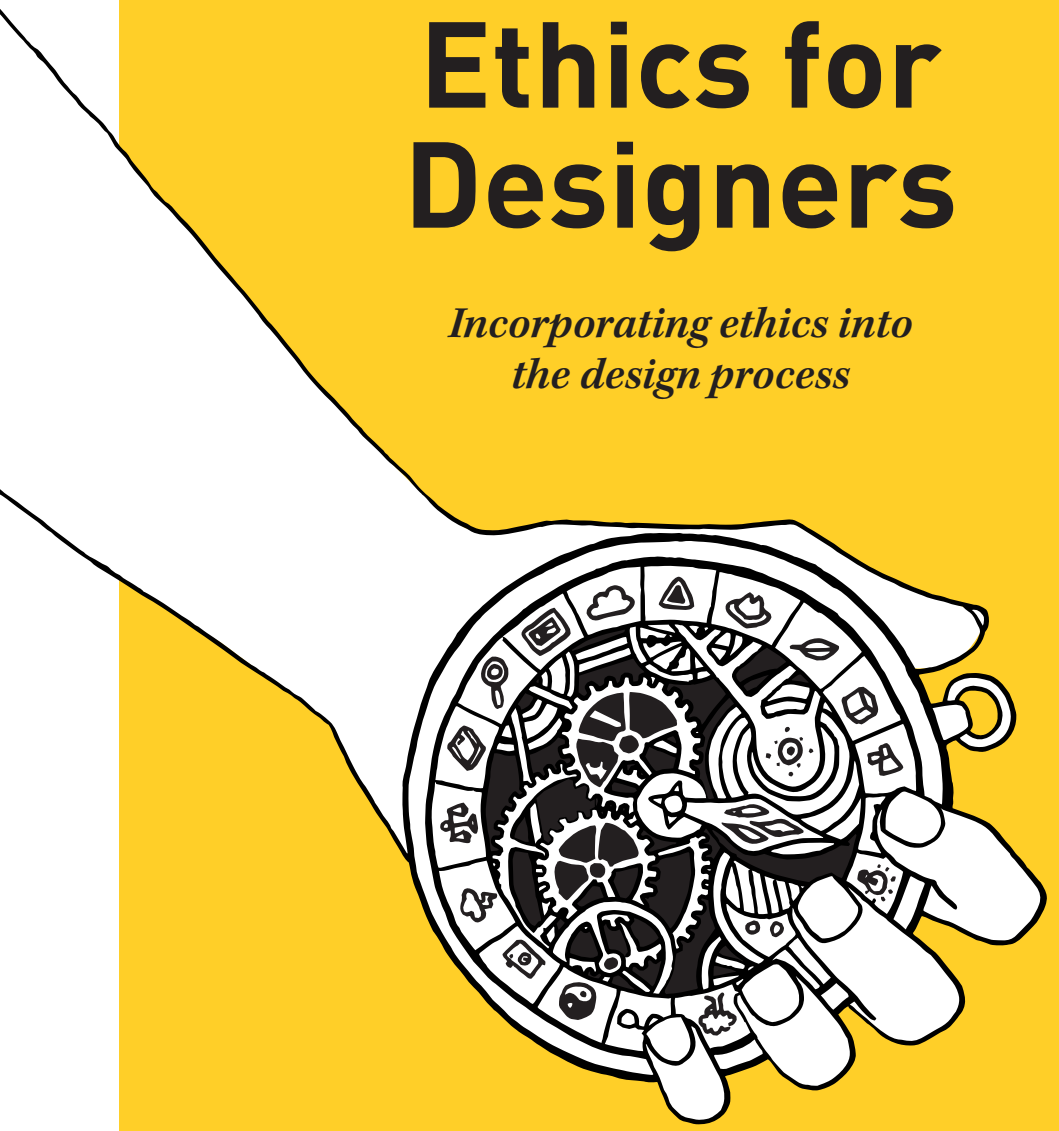
Ethics for Designers

Incorporating ethics into the design process



Jet Gispen

Ethics for Designers

Incorporating ethics into the design process

Master thesis
by Jet Gispen

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Abstract

One of the broader definitions of design as an activity is 'transforming a current state into a preferred state' (Simon, 1996). By this definition, it is very clear that design is inherently ethical. For what is defined as 'preferred' and who decides this? Within this research ethical design practice is defined as being aware of and taking responsibility for the ethical implications of a design in development.

To this end, the central aim of this research has been to explore ways for designers to incorporate ethics into their design process. A practice-based research methodology has been employed, with research methods including interviews, case studies and observations. A range of case studies has been executed at the faculty of Industrial Design Engineering at the Delft University of Technology.

Various techniques based on current ethical decision making tools and design methods have been experimented with. The insights gained throughout the project are boiled down into an accessible framework of how designers can cope with ethical issues within design. The argument put forth in this research is that the development of skills allows for incorporation of ethics because skills are not limited to specific content. The proposed ethical skills for designers are moral sensitivity, moral creativity and moral advocacy.

Building on the theoretical framework, a toolkit for designers to acquire and develop these ethical skills has been developed. The tools are grouped in relation to the three ethical skills.

These tools include: an evaluative exercise inspired by the 'script' concept of Latour; an ethical framing tool to define ethical constraints and provide an overview of the designers' responsibilities; an ethical ideation game based on brainwriting and hidden roles, which stimulates integrating values into design; a role-playing tool to uncover and experience potential unethical situations and to improve a design; a practical introduction to normative ethics; a mapping tool based on the concept of Value Sensitive Design and a tool to set ethical objectives and divide responsibilities among stakeholders.

Each tool is focused on a different aspect of the design process, ranging from the deconstruction of previous work to ideation to communication with stakeholders. Thus allowing the tools to find their natural place within an existing design process.

Finally, these tools have been evaluated with designers in practice. However, to fully validate the effect of the toolkit each tool should be evaluated in real life design projects. In addition, these tools can be used to investigate the effect of practically incorporating ethics into design projects. ■

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Throughout my graduation project, I have encountered a lot of people. I would like to thank everyone who has helped make it possible for me to do this project. Marco, thank you for your relentless enthusiasm about everything I was doing, your calming words in moments of stress and your guidance in scientific writing. I have learned a lot from you. Wim, thank you for being you. Ever since we met during EI I have always felt a special bond and am grateful for your support throughout my graduation. You challenge and empower me. Thank you to the lovely folks at studiolab for providing an inspiring workplace.

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01.

The project

This chapter provides an overview of the research, through setting the objective, relevance and research approach.

1.1 Introduction

Design has a large influence on how people behave and live their lives. One of the broader definitions of design as an activity is 'transforming a current state into a preferred state' (Simon, 1996). By this definition it is very clear that design is inherently ethical. For what is defined as 'preferred' and who decides this?

In fact, the act of design itself can be seen as ethical in that design aims to answer the question of how to live a good life. Designers are trained to uncover what people want and design things that help people achieve this. In this light, designers have a large responsibility towards the people he designs for.

A lot has been written about the moral responsibility of employees in the fields of, among others, engineering, medicine and law. In these fields, it is common for practitioners to sign a code of conduct or even take an oath. However, this is not the case in design.

Given this large influence of design, it is important that designers are aware of their responsibility and know how to act accordingly. Furthermore, to prevent designs from having negative ethical implications, the ethical dimension of a design must be investigated while it is being designed.

Therefore the central aim of this project is to explore ways for designers to incorporate ethics into their design process. The argument put forth in this research is that if designers are provided with practical means to engage with and reflect upon the ethical implications of their work, the design outcomes they produce would be 'morally better'.

To explore how designers could do this, a series of case studies has been conducted. Each study focused on a different ethical technique and way to incorporate this in a design process. All case studies took place at the faculty of Industrial Design Engineering of the Delft University of Technology.

This thesis is built up of five chapters. Chapter 1 provides an overview of the research, setting the objective, approach and significance. In Chapter 2 the context within which this work is positioned and framed is set through an exploration of the theoretical underpinnings from which understanding and approaches are drawn. From this position, the current situation of ethics in design and various approaches to improve this situation are explored as outlined in Chapter 3, through empirical studies and cases.

Throughout this exploration, there has been an evolution of approaches and tools, that have enabled the distillation of this body of work into a divergent framework of ethics in design. This framework facilitated the development of an ethical toolkit for designers which is described in Chapter 4.

Finally, Chapter 5 provides an evaluation of the toolkit, the conclusions of the research and how it has addressed the research question and defines the contribution to new knowledge that this master thesis has developed. Moreover, the limitations and implications of the research are discussed and recommendations for future research are suggested.

1.2. Research aim and objective

This master thesis is the result of a graduation project for the master Design for Interaction at Delft University of Technology. The central aim of this project has been to explore ways for designers to incorporate ethics into their design process. This has been enacted through the development of an ethical toolkit for designers. To achieve this the current situation of ethics in design has been investigated and various ways to overcome existing barriers have been experimented with.

The argument put forth in this research is that if designers are provided with practical means to engage with and reflect upon the ethical implications of their work, the design outcomes they produce would be 'morally better'. This thesis documents both the findings of the research as well as the development of the ethical toolkit.

Research question

As currently very few designers engage in ethics it is important to look into what holds them back and find ways to motivate and convince designers to overcome these barriers. Therefore the research question explored throughout this thesis is:

How can designers incorporate ethics in their design process?

This research question evolved throughout the practice-based research process, initially seeking to address the ways in which the ethical implications of a design could be investigated. Through this research, the question shifted focus towards the designer and the design process. The notion emerged that designers should not only learn about ethics, but in fact acquire new skills.

The development of ethical skills would allow designers to incorporate ethics in their own process, regardless of its content. With this shift in focus a series of sub-questions emerged through the explorations:

1. ***What is ethical design practice?***
2. ***Which skills do designers need to incorporate ethics in their process?***
3. ***Which tools are needed for designers to develop these skills?***

1.3 Gap and significance

This work contributes to the fields of design, design education and applied ethics. The forthcoming investigation in Chapter 3.2 concerning issues in the understanding and application of ethical techniques in design, demonstrates a gap in the ways that ethical concerns are currently presented and framed to designers.

As technological developments are speeding up more than ever, people are now being confronted with the impact of designs made just years ago. This highlights the vital role technology plays in people's everyday life.

A lot has been written about the moral responsibility of employees in the fields of, among others, engineering, medicine and law. In these fields, it is common for practitioners to sign a code of conduct or even take an oath. However, this is not the case in design. There is no formal or collective agreement on what ethical design is. Because design is such an omnipresent influence that touches upon every aspect of daily human life, it is a domain very much in need of ethical practice.

Some designers in the field are calling out a need for reflection and ethical concern ►

within design practice. A few examples of practical approaches relating to ethics and design are described. Designer and sustainability expert Leyla Acaroglu (2014) advocates a holistic approach to design in which we learn from systems thinking. Systems thinking is as much a mindset as a methodology, which revolves around the view that everything in the world is (part of) a system (Kim, 1999). It refutes the idea that phenomena can be reduced to individual parts. Acaroglu argues that the ethical decisions made in design should be publicly discussed (Acaroglu, 2016).

Tristan Harris (2016) upheld the position of Design Ethicist at Google in which he studied how technology influences a billion users' attention, well-being and behavior. After leaving Google he started the 'Time Well Spent' movement in which he attempts to counteract the attention economy. Harris (2016) aims to empower users to spend their time well, and encourage design companies to design for this and ultimately adhere to alternative success metrics.

The Just Things Foundation was founded to raise awareness about the ethical dilemmas designers encounter in the development of products and services in the domain of Internet of Things (IoT) (Schouwenaar et al., 2016). This consortium of design agencies and a researcher from the Delft University of Technology published a manifesto (see Figure 1) for a responsible IoT (Schouwenaar et al., 2015).

As director of Design Studies at Carnegie Mellon, Cameron Tonkinwise proposes new approaches for design practice and education, with a focus on sustainability and systems thinking (Tonkinwise, 2004). He contributed to the conception of a new design discipline Transition Design: a new area of design research, study and practice that proposes design-led societal transition toward more sustainable futures (Kossoff, 2011). Tonkinwise (2013) also considers a route of 'undesign' proposing designers not only to make fewer things, but even 'unmake' existing things. Sometimes the best way to tackle a complex problem is by eliminating something, rather than creating something new.

Thus it is well established that the ethical implications of design should be discussed. However, both in design practice and design education there is a lack of (structured) ethical consideration. Building on the arguments put forth by Mitcham (1995), Verbeek (2006), Van de Poel (2006) and Fallman (2011) for ethically concerned design, practical approaches to ethics in design should be developed. Within the field of Human Computer Interaction specifically, Fallman (2011) urges that "if interactive artefacts are knowingly designed to provide users with the opportunity of having specific types of user experience, it is also necessary to develop guiding visions that provide the means—the ideas, concepts, models, and tools—for revealing, analysing, and discussing the obvious implications (human, social, cultural, ethical, moral, ecological, and political) of these experiences, and how they foster particular relationships and dependencies."

Therefore this project serves to investigate ways to support designers in incorporating ethics into their design process. In turn contributing to the facilitation of thoughtful design in a complex world.

1.4 Research approach

This research has employed a practice-based research methodology. Practice-based research concerns an investigation with the aim to gain new knowledge by means of practice and the outcomes of that practice (Candy, 2006).

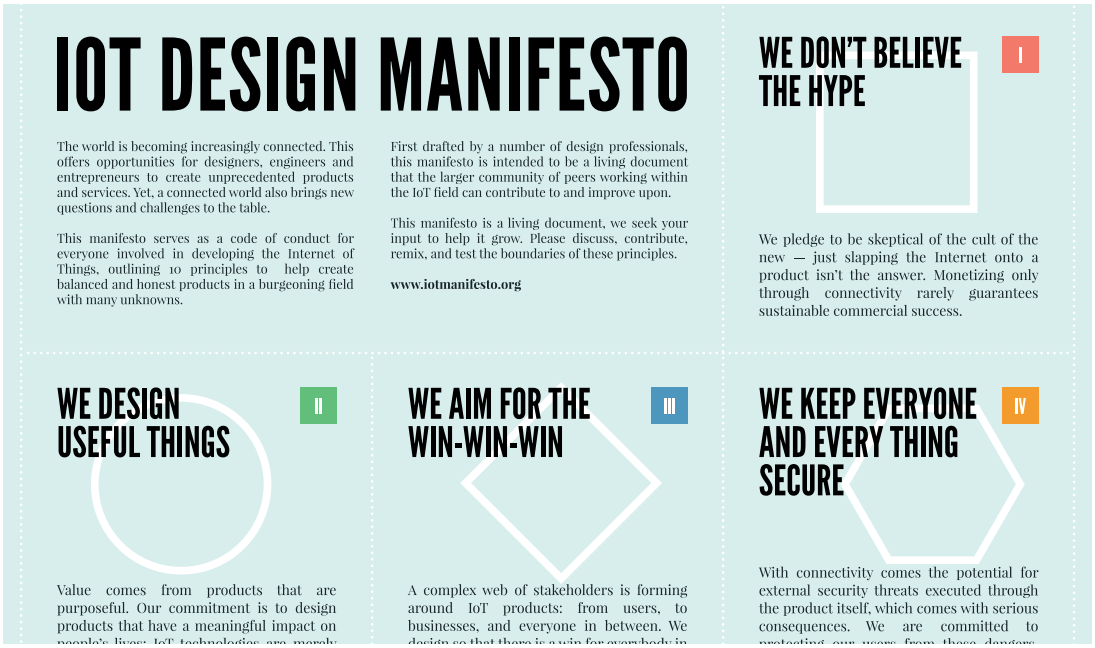

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Figure 1. An impression of the IoT manifesto developed by the Just Things Foundation.

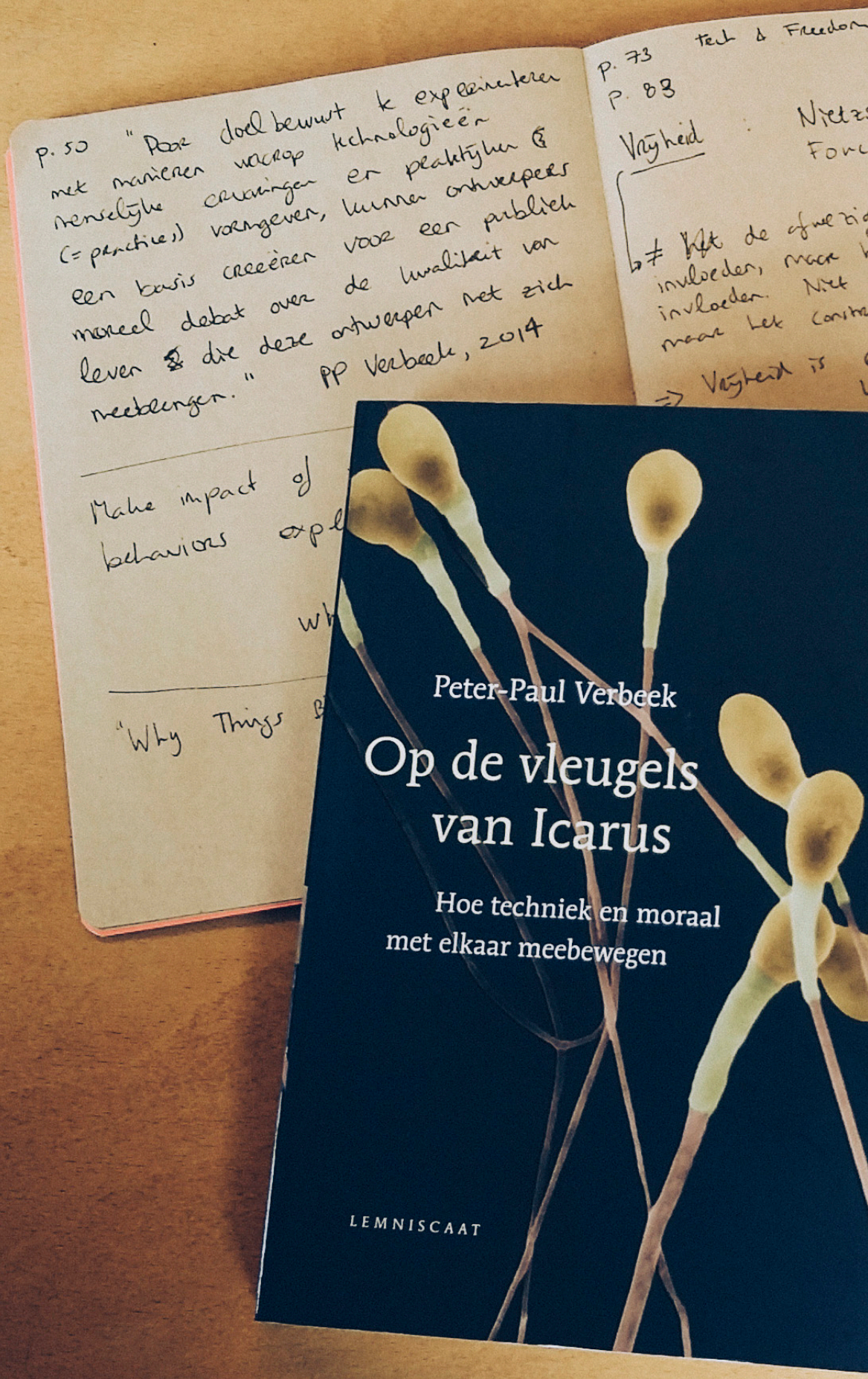
Practice-based research falls within the general area of action research, which upholds the notion that knowledge can be generated through experience. In simplified form, action research consists of a cyclical process of conducting an investigation, taking action based on the results of that investigation, followed by evaluating the changes in the situation (Brydon-Miller et al., 2003).

Essential to this research approach is the reflexive attitude of the practising researcher. Reflexivity is an attitude of attending systematically to the context of knowledge construction (Cohen and Crabtree, 2006). This includes critically reflecting on the situations of practice and the influence of the researcher on the outcomes.

The practice-based approach has been chosen because besides drawing on a range of conventional research methods it allows a practitioner to develop their own approach to research design, data collection and interpretation (Baum et al., 2006). This project focuses primarily on the disciplines of industrial design, interaction design and service design since these are taught at the faculty of Industrial Design Engineering of the Delft University of Technology (see Figure 2).

Various research methods have been used, including interviews, case studies and observations. The action-reflection cycle consisted of shifting back and forth between literature and empirical investigations on the one hand; and case studies and developed applications on the other.

The case studies have been executed at the faculty of Industrial Design Engineering at the Delft University of Technology. These case studies were complemented by a series of interviews with designers in practice. These interviews served to gain insight into the current role of ethics in design practice as well as drivers and barriers for incorporating ethics in the design process. ■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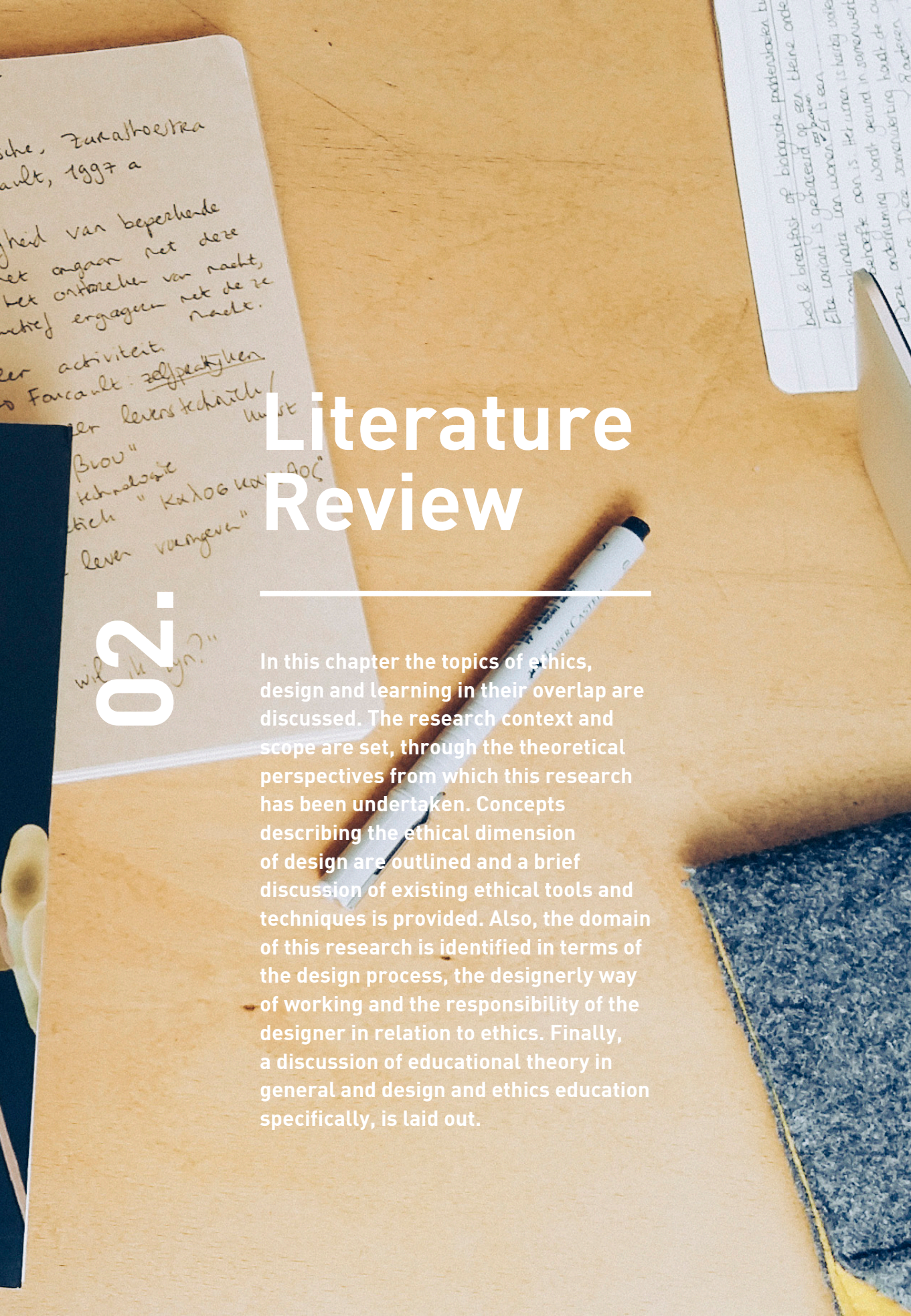

02. Literature Review

In this chapter the topics of ethics, design and learning in their overlap are discussed. The research context and scope are set, through the theoretical perspectives from which this research has been undertaken. Concepts describing the ethical dimension of design are outlined and a brief discussion of existing ethical tools and techniques is provided. Also, the domain of this research is identified in terms of the design process, the designerly way of working and the responsibility of the designer in relation to ethics. Finally, a discussion of educational theory in general and design and ethics education specifically, is laid out.

2.1 Relevant literature on ethics

In this chapter the ethical dimension of design is conceptualised. Furthermore, a selection of existing tools and techniques for ethical deliberation is presented. These existing techniques are discussed concerning their applicability to the domain of design. Finally three established approaches for incorporating ethics into design, engineering and science respectively are discussed.

2.1.1 The ethical dimension of design

As mentioned the broad definition of design as an activity is 'transforming a current state into a preferred state' (Simon, 1996) clearly indicates that design is inherently ethical. Below three other concepts, relevant to this project, are explained.

Artefacts contain scripts for human behaviour

In the field of Science and Technology Studies, many scholars have conceptualised this notion of design or technology development being an ethical activity.

When defining the characteristics of an object, designers necessarily make hypotheses concerning their view of the world in which the object enters. To this end, designers define actors with specific abilities, tastes and motivations and make assumptions about how morality, technology, science, and the economy will evolve (Akrich, 1992). A large part of the work of designers is that of 'inscribing' this vision of the world in a new object. Madeleine Akrich (1992) calls the end product of this work a 'script'. Thus like a film script, designers - in this sense materially - prescribe what the actors do. In which the actors are the predefined users of such an object.

French philosopher Bruno Latour also contributed to the concept of scripts. However, Latour (1992) focussed more on the script of the actual artefact than the inscription of the designer. Thus we can distinguish an 'artefact's script' and a 'designer's script' (Mattozzi, 2015). This distinction is important because in reality within one object these two scripts can conflict. Multiple explanations of these conflicts are appropriate. In the process of

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Figure 2. A designer inscribing the script of a digital camera.

inscription, users are simplified in order to make the situation comprehensible for designers. Thus once being used, people assign their own uses to an object. Furthermore, an artefact's script allows other uses besides those envisaged and inscribed by the designers (Mattozzi, 2015). The discrepancy between a designer's script and an artefact's script is also due to the fact that design processes are complex and imply many mediations within the very process of designing (Mattozzi, 2015).

Designer Anthony Dunne illustrates the intrusive effect of technological artefacts in his book Hertzian Tales: 'While using electronic objects the use is constrained by the simple generalised model of a user these objects are designed around: The more time we spend using them the more time we spend as a caricature. We unwittingly adopt roles created by the Human Factors specialists of large corporations. For instance, camcorders have many built-in features that encourage generic usage; a warning light flashes whenever there is a risk of "spoiling" a picture, as if to remind the user that they are about to become creative and should immediately return to the norm' (Dunne, 1999, p. 30). See Figure 2 for an illustration of this concept.

Artefacts mediate human morality

Philosopher of technology Peter Paul Verbeek claims that the script concept as conceptualised by Akrich and Latour is unrealistically asymmetrical. It is based on a hierarchical view of the designer inscribing a script in an object and a user adhering to this script. According to Verbeek, this view neglects the role of both user and artefact. Looking at technology from a phenomenological perspective, he takes this view one step further. Verbeek (2014) claims that technological artefacts not only prescribe how to act but in fact shape people's morality. He builds upon Heidegger's analysis of the role of 'tools' in the everyday relation between people and reality. Heidegger (1927) argues that people's involvement with reality takes place through the use of such 'tools'. ►

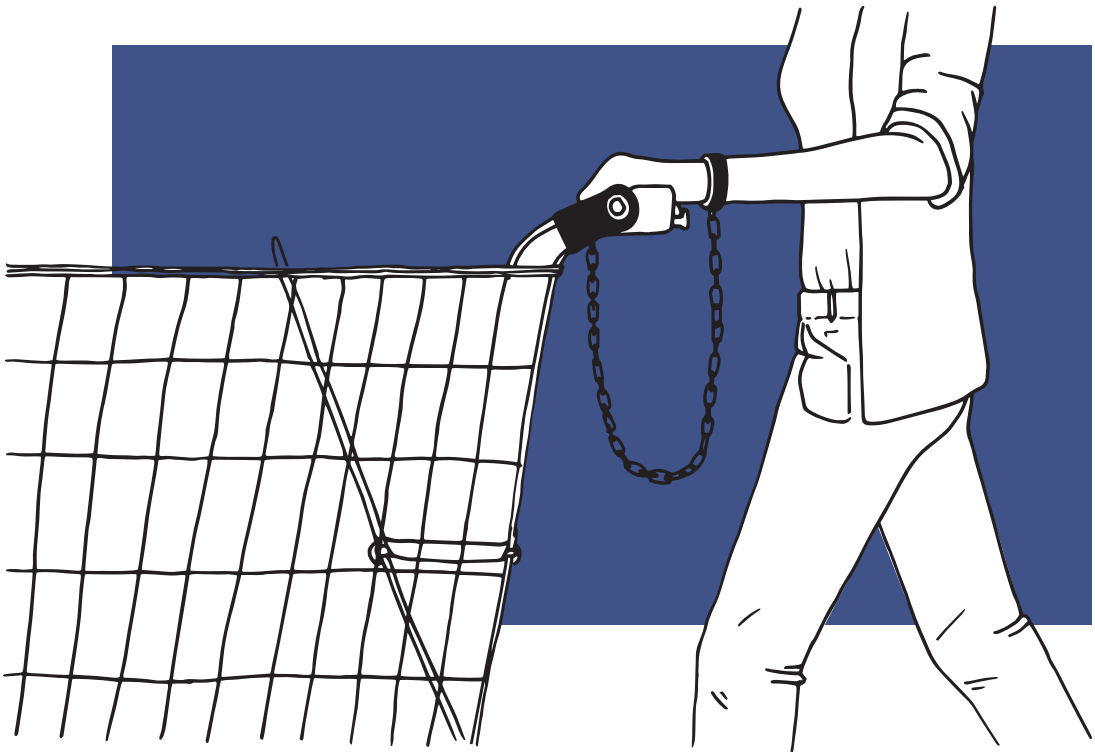

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Figure 3. How the design of shopping carts embodies a social norm.

"Richard Buchanan put it nicely in a recent essay (Buchanan, 2001), where he said, 'Products are vivid arguments about how we should live our lives.' Our designs are not ethical or unethical in that they're using ethical or unethical means of persuading us. They have a moral component just in the kind of vision and the aspiration of the good life that they present to us."

- Sebastian Deterding
Designer/researcher of gameful design for human flourishing

Heidegger distinguishes tools as either 'present-at-hand' or 'ready-to-hand'. This distinction can be used to describe the way objects are present in a use context. Tools in use are ready-to-hand in the sense that they facilitate actions without themselves being present as an experience in itself.

Verbeek: 'When using a technological artefact it facilitates people's involvement with reality and in doing so it co-shapes how humans can be present in their world and their world for them.' (Verbeek, 2006, p.364). Verbeek calls this influence of technology 'technological mediation'. In that sense designers give form to this technological mediation and thus, as phrased by Verbeek, materialise morality.

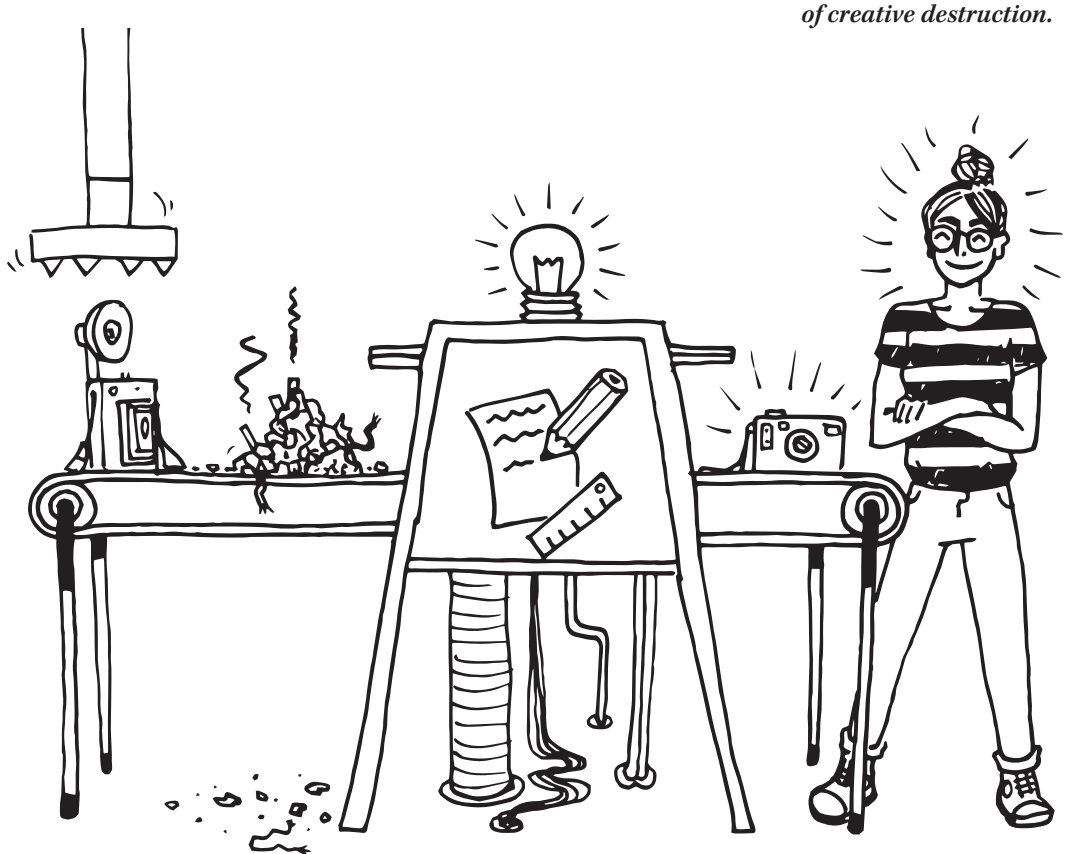
An example brought up by Verbeek is that of a coin lock on shopping carts. Fairly innocently such a lock urges people not to let their cart stray on the supermarket premises (Verbeek, 2014, p.113). Because people want to retrieve their 50 cents, they make the effort to return their cart. Such behavior rests on the universal human tendency referred to in economics as 'loss aversion' (Kahneman & Tversky, 1984). This example illustrates how an artefact can embody a norm from the world of humans (see Figure 3).

Creation = destruction

Another way to look at the impact of design is to view design as an act of creation. Logically, everything that is created requires something else to be changed, destroyed, or depleted (Fry, 2009; Acaroglu, 2016). Be it in terms of materials and energy or for instance cultures or human practices. As Tonkinwise (2013) puts it, Tony Fry's ethical foundation for design is, in fact, an adaptation of the second law of thermodynamics. This law states that the total entropy of a system will always increase over time. The increase in entropy accounts for the irreversibility of natural processes, and the asymmetry between future and past. Designing something requires vast amounts of resources to turn matter into a more valuable form.

This 'destructive power' of design clearly illustrates the ethical dimension of design. Economist Joseph Schumpeter (2013) famously called this phenomenon 'creative destruction'. Design is an act of creative destruction in that its intention is to create something new, inevitably destroying existing products or systems (see Figure 4). It seems unimaginable for designers not to view their work in this light and consider what must be sacrificed to bring their designs into the world. ■

▼ *Figure 4. Design as an act of creative destruction.*



2.1.2 General ethics tools and techniques

Various existing approaches in the domain of ethics are analysed. A set of ethical tools is selected, based on whether they might be applicable in the design process. This selection is made based on the designerly way of working as described in Chapter 2.3.2.

Stakeholder Analysis

One of the most common methods applied in ethical decision-making is a stakeholder analysis. It is most often used in the domain of business ethics when determining a morally acceptable course of action. There is no universal tool for performing an ethical stakeholder analysis, it is rather a mindset on incorporating the opinions of all people involved in a specific situation (Kaiser, 2005). The notion of empathising with various stakeholders (including users) could be well suited to the way designers work. However, this being a merely theoretical and unguided analysis might not be very effective in a design process.

Ethical Cycle

The ethical cycle (Van de Poel & Royakkers, 2007) is a systematic approach to moral judgment based on the traditional design process. Van de Poel and Royakkers (2007) noticed many resemblances between the process of moral deliberation and the design process. Similar to design problems, moral problems are ill-structured. Therefore the ethical cycle proposes to navigate moral problems in an iterative manner, in which the problem and solution co-evolve (see Figure 5). Likewise in design, the outcome of such a process cannot be predicted upfront.

Closely tied to the design process this tool could inspire the development of ethical tools for designers. The iterative nature of this reflexive exercise and the fact that it allows multiple possible moral solutions would suit the creative approach of a designer. An important educational benefit is the possibility of collective deliberation. Discussing the goals and outcomes of this technique with fellow designers could help nuance students' ethical understanding.

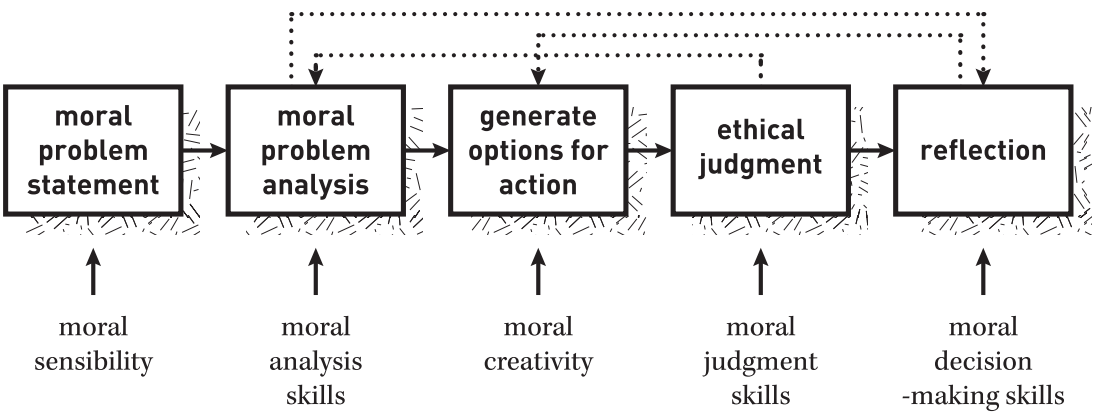


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Figure 5. The ethical cycle: a systematic approach to moral judgment based on the traditional design process.

Ethical Matrix

The ethical matrix (Kaiser, 2005) is a theoretical tool used to collect and weigh moral arguments for each stakeholder based on general moral values. It is based on a matrix structure that encourages to include all arguments in an ethical decision, rather than only those that are top of mind.

The process of the ethical matrix is as follows:

1. Identify all relevant stakeholders;
2. Establish a set of ethical principles;
3. Set up a matrix containing each ethical principle from the perspective of each stakeholder;
4. Make a consequence matrix in which the impact of the technology on each cell is described;
5. Based on the arguments in each cell, make a considered judgment on what is ethically acceptable;

Thinking from different stakeholder perspectives and the possibility of actual stakeholder engagement is a good fit for a designerly approach. The strict logical structure, however, might limit a designer's creative thinking. Furthermore, as a theoretical exercise without the opportunity for iteration it would be less relevant. Lastly, ample theoretical knowledge of ethics appears a strict requirement for effectively applying this technique.

Dramatic rehearsal

John Dewey (2005) proposes using imagination to explore possible outcomes to complex moral situations. In his view, imagination is a key component to moral deliberation because morality is essentially concerned with humanity. And humans do not behave in logical, predictable ways, but rather in fluent and often irregular patterns. The strategy Dewey proposes to humanly investigate moral problems is to undergo them. This he refers to as dramatic rehearsal; a process of tentative action in which we try out various outcomes, imagining ourselves actually doing this and reflecting on our actions (Fesmire, 2003). Dramatic rehearsal requires moral imagination, which can be understood as a capacity to empathise with others and to discern creative possibilities for ethical action.

Conclusions

Ethical tools serve as a foundation for ethical decision-making. However, they cannot be reduced to a strictly logical structure. The people using the tool will always have to make the decision themselves. Dramatic rehearsal is an inspiring way to approach ethics which resonates with the designerly way of working.

Furthermore, it is observed that although each tool provides some sort of structure, they are very much a theoretical exercise. These techniques rely heavily on the theoretical knowledge of ethics of the person applying them. Literature on the ethical cycle and ethical matrix do suggest applying these methods in practice, but provide no instruction on how to do so. In an interview one of the authors of the ethical cycle, Ibo van de Poel, mentioned that the tool is not applied in practice (I. van de Poel, personal communication, September 21, 2016). According to Van de Poel, it rather serves as a theoretical guideline, used particularly in engineering education. Both these methods also suggest involving the actual stakeholders of a project in the evaluation, but again do not describe how to do so. Kaiser (2005) criticises the fact that most ethical tools described in literature have not been empirically tested. Unfortunately, he does not propose an alternative approach. In conclusion, the valuable aspects of the methods described above are taken into account, while being critical of the ability to apply the method in practice. ■

2.1.3 Ethical approaches in design, engineering and science

Value Sensitive Design

The most prominent design theory that incorporates ethics is Value Sensitive Design. The goal of Value Sensitive Design (VSD) is to influence the design of technology by explicitly attending to human values and integrating them into and throughout the design process (Friedman and Kahn, 1997). VSD highlights the way in which technology both shapes society and is shaped by social factors (Friedman, Kahn and Borning, 2002). Such complex socio-technical systems involve intertwined interactions between humans and technology and cannot be designed in a value vacuum. The VSD methodology consists of a three phased iterative approach, which includes investigations of conceptual, empirical, and technical issues specific to a particular design (Cummings, 2006).

The conceptual phase consists of philosophically informed analyses of the issues that are to be investigated. Critically defining which values are important clarifies issues and allows for comparing results. These conceptual analyses are then substantiated by empirical investigations of the human context in which the technical artefact is used. The last phase concerns investigations of how existing technological properties support or hinder human values. Which in turn inspires ways to design in such a way that values identified in the conceptual investigation are supported. (Friedman and Kahn, 1997)

Although the concept of considering which values are important is a good way to engage with the ethical dimension of design, the analytical nature of VSD makes it less appealing to apply in everyday design practice. Even in the original publications about the methods of VSD (Friedman, Kahn and Borning; 2002) it is unclear how to actually apply this in a design project. The examples given suggest it is more suited to design research or the analysis of existing designs.

Constructive Technology Assessment

Technology Assessment (TA) is a scientific process that aims to contribute to the formation of public and political opinion on societal aspects of science and technology. The outcomes of such an assessment are mostly directed at policymakers. Based on the conviction that all technological development has ethical implications, it takes into account the fact that scientists and engineers are not trained ethicists in an attempt to structure a critical assessment.

Constructive Technology Assessment (CTA) takes this approach one step further by performing the assessment concurrently with the development of the technology. This allows the outcomes of such an evaluation to steer the development of a new technology. CTA is based on the idea that technological development is a process of constant decision making, which can be steered along the way (Schot, 1992). Engaging with the ethical dimension of a design while it is being developed is important because this allows the outcomes of such an investigation to be fed back into the design process.

Midstream Modulation

Midstream modulation (MM) is a scientific approach that aims to investigate the ethical implications of both process and outcome of scientific developments. It is a framework for guiding interventional activities in the laboratory to trigger reflection on the broader societal dimensions of the work of research & development (R&D) practitioners. An

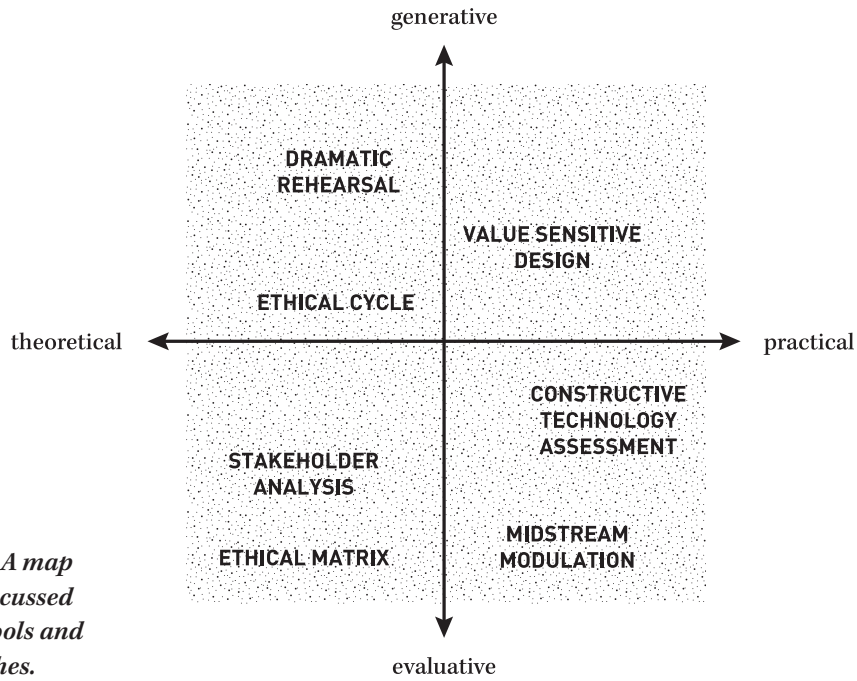

Figure 6. A map of the discussed ethical tools and approaches.

'embedded ethicist' confronts practitioners with the ethical dimension of their decisions (Schuurbiers, 2010). The goal is not just to evaluate the broader impact of the project at hand but also to trigger reflexive awareness among these practitioners (Fisher, Mahajan and Mitcham, 2006).

An example of applying midstream modulation illustrates that it is easier to discuss ethical issues when they are related to a specific situation. This makes the relevance of the issue clear to the person investigating it (Schuurbiers, 2011). Furthermore, reflecting on a design from a broader perspective, for instance by looking at the long-term impact helps to understand the ethical challenges and opportunities (Schuurbiers, 2011).

Conclusions

A distinction between the ethical tools and approaches discussed is the degree of abstraction. Most ethical techniques exist in the realm of theoretical, philosophical inquiry. In order to translate the knowledge of ethical theory to the domain of design practice, the method should be more hands on.

Another important dimension discovered among the various methods analysed is that ranging from evaluative to generative. This dimension distinguishes between methods, which serve to investigate and assess the ethical implications of a situation and methods that serve to address these issues in a generative manner.

For an overview of the various tools and approaches discussed and their respective positions on these dimensions, see Figure 6. The elements that were used for the development of an ethical toolkit for designers are: role-playing to empathise with ethical concerns (*dramatic rehearsal*), defining and embedding values in design (*Value Sensitive Design*) and viewing designs holistically (*Midstream Modulation*). ■

2.2 Relevant literature on design

Since most readers of this thesis have a background in design, it is not needed to present a thorough definition of design. However, in this chapter the domain of this research is identified in terms of the design process and the designerly way of working. Rather than listing the different design disciplines that could benefit from this research, a description of design as an activity is presented. The most common characteristics of design are illustrated. Furthermore, the role of the designer in understanding the ethical implications of design is described.

2.2.1 The design process

Design as a way of thinking is a mix of rational, analytical thinking and creativity. Historically, the dominant model of the design process was that of a phased problem-solving process: analysis - synthesis - evaluation (Lawson, 2006). Viewing design in this light allowed for a clear, linear model to describe the process. However, this phased representation of design neglects the accidental and iterative nature of design (Lawson and Dorst, 2009).

The model of design as learning is agreed upon as being a much more accurate representation. This model concentrates on the designer gathering knowledge of the problem while attempting to arrive at a solution. This is done by experimenting with different views of the problem and trying out different solutions. Schön (1983) famously conceptualised this way of working as being a reflective practitioner. Schön claims that designers engage with concrete representations of abstract concepts in a conversational way. Iterating between framing a question, performing moves towards a solution and evaluating these moves, which might lead to new moves or a new way of framing (Schön, 1983).

The design process used throughout this research is based on this iterative action-reflection model of design. Specifically, the model presented by Rozendaal (2016) is used to map the research activities and resulting design outcomes onto the design process. This model revised the traditional design process by Roozenburg and Eekels (1991) and includes four phases, namely (1) framing, (2) envisioning, (3) realising and (4) evaluating (see Figure 7). Framing to understand and define the problem, envisioning new solutions

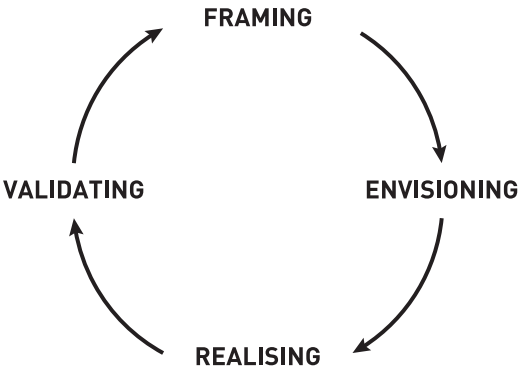

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Figure 7. A model of the design process by Rozendaal (2016).

to the problem, realising these solutions into realistic designs and validating design decisions and outcomes.

2.2.2 The designerly way of working

Based on the author's experience as a design student and a thorough literature review of design theory and practice by Stolterman (2008), the 'designerly' way of working is described.

Design is a curious discipline in that it combines knowledge and processes from both the humanities, such as psychology and sociology; and science, such as material science, engineering and information technology. Designers are therefore taught to integrate knowledge from diverse fields into a single comprehensible unit (see Figure 8). This could be a product, but just as well a service, system, campaign or any other intervention. ►

▲

Figure 8. A designer at work; simultaneously engaged in different modes of thought and action.

Therefore being able to work in a multi-disciplinary team is a key skill of any designer. Throughout a design project, designers engage both in individual and collaborative work. Furthermore, designers are used to working with constraints, both in terms of time and resources as well as the content of the project at hand.

Designers are both creative and analytical. They go through a series of iterative steps in which a problem is formulated and solutions are developed and then tested. The outcome of each project is different, yet the approach is often similar. Such an approach requires a degree of flexibility as well as reflexivity. Common methods designers use to do this are forms of visualisation and prototyping. These methods require an ability to switch back and forth between thinking and making.

Since designing involves innovation, the creation of something new, designers are very much future oriented. Also keeping in mind the time it takes from a first idea to launching a new product, it makes sense that designers are always focused on the years to come. This mindset requires two important skills: the ability to (1) imagine possible futures and (2) handle uncertainty (Cross, 1982).

One final characteristic of a how designers work is the ability to understand complex problems. Design problems have often been labelled as wicked problems (Buchanan, 1992; Rittel, 1988) because they are ill-defined, open-ended problems with multiple stakeholders involved. This requires designers to take a holistic approach in which both the bigger picture as well as rich details are taken into account.

Crucial to the way of working as described above is the so-called designerly approach. In Stolterman (2008) this is described as "such an approach is different from the scientific approach and is solidly based in design practice and in the situated and the concrete. It is an approach that deals with particulars and with the richness of reality, and with the purpose of creating and forming new realities."

In summary, designers possess a set of skills concerned with identifying problems; framing the design context; and representing, selecting and evaluating solutions.

2.2.3 The designer's moral responsibility

Since designers are (in part) responsible for their designs, they also bear a responsibility for the ethical implications. As creators they impose a certain view on a situation and with this in mind aim to ultimately improve the situation.

Several forms of responsibility can be distinguished. Given the fact that most design projects are of a multi-disciplinary nature

"Designing is taking a stand. As soon as you design something, from a tea cup to a public sector, you change the world because you create new relations between people and that world."

- Mattijs van Dijk
Reframing Studio

often a complex network of stakeholders is involved. As a professional, a designer has certain obligations towards his users, the client and fellow design professionals to name a few. He has an obligation to adhere to agreed upon conditions, to deliver a product of quality and an obligation to create something new that does not infringe the rights of others. These obligations are documented by law, not specifically for the profession of design but in terms of economic conduct. Specifically, a client and designer can come to terms on a certain project in a contract.

However, the moral responsibility of designers reaches far beyond that of professional conduct. The immense power of design to shape the daily lives of many individuals calls for a more thorough and nuanced consideration of the role of ethics in design. Not only should designers commit to their intentions, but more importantly they should closely examine these intentions. It is important to note here that designers are also human beings and thus in fact moral agents. As human beings, having a clear ethical framework to guide your ways of life is just as valuable for a designer as any other person.

This project describes investigations into how designers can thoughtfully take on these responsibilities within their work: as a designer and as a human being. ■

"Designing for change without carefully considering the particular meaning inscribed into the object is irresponsible - the 'How' matters immensely."

- Marc Hassenzahl
Professor of Experience Design

2.3 Relevant literature on learning

For designers to be able to incorporate ethics into their work effectively they must gain new knowledge and learn new techniques. To this end educational theory on learning ethics and learning design was investigated. The aspects of both domains that are relevant for developing effective ethical techniques for designers are described.

2.3.1 Learning ethics

Classical ethics education, whether taught in philosophy or engineering programmes consists mostly of lectures regarding common ethical theory, case studies and written essays. With such an approach students learn about the different ethical views and are encouraged to reflect on the validity and value of each theory. Furthermore, students are taught to build logical arguments and present their philosophical point of view.

In 2009 Lofthouse and Lilley performed a benchmarking study of the approaches used to teach ethics to designers and engineers. The study reviewed both the content and techniques taught in various courses in universities across the globe. The approaches mentioned included role-play, case studies, scenarios and group discussions. Furthermore, it was suggested to educate designers in systems thinking to promote a more holistic approach to design (Lofthouse and Lilley, 2009). Below these approaches are briefly discussed in relation to design education.

Role-playing

Role-playing promotes active learning, which is an effective way to break through the 'dry' nature of ethical theory. With such an approach students assume roles of stakeholders and are asked to make collective

decisions regarding ethical questions. The concrete examples used in role-playing improve the students' learning. An important benefit of role-playing is that it allows students to 'feel' the ethical dimension of their work and their responsibility for the impact thereof (Lloyd and Van de Poel, 2008). This approach would be very well suited for designers, who are used to empathise with their users.

Case studies

Case studies have long been seen as an effective way to integrate ethics into the engineering curriculum by using theoretical descriptions of real life cases. However, the chronological way in which evidence is provided in hindsight is not realistic (Lloyd and Van de Poel, 2008). It gives students the impression that ethical decisions are clean and easy. De Vries (2006) argues that case studies in ethics education often reduce ethical analysis to choosing between two alternatives. Although this helps students focus on what is relevant, it ignores the complexity of design decision making.

Scenarios

Scenarios enable designers to imagine and think through the potential effects of their designs during use. This approach can be used to visualise different visions or behaviours. A benefit of the use of scenarios is that it is context-specific. This makes the ethical aspects of a design decision concrete. Furthermore, scenarios are a common design tool and could, therefore, be seamlessly integrated into the designerly way of working.

Group discussions

Group discussions are seen as a valid mechanism for teaching ethics in design. Students are encouraged to discuss various ethical questions and debate possible courses of action. Such discussions encourage students to bring up issues themselves (Lynch et al., 2000). Two important conditions for effective ethical group discussions are: (1) a good facilitator and (2) sufficient knowledge of the topic.

Games

The last approach analysed is the use of games to teach ethics. Most often used in the context of business education and practice, games can provide a way of developing skills such as negotiation, rhetoric, strategy formulation, presentation of evidence and theory (Lloyd and Van de Poel, 2008). By creating rule-bound, often social and competitive environments, games encourage students to use their practical knowledge in managing ill-defined, open-ended situations (Lloyd and Van de Poel, 2008). Moreover, games allow students to reflect on their own experiences rather than the hypothetical experiences of others. Games provide the means to combine ethics with the creative approach of design.

Integrating ethics into the curriculum

Various scholars in the fields of science, engineering and design education have argued for the integration of ethics into the curriculum (McLean, 1993; Lofthouse and Lilley, 2009; Riley et al., 2007; Lloyd and Van de Poel, 2008). Compared to the classic educational approaches of free-standing ethics courses or ethics modules, an infusion of ethics has three clear advantages: (1) ethics is communicated as an integral and 'normal' aspect of the design process; (2) it implies that engineers and designers should be educated in ethical decision making; (3) it shifts the focus from extreme and 'large' ethical concerns to day-to-day 'small' ethical decisions. ■

▲

Figure 9. An impression of design students working in a studio environment.

2.3.2 Learning design

Project based learning

The general teaching style used to teach designers how to design is through learning by doing. In formal design education, a curriculum is generally built up of progressively difficult design projects. This degree of difficulty is related to the level of integration required to complete the project. Parallel to these projects, students receive more formal education in specialised topics. Furthermore, specific skills could be taught through the use of workshops. However, in most design schools, students are expected to pick up on such skills by performing the projects. (Lawson and Dorst, 2009)

Situated learning

The way professional designers learn from projects is characterised as 'situated learning', which holds that learning takes place not in a formal educational setting but rather in the context in which it is to be applied (Lave and Wenger, 1991). This mode of learning goes beyond the learning by doing approach used in design education. In this case, the context or situation is as important as the doing itself. Each design project is a concrete source of learning for the practising designer.

Working in teams

A key feature of design education is working in studios, where design teams work alongside each other (see Figure 9). The design studio in modern design education is not so much a physical space, as well as a cultural space. Important features of learning with a studio-based approach are that it fosters co-location, emphasises learning by doing, has an unrestricted timetable and relies on mimicking practice. Generally, design students spend

"In the studio, students work very much on their own approaches. They support each other in learning how to find solutions that lie inside the value system of the studio or unit."

- Lawson, B., & Dorst, K. (2009). Design Expertise. Routledge. (p.226).

much more time with their peers than with staff. This triggers them to exchange ideas and learn from each other's skills and knowledge. In practice, it is also common to build expertise not just by individual experience but by sharing insights. (Lawson and Dorst, 2009)

Simulating design practice

Learning in studios is seen as an attempt to prepare students for working in design practice. However, these projects are generally of a shorter timespan than their real world counterparts. Paradoxically, students do have more actual design time because they do not have to take all sorts of practical, legal and financial aspects into account. Since design is hard to schedule, in teaching design it is important to have large blocks of unscheduled studio time. The unstructured nature of design forces design students to develop effective time management skills. ■

2.4 Conclusion Chapter 2

To prepare design students for such real world situations, some projects introduce fictional clients (usually teaching staff) who have strict concerns regarding the outcome of the project. However, this simulation hardly offers a realistic learning experience. Bringing in real clients would always be favourable, despite the practical constraints to setting up such projects (Lawson and Dorst, 2009).

This chapter has, through an examination of the literature relevant to this research, framed the context from which it has been produced and defined.

Conceptualising the ethical dimension of design

According to Latour (1992) and Akrich (1992) Artefacts contain scripts for human behaviour. In this analogy, like a film script, designers - in this sense materially - prescribe what the actors do.

Verbeek (2014) claims that technological artefacts not only prescribe how to act but in fact shape people's morality. Verbeek: 'When using a technological artefact it facilitates people's involvement with reality and in doing so it co-shapes how humans can be present in their world and their world for them.'

A different way to look at the impact of design is to view design as an act of creation. Logically, everything that is created requires something else to be changed, destroyed, or depleted (Fry, 2009; Acaroglu, 2016). Be it in terms of materials and energy or for instance cultures or human practices.

Reviewing existing ethical tools and approaches

Ethical tools serve as a foundation for ethical decision-making. However, no ethical tool can be reduced to a strictly logical structure. In the end, the people using the tool will always have to make the decision themselves. Furthermore, these techniques rely heavily on the theoretical knowledge of ethics of the person applying them.

Of the tools analysed, Dewey's dramatic rehearsal (Dewey, 2005) provides an inspiring way to approach ethics which resonates with the designerly way of working.

The elements relevant for the development of an ethical toolkit for designers are: role-playing to empathise with ethical concerns (*dramatic rehearsal*), defining and embedding values in design (*Value Sensitive Design*) and viewing designs holistically (*Midstream Modulation*).

Identifying the domain of application: design

The design process is defined as an iterative action-reflection model, based on Schön (1983). Specifically, the model by Rozendaal (2016) is used to map the research activities and resulting design outcomes onto the design process. This model includes four phases, namely (1) framing, (2) envisioning, (3) realising and (4) evaluating.

The designerly way of working is characterised as solidly based in design practice and in the situated and the concrete. It is an approach that deals with particulars and with the richness of reality, and with the purpose of creating and forming new realities (Stolterman, 2008).

To this end designers are able to: (1) integrate knowledge from diverse fields into a single comprehensible unit (Stolterman, 2008), (2) work in a multi-disciplinary team (Stolterman, 2008), (3) think creatively and analytically (Lawson, 2006), (4) imagine possible futures and handle uncertainty (Cross, 1982) and (5) understand complex problems (Buchanan, 1992; Rittel, 1988).

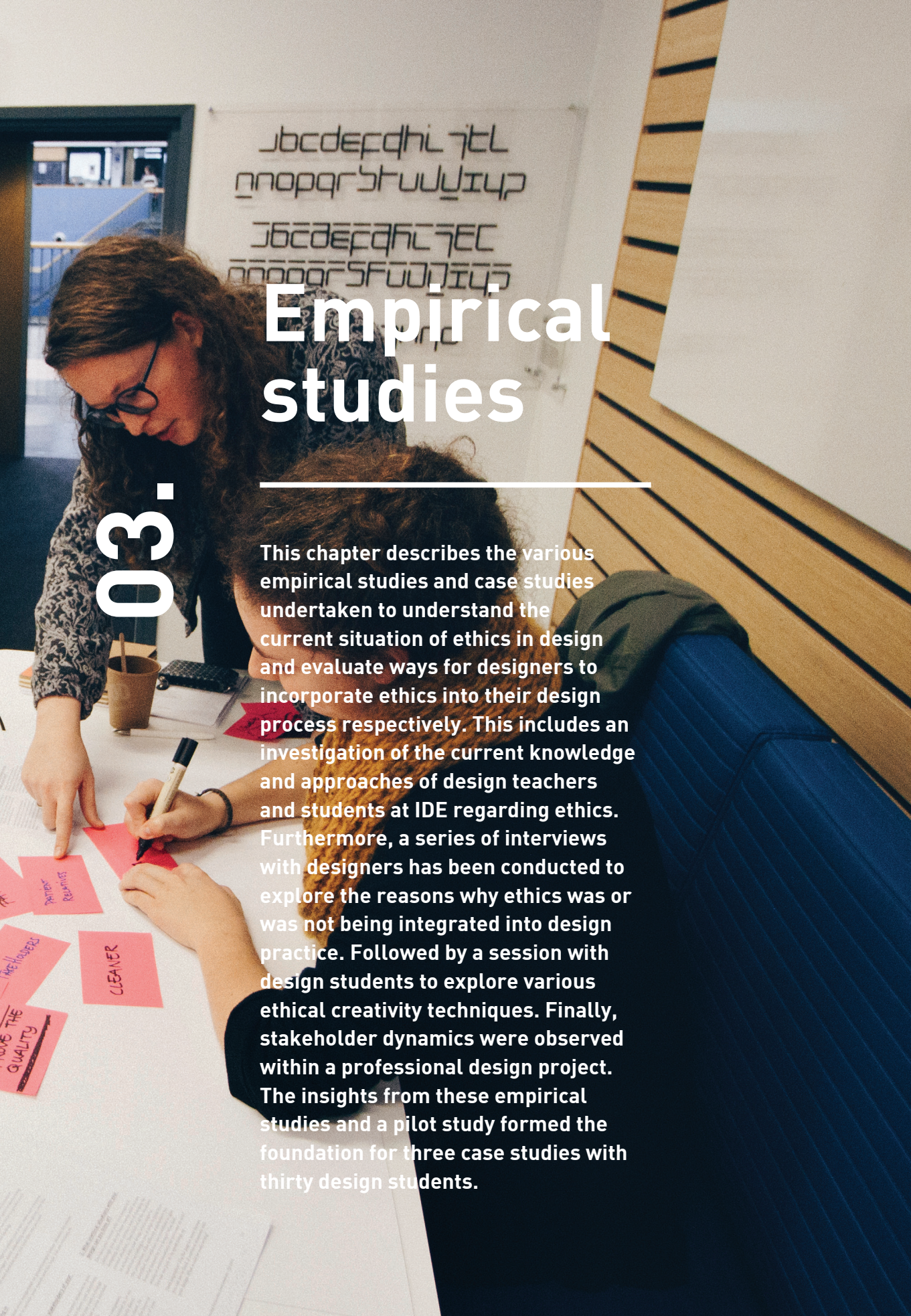
The moral responsibility of designers reaches far beyond that of professional conduct. Since designers are (in part) responsible for their designs, they also bear a responsibility for the ethical implications.

Reviewing existing ways to learn ethics and design

Current approaches to teaching ethics to engineers and designers include role-playing, case studies, scenarios, group discussions and games (Lofthouse and Lilley, 2009). Of these approaches the use of role-playing, scenarios and games provide opportunities for application in the domain of design.

The general teaching style used to teach designers how to design is through learning by doing (Lawson and Dorst, 2009). The way professional designers learn from projects is characterised as 'situated learning', which holds that learning takes place, not in a formal educational setting but rather in the context in which it is to be applied (Lave and Wenger, 1991). In order to effectively teach designers how to incorporate ethics into design, this situated learning approach is kept in mind. ■


Design and ethics.
Receptionist
Cashier.
MEDICAL EXPERT (DOCTOR)
Level up knowledge



03. Empirical studies

This chapter describes the various empirical studies and case studies undertaken to understand the current situation of ethics in design and evaluate ways for designers to incorporate ethics into their design process respectively. This includes an investigation of the current knowledge and approaches of design teachers and students at IDE regarding ethics. Furthermore, a series of interviews with designers has been conducted to explore the reasons why ethics was or was not being integrated into design practice. Followed by a session with design students to explore various ethical creativity techniques. Finally, stakeholder dynamics were observed within a professional design project. The insights from these empirical studies and a pilot study formed the foundation for three case studies with thirty design students.

3.1 Current ethics knowledge at Industrial Design

3.1.1 Goal

This study describes a series of investigations into the current role of ethics in design education. The objective of this study was to identify opportunities for improving how designers learn to engage with ethics. To achieve this, the following research questions were addressed:

1. ***What knowledge of ethics do students at Industrial Design Engineering have?***
2. ***How is ethics currently taught at Delft University of Technology?***

3.1.2 Method

The scope of the investigations was limited to the Delft University of Technology (TU Delft). Different research methods were used to understand the current situation. This included desktop research, informal conversations with staff of the faculty of Industrial Design Engineering (IDE) and a brief exploratory session with students. Furthermore, ethicist and educator Ibo van de Poel was interviewed about his experiences with teaching ethics at the faculty of Technology, Policy and Management.

3.1.3 Key findings

On investigation of the role of ethics at TU Delft, it appeared that of the entire university the design faculty is the only one without an ethics course (Delft University of Technology, n.d.). Faculty staff of an older generation recalled that there used to be such a course, but that it gradually shifted focus towards safety and ergonomics. It seems that safety was deemed the main aspect of teaching ethics at a design faculty.

Furthermore, Van de Poel commented that in his experience design educators at TUD did not see the use of explicitly addressing ethics within their course:

"I get a sense that because many people at IDE claim they already pay a lot of attention to the social dimension of design, that they think it's not necessary to also consider ethics. At least that's what I often hear from teachers 'Yeah, but we already do all of that'. I don't believe that's entirely true"

A quick search of the word 'ethics' on the web page of the faculty (Industrial Design Engineering, n.d.) shows the following results: an announcement of the founding of the Just Things Foundation (as mentioned in Chapter 1.3); an exhibition of TU Delft student artworks reflecting ethical concerns with new technologies in society, in which IDE students took part; the minor programme sustainable design engineering which offers students instructions on the topic of Value Sensitive Design; a PhD research project on translating the Capability Approach to a design context; an overview of research publications done by members of the faculty in the domain of design and sustainability; and a feedback and assessment form for PhD researchers and their mentors, referring to ethical research protocols.

Although this list shows some interesting events and initiatives, most of the items are targeted at researchers and other faculty staff. Besides a brief mention of Value Sensitive Design in a minor programme, there are no formal resources for design students. Lecturer Henk Kuipers mentioned that the students are often reluctant to engage with such a complex topic as ethics. Kuipers elaborated that: "Students never have to reflect on their design once it's finished. They just move on to the next project, no questions asked."

There is one exception: the master elective course Experiencing Persuasive Environments. Besides teaching students how to use design to persuade people to do something, this course also aims to address the ethical implications of such designs. This course is described in further detail in Chapter 3.7 and Chapter 3.8 ►

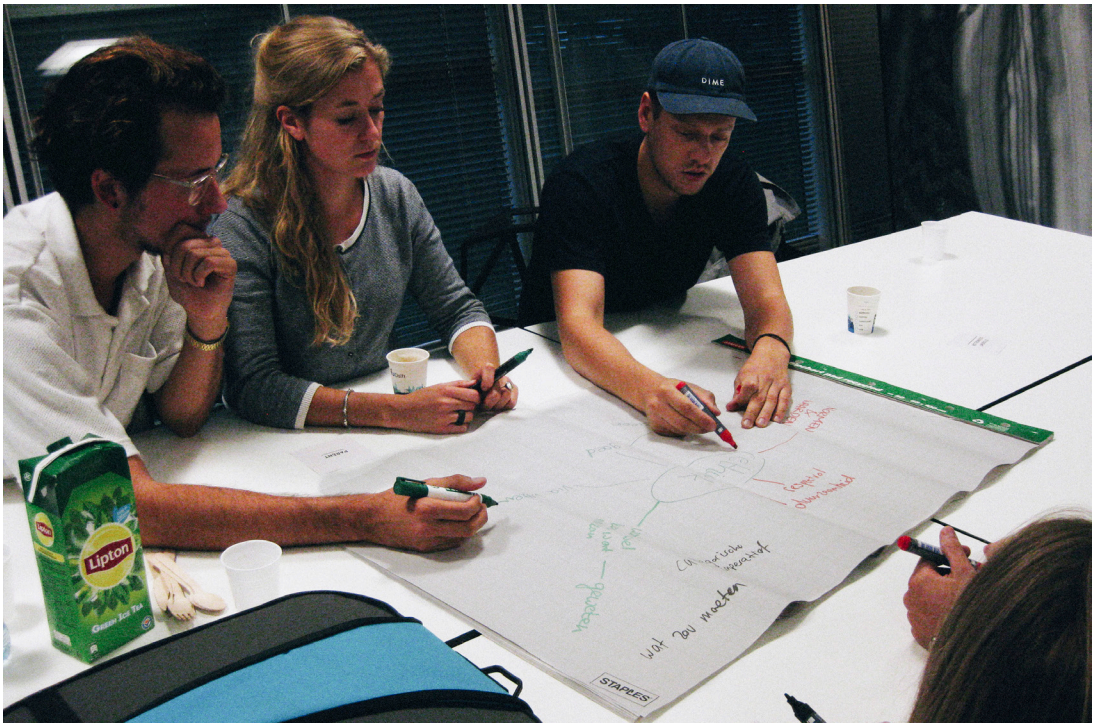


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Figure 10. Master students making a mindmap of topics they associate with ethics.

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Figure 11. An overview of the terms mentioned in the students' mindmap on 'ethics'.

of this thesis as it provided an opportunity for the author to experiment with ethical tools in design education.

From a student perspective, it is clear that no theoretical knowledge of ethics is acquired within this educational programme. If students are at all aware of the ethical dimension of their work, they do not know how to address these issues. Van de Poel confirmed that students at IDE lack skill in systematically dealing with ethical issues. A skill that is closely tied to the very root of philosophical inquiry: the ability to construct solid arguments. Van de Poel explained that ethical decision making at IDE is mostly based on gut feeling, rather than systematic reasoning.

To gain further empirical insight into the students' current knowledge and understanding of ethics in general and in relation to design, a session was organised with 5 master students of both Industrial Design Engineering and other faculties of the Delft University of Technology. Participants were asked to collectively set up a definition of 'ethics'. They discussed a mind map with relevant topics (see Figure 10 and Figure 11) and agreed on a definition:

"Ethics is a culturally determined set of norms and values, which take the whole (system red.) into account."

At the end of the session, participants were also asked to collectively formulate a definition of 'ethical design'. This definition was stated as follows:

"Ethical design is about (1) being aware of the impact of a design on the entire system. In which the system consists of all stakeholders (user, society, earth etc.) (2) Taking responsibility for this impact. And (3) acting in such a way that this impact is the most positive/least negative for all those (both people and things) impacted by the design"

These definitions showed that the students had a general understanding of ethics and how it relates to design. However, they showed no knowledge of ethical theory and were not able to explain how they would resolve ethical dilemmas within a design project.

3.1.4 Discussion

This study set out with the aim to gain empirical insight into the current knowledge of students at IDE. Firstly it was observed that students are not taught in ethics at this faculty.

From a session with master students it appeared that while students have a general understanding of ethics, they lack theoretical knowledge. Furthermore, it was found that within design projects students make ethical decisions implicitly. This lack is maintained due to teachers, who do not see the need for ethics at a design faculty.

These results seem to be consistent with other research which found that ethics is not an integral aspect of design education (Tonkinwise, 2004).

This study has indicated the need for ethics education within the design curriculum. In addition, designers in training are in need of a structured approach for applying that knowledge in specific design projects. ■

"Students never have to reflect on their design once it's finished. They just move on to the next project, no questions asked."

- Henk Kuipers, lecturer at Industrial Design Engineering TU Delft

3.2 Interviews with designers in practice

3.2.1 Goal

A series of interviews was conducted to explore the reasons why ethics was or was not being integrated into design practice. The interviews were conducted as face-to-face qualitative interviews.

3.2.2 Method

Participants

JAN BELON, CO-FOUNDER OF AFDELING BUITENGEWONE ZAKEN

Afdeling Buitengewone Zaken is a design agency with a strong core team of system designers. They transform visions and ideas into tangible products, services and experiences. The Afdeling guides the entire process, from research and design to development. With user participation, experimentation and prototyping, risks are identified and tackled early on in the development process to ensure that the outcomes are promising and unconventional. (Afdeling Buitengewone Zaken, n.d.)

PIETER JONGERIUS, FABRIQUE [BRANDS, DESIGN & INTERACTION]

Fabrique is a strategic design agency that believes design has a power to change and to improve things, to create an impact. Together with their clients they create things that they did not think were possible. Fabrique has summed up that innovative power in their motto "Challenge reality!" Ask questions. Don't take anything for granted. Push boundaries. Together. That's Fabrique at its best. (Fabrique, n.d.)

JOS OBERDORF, MANAGING PARTNER AT NPK DESIGN

Npk supports organisations and helps them tread the route of innovation. They use effective methods to convert wishes and dreams into concrete solutions, with more than 35 years of experience. Their expertise extends across the whole innovation process, from strategy and value creation to concepting and realisation. This enables them to carefully assess every step in the context and modify the starting points where necessary. (npk design, n.d.)

Procedure

Semi-structured qualitative interviews were conducted with 3 experienced designers, with high positions in their respective firms. Topics covered in these interviews included: the design methods and tools currently used; the understanding of ethics in relation to design; examples of ethical dilemmas within design projects; how ethical dilemmas are handled within design projects; and perceived barriers to engage with ethics within design practice.

This research was explorative in nature, and whilst a set of interview questions was used, participants were asked to respond in whatever ways they felt appropriate. This allowed for more personal responses to be captured. As described by Kvale (1996), the main task in interviewing for qualitative research is to understand the meanings (both explicit and implicit) of what the interviewees say.

While the number of interviewees represents a very small sample of designers in practice, care was taken to recruit participants from different business types. These three agencies are briefly described below. Due to the conversational nature of the interview technique, the wording and body language of the participants contributed to the content. Therefore the interviews were transcribed and quotes are included in the results.

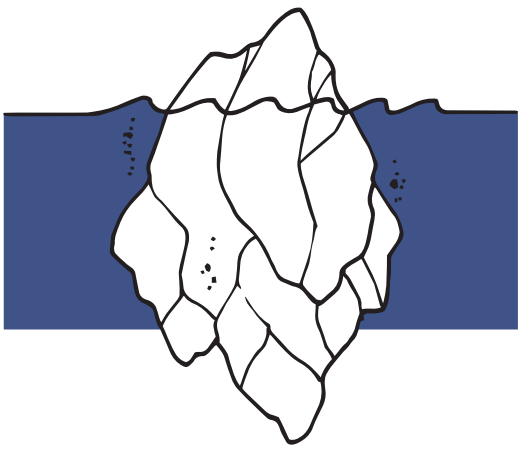
3.2.3 Key findings

Discussing ethics during the design process

Deciding whether or not to take on a project was regarded the most important moment to discuss ethics. For each offer, the agency checked if that project would fit their vision and way of working. Declining a project was mentioned as a strong weapon for staying true to your ethics as a design agency.

Another important moment was the first phase of a project in which the intentions are formulated and documented in a design brief. Most other examples mentioned in the interviews referred to specific design decisions made throughout the design process. This provided an interesting opportunity for developing practical tools that support designers in making these decisions responsibly.

Based on the interviews the way ethics is dealt with in design practice is currently characterised as: implicit, individual, obvious and unstructured. The following paragraphs describe these characteristics.



Implicit ethics

When asked to describe the role of ethics in their work, all three designers stated that it happens implicitly. Jos Oberdorf boldly stated that the word 'ethics' is never even mentioned at npk. Other terms mentioned were 'follow your gut' and 'use your moral compass'. At Fabrique, nothing was written down with regard to ethics because everyone trusts each other to have the same standpoint.

It could be that ethics is handled implicitly due to a lack of knowledge or ability to cope with such issues. But it might also be that ethical ►

issues are not necessarily identified or labelled as such. This raises the question whether or not to use the actual term 'ethics' and the accompanying associations.

An example of when ethics is made explicit was mentioned in the case an agency would communicate their work to the outside world. Upholding a certain reputation as an agency seems an effective trigger for engaging with ethics. Pieter Jongerius explained that in his opinion ethics should be seen as a dimension of quality.

Individual ethics

Each ethical decision comes down to the individual ethics of the designers. Therefore it is important for designers to have a good 'moral compass'. Designers should know where to 'draw the line' when it comes to types of projects designers are comfortable working on, clients they want to work for but also design decisions on a more concrete level.

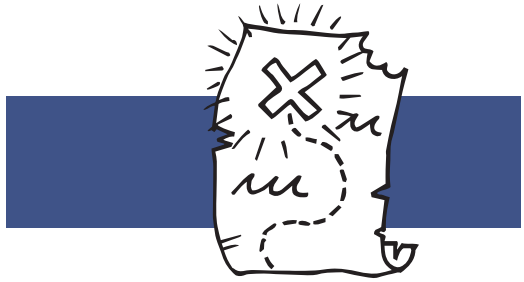
However, it was mentioned that the agency culture also has an influence on this. When asked where these strong company ethics come from, all three agencies referred to the personal ethics of their founders. Interestingly these ethics are so strong that the entire company abides by this system. Jos Oberdorf mentioned that designers are often unaware of

"In practice [an ethical decision] very much depends on whoever is coincidentally present at that moment. It shouldn't be that way, but I think that's how it works."

- Pieter Jongerius
Fabrique [brands, design & interaction]

their own value system because it appears to be the norm or the default. Because a certain ethical point of view seems obvious, it is hard to make that explicit within the company.

Jan Belon emphasises that at Afdeling Buitengewone Zaken ethics is part of their company DNA. For them, it is important to communicate to their clients the responsibility they take in their projects for their users and society as a whole.



Obvious ethics

When asked to describe the role of ethics in their work, the designers referred to very obvious ethical issues. Issues such as safety, causing people harm in some way and data privacy. It is expected of designers that they are aware of these aspects and deal with them appropriately.

But when asked to give examples of ethical issues within specific design projects, the issues mentioned are a lot more nuanced. These referred to specific, sometimes very low level, design decisions. For example: "When visitors want to deposit money do you warn them to 'game responsibly' before or after they

spent their money? You could say you've spent your money, use it wisely. But it would be even better to say it upfront, but you know that would result in lower turnover for you client. What do you do?"

A different example described by Oberdorf and illustrated in Figure 12:

"We do a lot of projects for a large beer brand, when does that concern alcohol abuse. Years back we designed the beertender and now studies show that the average beer drinker drinks five litres of beer each week. Did we contribute to that? Should we aim to make drinking beer even easier?"

This raises the question how to support designers in such a way that they become aware of the less obvious ethical issues as well.

Unstructured ethics

The designers talked about how there is no set procedure for handling ethical issues in a design project. Besides the implicit 'shared understanding' as described above there are no agreements on how to assess, ►

Figure 12. Does a well-designed beertender promote alcoholism?
▼

"There are guidelines for responsible gaming, provided by a client. They are pretty abstract. So if you apply them to the design problem, they're actually not that useful. You still have to decide for yourself."

- Pieter Jongerius
Fabrique [brands, design & interaction]

communicate or resolve ethical concerns. In most cases, the responsibility lies in the hands of the project managers or company owners. This might prevent employees from expressing their concerns due to an experienced power distance. Furthermore, ethics is only discussed if deemed directly relevant to the central topic of the project.

"Even though we have been ISO certified for years, everything is laid down in procedures, except for this kind of issues. These things are very hard to formalise, so they are usually only addressed when you need to express yourself to the outside world, to make explicit what your stance is on a specific theme." npk design

An exception was seen at Afdeling Buitengewone Zaken where the IoT manifesto is used for all IoT related projects. Although this does not serve as a procedure for decision making it does make clear which ethical topics are seen as important. In addition, the manifesto functions as a discussion tool, especially when used in client meetings to set the project terms.

Barriers to engage with ethics in design practice

Besides a description of how ethics is currently engaged with in design practice, the interviews revealed five main barriers (see Figure 13): money, time, clients, industry norms and the restrictive nature of ethics.

1. Money

The financial constraints of commercial design projects do not allow for ethical consideration. All three interviewees mentioned that ►

▲

Figure 13. The barriers for engaging with ethics, perceived in design practice.

commercial pressure dominates the content and decisions of every design project. Surprisingly though all three design agencies explained that they are not 'in it for the money'. References were made to mysterious other agencies, which seem to have different intentions. So called cowboy agencies, designers who want to drive a Porsche or agencies with a hit-and-run policy.

2. Time

Ethics was referred to as being complex and requiring time for reflection. Since each design process is an accumulation of choices, designers are trained in making quick decisions. However, Pieter Jongerius from Fabrique mentioned that for large, complex projects it is important to have an incubation period: a phase in which designers can take time to delve into the subject and freely diverge without the client breathing down their necks. This example showed that while time is considered very limited, 'taking one's time' could contribute to a high-quality outcome.

3. Clients

The number one external barrier appeared to be the client of a design project. Reasons mentioned ranged from clients not demanding an ethical point of view to clients having the final say in most important design decisions. The responsibility for ethical issues appeared to be deflected up in the professional hierarchy. Once an agency has agreed to accept a project they feel obligated to adhere to the client's orders.

The examples described in the interviews illustrate the courage designers need to engage in an ethical discussion with a client. One designer explicitly advised considering this in the development of tools for designers, because even the best intentions could go awry if a client disagrees.

"I'm afraid that for a lot of organisations ethics is just a bit too high in the Maslow pyramid" Pieter Jongerius, Fabrique [brands, design & interaction]

4. Industry norms

One of the designers described that often the competition does something unethical and gets away with it. Effective design mechanisms quickly become norms, which other agencies feel the need to implement to remain relevant in the industry. An online collection referred to as dark patterns, curated by a group of UX professionals illustrates this (Brignull et. al, 2012). An example mentioned by Pieter Jongerius is that of retargeting ad banners. Although experienced as annoying by consumers and designers alike, they do increase profit and are therefore continually used in web design.

5. Restrictive

Ethics has a reputation of being heavy and concerned with very critical thinking. This mode of thinking would not fit the creative, imaginative approach used in design projects. Pieter Jongerius described it as follows:

"The making of these products is already so complex that another file in the project, another board on which you have to play chess - you were already playing on eight boards - that's not really what you're waiting for."

However, an interesting parallel was observed between the restrictive nature of ethical reflection and the way in which design constraints fuel creativity. This suggests the possibility of developing a mode of ethical reflection that does fit the creative approach of a designer. Investigations into such an approach are described in Chapter 3.3.

"You have to be a strong enough person to instigate change. You often feel that you need to do what they think is best – you have to be upfront and honest about it to get it into a business."

- Acaroglu, L. (2014). Making change: Explorations into enacting a disruptive pro-sustainability design practice.

3.2.4 Discussion

This chapter illustrated the current situation of ethics in design practice, by means of interviews with professional designers. Four characteristics of how designers engage with the ethical aspects of their work were described, being: implicit, individual, obvious and unstructured. Furthermore, five main barriers were identified: money, time, clients, industry norms and the restrictive nature of ethics.

A valuable parallel can be drawn between ethics and sustainability when discussing the impact of design. Sustainability is a topic that appears to have found its way into the minds and methods of many designers. Some designers or design agencies even claim to specialise in 'sustainable design' (Dexigner, 2016). The question is whether emphasising sustainability as a novel or more valuable aspect of design ultimately promotes a stance of responsibility. In her PhD research, designer Leyla Acaroglu investigated barriers for designers to engage with sustainability in their practice (Acaroglu, 2014). The insights from Acaroglu have been projected onto ethics and used to support the insights from the interviews.

Acaroglu (2014) states that industrial design consultancies were described as being very hierarchical. This organisational structure makes it hard for junior employees to initiate the inclusion of sustainability. Another interesting finding is that the responsibility for engaging with sustainability is deflected up through the professional hierarchy. Where juniors rely on their superiors, those higher up in the chain expect change from the industry at large and regulatory institutions (Acaroglu, 2014).

Acaroglu (2014) also mentions that in practice commercial pressure dominates the content and decisions of every design project. ■

3.3 Exploring ethical creativity techniques

3.3.1 Goal

The goal of this study was to evaluate starting points for 'ethical creativity techniques' that had been collected throughout this project. The study served as an explorative case study, rather than a generative creative session. Moreover, techniques that were deemed effective by the participants were elaborated during the session.

3.3.2 Method

Participants

Four students of different master programmes of the Delft University of Technology participated in this study. Their backgrounds included architecture, industrial design and applied physics.

Procedure

Participants were first introduced to the topic of ethics in relation to design by means of both positive and negative examples of ethical design issues. Then participants used the provided ethical creativity techniques to generate ideas for a fictional design brief. This design brief was deliberately kept broad to invite the participants to interpret it themselves and choose their own design direction. The brief was formulated as "How might we make people feel safe on the streets?"

Through using the techniques they evaluated and defined them and finally suggested improvements (see Figure 14). With the use of formatted cards, participants were guided in evaluating and defining the ethical creativity techniques. Throughout the session, photographs were taken occasionally.

The contributions of the participants were documented on the provided template cards and elaborated on post-its. At the end of the session, the researcher collected the filled-in template cards and accompanying post-its.

Ethical creativity techniques

Using the knowledge of current ethical tools and insights into various creativity techniques, a set of 'ethical creativity techniques' was developed. At the point of the study, these techniques consisted of no more than a broad description. This study served to investigate their effectiveness and detail their application.

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Figure 14. Participants discussing their experiences with the ethical creativity techniques.

1. To the extreme

"What would be the most unethical design you can think of? How would that design function and look? Then try to come up with ways to flip this around. How can you use the negative to inspire positive outcomes?"

2. Undesign

"Is it really necessary to design a new product? Could you change something in the current system to improve the situation? Or even undesign something that already exists?"

3. Change perspective

"Think of all the different stakeholders involved in the situation. Then look at the situation from different perspectives. What would be most ethical for the manufacturer? Or the user? Or the earth?"

4. Shift normative framework

"Start by setting up your current normative framework. Define how you view the situation (state your definitions) and what you would want to change (your intentions). Then take an entirely different set of norms as your starting point. A different political view or a religious conviction for example. How does this change the situation? And your intentions?"

5. Design dialogue

"Rather than viewing the situation as a problem owned by the user that should be solved by the designers, think of it as a dialogue. As a designer, you engage in a dialogue with the user by means of a design. What does this mean for your design?"

3.3.3 Key findings

To gain insight into how the participants experienced using the ethical creativity techniques, each technique was evaluated with the use of a template card and further elaborated during a brief evaluation. The template required participants to describe the goal, process and outcome of each technique. ▶

“The process of ‘shifting normative framework’ was sort of painful, maybe even a bit scary because you realise how prejudiced you actually are.”

To the extreme

This technique worked well to spark the participants’ creativity. Exaggerating their thoughts helped to take ethics into account and allowed for open discussion. Furthermore, participants experienced using this technique as fun. One participant duo commented that some of the ideas they thought were very unethical, currently exist. It appeared that deconstructing existing design solutions made the importance of ethics in design evident.

Change perspective

For this technique, it was important to set a clear scope. A guideline for setting such a scope could enhance the process. What was interesting about this technique is that by asking the participants to view themselves as a stakeholder, their own intentions and concerns were made explicit. A concern with this technique is that empathy can be troublesome because the designers made assumptions about a person’s needs and were inclined to view people in groups.

Shift normative framework

Defining their normative framework helped the participants make their assumptions explicit. They mentioned it made them aware of their own prejudices. This technique did not work well as an ideation technique. Rather it could function as a framing technique, earlier on in the design process. Participants commented that they needed external input to effectively step out of their own normative framework. This could be in the form of interviews, co-creation or a set of predefined normative frameworks. Working in diverse teams could also enhance empathy and provide a basis for defining a well-rounded normative framework. Guidance in ridding oneself of all the assumptions (e.g. examine things as if you are from a different planet) could also help in setting up a normative framework or shifting it. (see Figure 15)

Undesign

This technique worked well in ideation because it forced the participants to take all existing elements (things, people, environments) into account. Doing this gave them clear constraints and thus sparked their creativity. It was mentioned that 'undesigning' could focus more on repurposing existing elements, rather than solely eliminating them. The technique could also work well later on in a design process, to reflect on a design concept and evaluate if it could be stripped down.

Design dialogue

This technique was perceived as vague and provided little guidance or inspiration. Participants did not see the value in terms of sparking creativity, nor in discussing ethical issues. It was suggested that this technique touches upon existing concepts of co-creation. It could be used as a scripting technique, which triggers the designer to think in terms of narrative.

3.3.4 Discussion

In summary, the 'to the extreme' and 'undesign' techniques proved most effective in terms of stimulating creative thinking. Additionally, the 'shift normative framework' technique was experienced as useful for framing a design project.

These findings may help in the development of ethical tools for designers. ■

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Figure 15. Participants pondering how to shift their normative framework.

3.4 Understanding stakeholder dynamics

3.4.1 Goal

The goal of this investigation was to observe how decisions of an ethical nature are made within a network of stakeholders. The opportunity presented itself to observe a meeting within the 'Democracy by Design' project initiated by Alliander, a publicly owned Dutch energy grid operator. The aim of this project is in itself of an ethical nature and was viewed as an example of best practice.

3.4.2 Method

Participants

- Thijs Turel [Consultant at Alliander and programme manager of 'Democracy by Design']
- Dominique Joskin [Innovation Consultant at Alliander]
- Frank Geerts [Information & Portfolio Manager eMobility at ElaadNL]
- Eric Van Kaathoven [Senior communication manager at ElaadNL]
- Holly Robbins [PhD Candidate at Delft University of Technology]
- Harm van Beek [Partner at The Incredible Machine]
- Marcel Schouwenaar [Strategist at The Incredible Machine]

Context

Dutch energy grid operator Alliander aims to accelerate the energy transition towards a sustainable and affordable energy system. Acting in the public interest, Alliander believe they have a societal responsibility to strive for a fair implementation of information technology. That is why Alliander initiated the research and development project 'Democracy by Design' in which potential design principles are researched to ensure such a fair implementation. The aim is to share these insights with both stakeholders and the general public. To this end, Alliander interviewed global thought leaders of which the results suggested three major focus areas: (1) the increasing role of platforms and how they centralize power; (2) the increasing 'smartification' of physical objects through algorithms; and (3) the way we deal with data and who benefits from data. (Turèl and van Alphen, 2016, p.14)

Within the context of the third focus area, design agency The Incredible Machine was commissioned to develop an experiential prototype of a transparent charging point for electric vehicles. This design project is a collaboration between Alliander and ElaadNL, a knowledge and innovation centre for charging infrastructure in the Netherlands. ElaadNL is an initiative of collaborative network operators in the Netherlands and is responsible for coordinating connections for public charging points on the grid on behalf of the operators involved.

Procedure

The author was invited to attend a project meeting for the transparent charging point project. The goal of this meeting was to set the definitions, align expectations and divide the project tasks. Marcel of The Incredible Machine, led the meeting.

After a round of introductions, the results from previously held workshops regarding the topic of electric charging points were discussed. All stakeholders were asked to review the workshop documentation and select relevant ethical issues. The intention was to go through the selected issues and use them to define the project terms and even set up a rough draft of a concept direction. However, this did not go as planned due to disagreements among the stakeholders. The meeting proceeded in an unstructured way in which participants had to claim the attention in order to contribute.

The meeting lasted 3 hours and took place in a meeting room at the ElaadNL location in Arnhem. Observations were recorded by means of note taking throughout the meeting. The author also took part in the different parts of the meeting to prevent the participants from feeling observed.

3.4.3 Key findings

To ensure all stakeholders were on the same page the future context was discussed. This took quite some time since different stakeholders each had different concerns. When it came to discussing the values relevant to this project differences in interpretation were observed. Even though this project revolved around 'transparency', there was no clear definition used. It became clear that it is important to define these values in direct relation to the design context and from the perspectives of the different stakeholders.

During a brainstorm at the studio of The Incredible Machine (see Figure 16) it was proven that these definitions had not been clearly stated during the project meeting. However, once the design team arrived at a shared understanding of these values, they left them in the background to create room for ideation. ►

"A fair smart city rewards its citizens for the data they contribute if this data generates value. This requires giving more thought to the use of data in the design process of a feature, product or service."

- Turèl, T. and van Alphen, H. (2016). Democracy by Design: Food for thought. Alliander.

An effective mechanism observed during the meeting was that of defining unethical situations and investigating why they are perceived as unethical in order to understand what values are important. Based on the notion that knowing what you want to prevent, helps to determine what to achieve. Furthermore, it was observed that there are different use cases for each relevant value. It was difficult to get these values and their respective use cases specific. Guidance in such a process might be helpful.

Regarding the group dynamics, a clear power game was being played during the meeting. Each stakeholder clearly had different concerns personally and professionally, both within and outside of the project. It was hard to distinguish between genuine concerns and power moves. Since ElaadNL commissioned the project, other stakeholders felt that each decision had to be checked with the gentleman representing this party.

Throughout the meeting, the stakeholders zoomed in and out from concrete examples in the industry to very general moral values. This did not appear to result in clear conclusions. One of the explanations for this is that the designers seemed to be managing expectations as to what they would deliver. Marcel later confirmed that they intended to probe what was expected of them, without over-promising what they would deliver.

3.4.4 Discussion

The aim of this study was to understand the dynamics between different stakeholders of a design project. Given that the goal of

the Democracy by Design project is ethical in itself, it provided a good opportunity for observation.

The results indicate that guidance in aligning expectations and defining moral values would improve stakeholder discussions about ethical concerns. An effective tool for such stakeholder discussions should take the differences in authority level into account to ensure an open and honest discussion.

Furthermore, it was found that flipping the negative consequences of a design can help to determine the ethical objectives of a project. This mechanism could be used in the development of ethical tools for designers.

Finally, it is important to take project management aspects into account. Any tools focused on guiding stakeholder negotiations should allow room for setting project terms and managing expectations. It must be prevented that the ethical content of a discussion should compete with practical stakeholder concerns or hidden agendas. ■

►

Figure 16. Brainstorm session at The Incredible Machine design studio.

3.5 Experimenting with stakeholder role-playing

3.5.1 Goal

An explorative pilot study was conducted to experiment with the use of role-playing to discuss the ethical implications of a design.

3.5.2 Method

Participants

Five students of different master programmes of the Delft University of Technology participated in this study. Their backgrounds included architecture, industrial design and mechanical engineering.

Procedure

This pilot study consisted of consecutive sessions in which participants adopted the roles of various stakeholders. The focus was on the process rather than the content of the ethical discussion. Triggered by a tangible mock-up and an illustrative video, participants came up with multiple potential scenarios of which they explored and discussed the ethical implications. The evaluated design was a fictional backpack, developed prior to this project within a master elective course. The concept was a social backpack with its own intentions. The product would contain a heart sensor and a distance sensor with which it knows if it is close to other smart backpacks.

Participants were provided with descriptions of different stakeholders and asked to enact these roles. By switching stakeholder roles, the participants were stimulated to view the situation from different perspectives and come up with creative opportunities for 'ethically' improving the design.

3.5.3 Key findings

During the role-playing process participants mostly came up with *un*ethical situations with the design. It appeared that thinking of negative consequences of the design was easier and more fun to do. However, participants were unsure of the scope of the ethical issues they should discuss.

A set of ethical themes was discovered in the hypothetical situations that the participants envisioned. These themes included: responsibility; intentions of the different stakeholders; different forms of harm, such as

▲

Figure 17. Participants role-playing an unethical social situation with 'smart backpacks'.

physical, mental, social and environmental; (mis)use, for instance with a different user, in a different context or for a different purpose; long term effect of a design; and autonomy, in relation to user control, privacy and freedom.

Role-playing is a skill not everyone possesses. This study clearly indicated the need for a facilitator to guide the role-playing process. Additionally, the process could be improved by preparing the scenes to act out. Immersing oneself in the role of a stakeholder provided an opportunity for emotion as an indicator of ethical issues. Whenever a situation felt 'off' it was regarded as unethical and therefore discussed.

Furthermore, it became clear that acting and reflecting are hard to do simultaneously. Participants felt that explicitly reflecting on a scene interrupted their acting flow. Conversely, holding off the reflection until the end of a scene caused participants to forget issues they wanted to discuss. Some participants argued that the stakeholder roles provided were unclear.

3.5.4 Discussion

This study served to investigate the use of role-playing with a design prop as a technique to explore the ethical implications of a design.

It was found that *un*ethical situations are easier and more fun to come up with. Furthermore, the design prop was not perceived as helpful. The role-playing became more interesting when the participants took on the role of the design itself. Participants played a smart backpack (see Figure 17), which helped to simulate the interaction.

Another important finding was that for effective role-playing preparation, practice and if possible a trained facilitator are needed. The role-playing proved that emotions are good indicators of ethical issues. Finally, it is important to separate acting and reflecting to prevent interrupting the role-playing flow. This can be done with the use of video recording for later analysis. ■

3.6 Case 1: Ethical role-playing workshop

3.6.1 Goal

Building upon the insights gained in the pilot study, role-play was further investigated as a technique for uncovering ethical design issues.

3.6.2 Method

Participants

Participants of this study consisted of 30 bachelor students of Delft University of Technology, from the faculties of Mechanical Engineering, Electrical Engineering, Computer Science and Industrial Design Engineering. These students took part in this workshop as part of their minor programme Robotics. Participants were grouped based on their design teams, each with their own design brief to design and build a robot for a specific context.

Procedure

The following adjustments were made to the procedure after performing the pilot study: participants were asked to come up with relevant stakeholders themselves; ethical themes were provided to guide participants in coming up with unethical situations; participants were instructed to prepare each scene, before acting it out; and the acting and reflecting were introduced as separate aspects, with the use of video recording to document the scene (see Figure 18).

Due to the large number of participants, worksheets were used to ensure the participants could perform the exercise by themselves. The worksheets were structured as follows: (1) list the stakeholders, (2) formulate a definition of ethics, (3) envision unethical situations, (4) prepare and enact the unethical situations, (5) reflect on the scenes and finally (6) evaluate the workshop. (see Appendix A)

3.6.3 Key findings

Participants came up with many different stakeholders that would affect or be affected by their design. They did not need further instructions to think beyond the more obvious parties. However, it was not apparent if the participants realised that their design would actually influence all these people. The intended effect of triggering a sense of responsibility was not achieved.

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Figure 18. One of the student groups acting out and filming their unethical scenario.

Reflecting on the ethical impact of their robot proved difficult for the participants. They could easily come up with unethical situations, but did not seem to take ownership of these consequences. When prompted with specific questions relating to the scene participants did reflect critically on their own work. In some cases, this triggered a discussion within the group about their design. Furthermore, a lack of depth and variety in the ethical topics was observed. Specifically socio-ethical implications seemed harder to identify and understand. It might help to stress these issues by providing examples.

It was clear that preparing the scenes before enacting them improved the process. Participants were asked to set the scene and divide the roles, which helped them get started. Unfortunately, the lack of a good facilitator made the acting out less effective. Participants were hesitant to act out certain scenes and felt uncomfortable. Some groups took a creative approach to their role-playing by introducing props and editing their video material. To this end, they focused more on the end result of a video than the actual content.

One group mentioned that they would have wanted to do this earlier on in the project. They explained that at this point "you want to have everything clear by now. The design is sort of fixed and then we just start building".

3.6.4 Discussion

Participants could easily come up with unethical situations but did not seem to take ownership. When asked how to adapt the design based on their insights, they did not see the relation between their design decisions and the ethical implications.

Preparing the scenes before enacting them improved the process, in comparison with the study described in Chapter 3.5. Unfortunately, the lack of a good facilitator made the role-playing less effective. Furthermore, it should be prevented that designers focus more on making their video than on the content.

Some participants wanted to do this exercise earlier on in the project because now the design was perceived as 'fixed'. It might be more effective to do such an exercise during the framing phase of the design process. However, this remark also illustrated the participants' fixed mindset regarding their design. Overcoming this mindset is important for developing an effective technique to investigate ethical implications of a design. ■

3.7 Case 2: Ethical disclaimer as a framing technique

3.7.1 Goal

The goal of this case study was to evaluate if the 'ethical disclaimer' technique triggered and increased the participants' moral sensitivity. Moral sensitivity is defined as 'the ability to recognise the ethical dimension of design in general and describe specific examples regarding the design project at hand'. For a detailed description of this skill, see Chapter 4.3.1. Furthermore, it was investigated whether the framing phase of a design process allows for incorporating ethics.

3.7.2 Method

Participants

Participants of this study consisted of eight groups of four master students of the master programmes Design for Interaction and Strategic Product Design. These students took part in the Experiencing Persuasive Environments elective course concurrently with larger design projects. As part of the course, this assignment was embedded in their design project, concerning persuasive design. The course was credited with 3 ECTS, which accounts for 84 study hours. Students were asked to spend 8 hours on this assignment.

Procedure

First, the researcher gave the participants a lecture on the ethical dimension of design, based on the theoretical framework of this research (see Figure 19). This lecture served to inform the participants of ethics in relation to design as well as trigger them to focus on specific situations, which might arise within their design context.

Then each group was given an instruction for the 'ethical disclaimer' assignment (see Appendix B). To allow the participants to execute the assignment autonomously the instructions provided a step-by-step approach. Each step and the instructions for the deliverable were intentionally kept open for interpretation, to stimulate a sense of autonomy and responsibility for the outcomes.

During the morning when the assignment was introduced, the researcher was available to answer questions. Participants were given a time frame of two weeks to execute the assignment. They were asked to hand in a brief report of their findings, including a reflection on doing the assignment.

Assignment

The assignment was structured as follows: (1) map the stakeholders and formulate your design intentions, (2) envision unethical situations, (3) formulate an ethical disclaimer, (4) make an ethical design manifesto and finally (5) reflect on the assignment.

First, the participants had to commit to their design intentions by putting them on paper, as a group. Mapping the stakeholders served to make the participants aware of the many actors that would be influenced or have influence on their design.

Then participants had to think of potential unethical situations with their design. The instructions guided them in coming up with these situations, which allowed participants to explore the ethical impact of their design in a fun way.

The purpose of ethical disclaimer itself was to show the participants that everything they design has an impact on the world. By explicitly asking the participants to either take responsibility or not, they were forced to consider this. They were asked to substantiate their choices to show that they were made consciously. Within the design project, the ethical disclaimer functioned as an ethical framework to guide the design process.

Since the disclaimer is based on negative consequences of the design, it might obstruct the creative process. Therefore the participants were asked to make a manifesto that inspired them, which they agreed on as a team and would adhere to during the project.

Because the researcher was not able to document the process of each group simultaneously, the groups were asked to write a reflection. Besides providing insight into the experiences of the participants, this required the participants to reflect on what they learned about their design. ►

▲

Figure 19. The author giving a lecture to the students about ethics and design.

3.7.3 Key findings

The participants needed a clear design direction to be able to do the 'ethical disclaimer' assignment. One group commented that thinking about unethical situations made them feel their design was 'bad'. They felt that thinking negatively held them back from developing their design. Additionally, some participants felt the topic of their design project did not include any 'important' or 'big' ethical issues, which made it harder to come up with unethical situations.

From the deliverables different ways of organising and describing stakeholders were found: lists, groupings, mind maps and ranging from no description to a description of stakeholder roles and an indication of the level of influence (e.g. 'main stakeholder', 'big influence', 'secondary stakeholder'). Furthermore, due to the openness of the assignment, different forms of manifestos were found: narratives, rules, statements and even a visual representation.

Doing this assignment made the participants (more) aware of the impact of their design. Most groups mentioned this in their reflections. One group mentioned that the disclaimer could serve to divide the responsibilities of the different stakeholders. In their reflection they suggested:

"Ideally other stakeholders apart from the designer should go through the same process and make a conscious choice about their responsibilities. These responsibilities should be checked throughout the design process and possibly even beyond."

The assignment helped the participants in setting up their design brief. Three of the eight groups mentioned this explicitly in their reflections. Additionally, half of the groups mentioned that the instruction to think from different stakeholder perspectives helped them come up with (diverse) unethical situations. This empathic approach is valued as an important aspect of the setup of the assignment.

Coming up with potential unethical situations proved hard at first. Discussing the ethical issues within their group appeared to make this easier. All groups came up with a variety of situations, covering many different ethical topics. One group explicitly mentioned the ethical themes as helpful in coming up with unethical situations, while a different group found the themes focused too much on product design, making them less useful for intangible designs Regarding the general structure of the assignment two groups found the stepwise approach helpful. For some it was unclear what a manifesto was and how to make this.

3.7.4 Discussion

Doing this assignment made the participants (more) aware of the impact of their design. However, this might have been because prior to this exercise none of the participants had ever engaged in an ethical reflection of their work. Regarding the motivation to participate it should be mentioned that the participants have not been graded on these assignments. However, participation was compulsory in order to complete the course.

An important finding was that the ethical disclaimer helped the participants in setting up their design brief. The provided instruction to think from different stakeholder perspectives helped them come up with (diverse) unethical situations. However, not all situations were clearly ethical (see Figure 20).

The use of a manifesto did not seem to contribute to the effectiveness of the technique, in part because not all participants understood the purpose of a manifesto. This

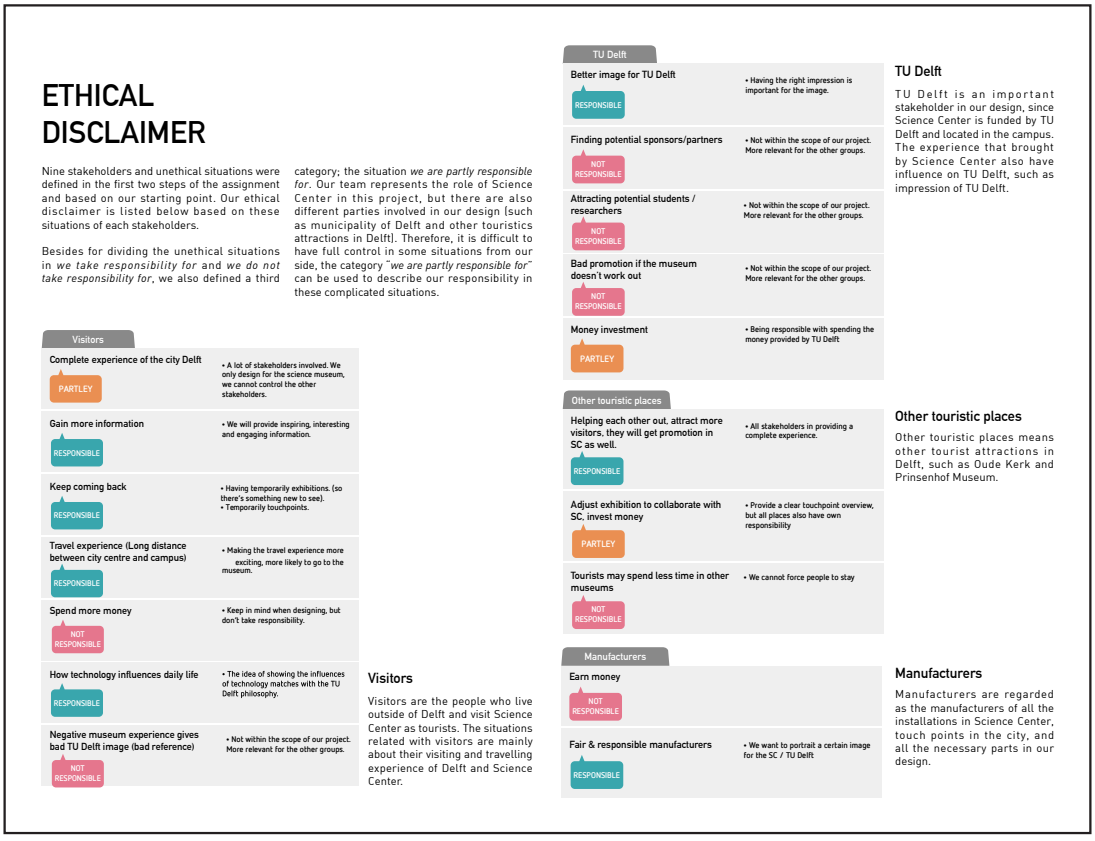
could be resolved by providing examples of existing manifestos. Additionally, most manifestos seemed too generic to effectively inspire the design process. The stepwise approach was experienced as helpful because it steered the focus to the content, rather than the process.

For the ethical tools to be effective, it is important that designers are guided in uncovering a broad variety of ethical issues of the design at hand. One group mentioned in their reflection that:

"It is easy to envision some possible problems that might occur, but in the end this will never cover them all as the final idea will also have some small parts that we overlooked in determining the first ethical problems."

Therefore they suggested to (re)apply the method when multiple design concepts are developed.

Finally, it was observed that the morality of the individual participants played an important role in discussions about the ethical impact of a design. Confronting designers with different ethical points of view could be a way to utilise this insight. Appointing students to work in multicultural groups, for instance, might improve their moral sensitivity. ■



▲

Figure 20. An impression of the ethical disclaimer handed in by one of the groups.

3.8 Case 3: Role-playing ethical extremes to ideate

3.8.1 Goal

The goal of this case study was to evaluate if the 'to the extreme' technique, that was investigated in study 3 (see Chapter 3.3) triggers moral creativity. In this workshop students put their design intentions into action, by implementing their ethical disclaimer in multiple levels of their design. Moral creativity is defined as 'the ability to explore creative solutions to moral problems'. For a detailed description of this skill, see Chapter 4.3.2. Additionally, it was investigated whether the envisioning phase of a design process allows for incorporating ethics.

3.8.2 Method

Participants

Participants of this study consisted of eight groups of four master students of the master programmes Design for Interaction and Strategic Product Design. These students took part in this elective course concurrently with larger design projects. As part of the course, this assignment was embedded in their design project, concerning persuasive design. The course was credited with 3 ECTS, which accounts for 84 study hours. Students were asked to spend 2,5 hours on this workshop.

Procedure

To ensure that the participants could execute the workshop autonomously each group received a set of worksheets (see Appendix C). These worksheets described a step-by-step approach to designing with ethics. The structure of the workshop is an elaboration of the 'to the extreme' technique as used in the creative session described in Chapter 3.3.

The worksheets contained clear instructions on how to execute each step and the amount of time recommended. This was done to allow the participants to focus on the content, rather than the logistics of the workshop. During the morning of the workshop, the researcher was present to answer questions. Participants were asked to hand in their worksheets, enactment videos and any additional materials by the end of the workshop.

Assignment

The assignment was structured as follows: (1) formulate a design goal, (2) describe two extreme situations, (3) generate design ideas

▲

Figure 21. One of the student groups acting out an ethical extreme.

for these extremes, (4) select and elaborate one idea for each extreme, (5) prepare and act out the scenes, (6) reflect on both scenes and finally (7) collect ingredients for your design.

First, participants stated their design goal or a design direction if they were further along in the project. This served as the starting point for the workshop.

Then each group envisioned two extreme situations their design goal could evoke. A design goal or vision generally describes an ideal situation designers wish to achieve. The purpose of this approach was to illustrate that the end goal is much more nuanced.

Rather than rationally analysing the extreme situations, the participants are asked to generate ideas. Thinking from these extreme (absurd) situations freed up the mind and allowed for creativity. Subconsciously the participants felt what was 'wrong' about certain ideas.

To provide a focus for the role-play, participants selected the most interesting ideas. Within each group, the ideas had to be elaborated such that everyone agreed on their purpose.

As with the previous first case study, participants were instructed to prepare their scenes. By enacting the extreme situations, with their extreme design ideas in them, participants personally experienced these situations.

The worksheets instructed the participants to record the enactments on video allowing for playback and analysis within the group. After acting out the scene, participants discussed what happened. The worksheet contained questions to guide the discussion. Using a WHY-HOW-WHAT template, participants considered how to consistently detail their design starting from the design goal.

3.8.3 Key findings

The data of this study consisted of observations by the researcher, the worksheets of each group of participants and brief individual evaluations. For the evaluation four students of different groups were asked: (1) how it went, (2) to explain the assignment, (3) what they had learned and (4) if they would use this technique in other projects. ►

"Because a doctor's consult [our design context] is a very delicate situation, it was really interesting to combine these extreme ideas with the sort of intricate details which are important in ethics."

At first, the participants seemed hesitant to take it to the extreme. Their situations were still quite realistic. Once the researcher explained how extreme the situations could be, they became more interesting. The groups seemed to be able to generate many different ideas. They had no trouble to stay within the indicated time frame. However, at some point, the ideas became too extreme for effective role-playing. The connection with the design was lost along the way. Include a step in which the ideas are nuanced or made more feasible might prevent this.

This comment illustrates an example of how the participants used this technique:

"It was interesting to act out our ideas and look at the ethics of that. For example, we envisioned a talking table and acted that out. That made us consider issues such as should we record the information, but also what does the conversation feel like if there is a third 'person' present?"

During role-playing, there was a lot of laughing going on (see Figure 21). It was clear that role-playing could be an awkward activity. One of the groups had a serious discussion about acting out the situations. They used the provided template to prepare the scene. Furthermore, it was observed that the participants wanted to make "nice videos". It was explained that the video itself was not the goal, but a tool for reflecting on the situation.

For some groups, it was unclear why they had to explain where the design should be between the two extremes. They expected this to be the

same for both situations. Most groups literally copied their design goal. This illustrated how instead of using this divergent step to look critically at their design goal, participants used the extremes to justify the design goal they already had.

The WHY - HOW - WHAT template appeared to help the participants make their intentions concrete. However, there was still a big difference in the level of detail among the groups.

Within the WHAT ring of the template participants used descriptions such as "a memorable experience", "friendly communication" or "a visually attractive truck". These descriptions were hardly explicit and did not provide detailed 'ingredients' for further developing the design. One participant commented:

"It felt weird to brainstorm with ethics because ethics is something that should be well thought out, while in the workshop the ideas were allowed to be 'unfinished'."

Regarding the timing of this workshop one participant explained:

"I like the approach of involving ethics in your design, but I'm not yet sure at which moment in the process it fits best. It can help completely at the start, to define the framework within which you'll design. It could also help towards the end, by specifically realising what small implementations have an effect on the bigger ethics picture."

3.8.4 Discussion

The outcomes of the workshop differed because the design teams were in different phases of their design process. Some groups had just (re)defined their design goal, while others had a visualisation and detailed description of their concept.

Many participants were confused about how to use ethics in a creative exercise. Since this was the actual goal of the workshop it should be investigated how to communicate this effectively. Once this was understood, thinking in extremes seemed an effective approach to generating ideas. Although the link with ethics was often not explicit, the ideas did all have clear ethical implications. Therefore it is concluded that this technique does trigger creativity, but not moral creativity.

The use of role-playing to experience the impact of an idea proved effective. Most groups commented that acting out helped them understand an idea holistically. However, the researcher was not present during these enactments. Therefore it was unclear how this process went and whether the participants were actively engaged in the activity. Unfortunately, due to time constraints participants were only able to perform this technique once. It might be more effective if designers could iterate the 'to the extreme' technique within their design process, to allow for quick transitions between creative divergence and evaluative analysis.

The WHY - HOW - WHAT template seemed to help the participants move from abstract to concrete. However, in this case, the link with ethics was not at all clear. Participants commented that they felt that had 'finished' the ethics part and continued designing. It seems the envisioning phase is a tricky place to incorporate ethics because the focus is on creatively conceptualising an abstract idea. Asking designers to consider ethics at this point does not seem a logical fit. ■

3.9 Conclusion Chapter 3

Current situation of ethics in design education

To gain empirical understanding of the current situation of ethics in design education, students and staff of Industrial Design Engineering were consulted in informal conversations. This showed that although design students at IDE have a general understanding of ethics and its relation to design, they lack theoretical knowledge and the ability to resolve ethical dilemmas within a design project. This could be explained by the fact that the faculty does not provide courses in ethics.

Current situation of ethics in design practice

A similar situation occurs in design practice. Based on interviews with three high-level professional designers, it was found that the way ethics is dealt with in design practice is currently characterised as: implicit, individual, obvious and unstructured. Besides a these characteristics the interviews revealed five main barriers for designers in practice to engage with ethics: money, time, clients, industry norms and the restrictive nature of ethics.

Observing stakeholder dynamics

A project meeting for the design of a transparent charging point was attended to understand how ethical decisions are made among stakeholders. This study showed that guidance in aligning expectations and defining values would improve stakeholder discussions of ethical concerns. An effective tool for stakeholder discussions should take the differences in authority level into account to ensure an open and honest discussion. Finally, it was observed that flipping the negative consequences of a design can be used to determine the ethical objectives of a project.

Use of role-playing to investigate ethical implications of a design

A number of the case studies performed to explore ways for designers to incorporate ethics into their design process, centred around the use of role-playing. A first pilot study with five master students revealed that it is easier and more fun to think of unethical situations. For the role-playing to be effective preparation, practice and if possible a trained facilitator are needed. Furthermore, it was found that emotions are good indicators of ethical issues. Regarding the role-playing procedure acting and reflecting should be separated to prevent interrupting the role-playing flow. This can be done with the use of video recording for later analysis.

In the succeeding case study with thirty bachelor students, participants came up with many different stakeholders but did not seem to realise that their design would actually influence all these people. This was also

reflected in the unethical situations, which participants could easily come up with but did not seem to take ownership of.

Preparing the scenes before enacting them had improved the process but unfortunately, a good facilitator was still lacking. Furthermore, it was found that participants had wanted to do this exercise earlier on in the project because now the design was perceived as 'fixed'. Overcoming this fixed mindset is important for developing an effective technique to investigate the ethical implications of a design.

Ethical disclaimer as a framing technique

A case study was then performed with thirty master students, to investigate if the 'ethical disclaimer' technique triggers moral sensitivity. This study showed that a clear design direction is required for setting up such an ethical disclaimer. It was found that the ethical disclaimer helped participants set up their design brief.

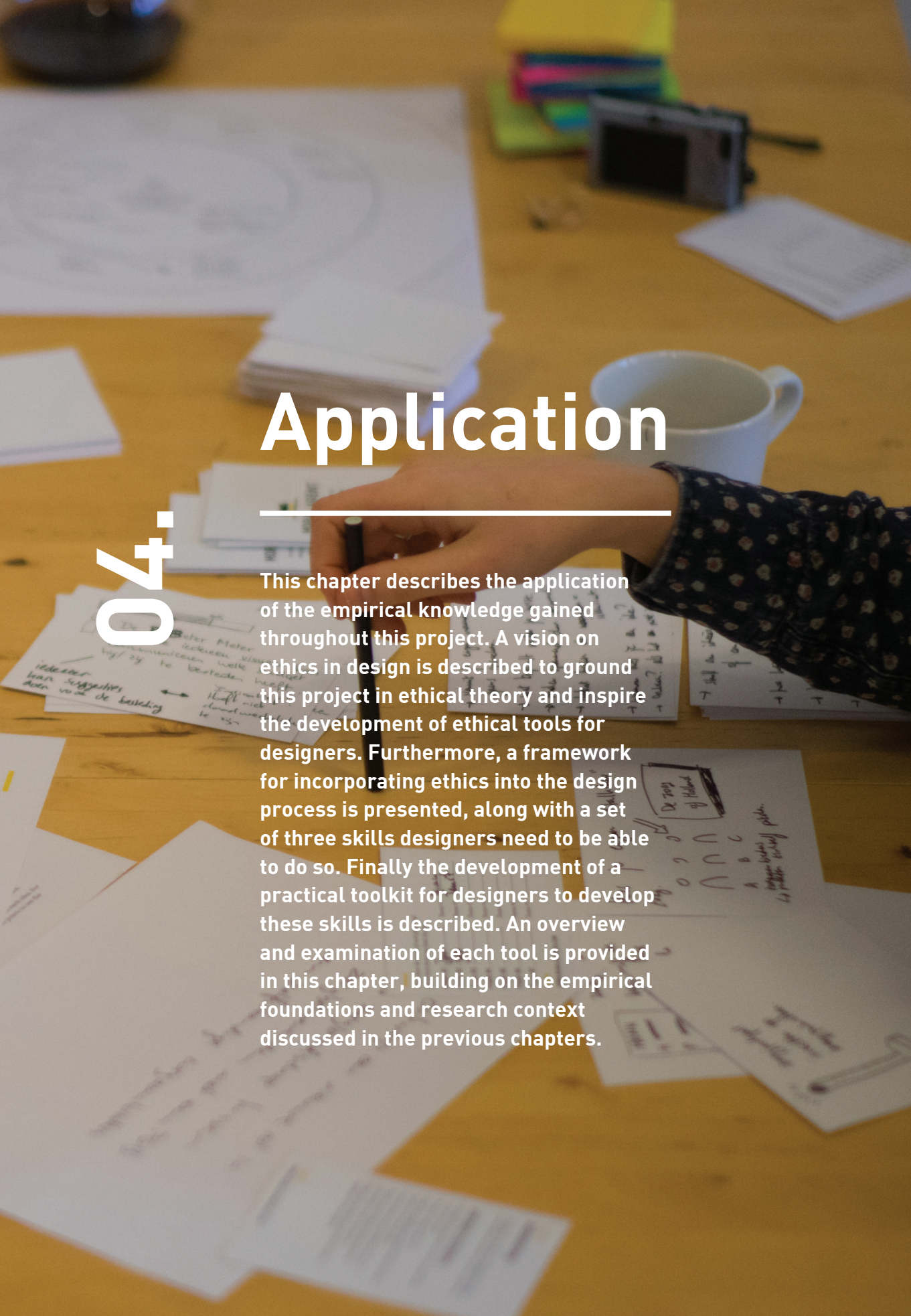
In addition, the disclaimer could also serve to divide the responsibilities of the different stakeholders. (Re)applying the technique when multiple design concepts are developed could keep the disclaimer up to date. Finally, it was observed that the morality of the participants influenced the discussions about the ethical impact of a design. Promoting diversity in design teams could capitalise on this influence.

Ethical creativity techniques for ideation

Finally, case studies were performed to investigate techniques to use ethics as design inspiration. To this end various existing creativity techniques were combined with ethical analysis tools. The first of these studies, conducted with four master students proved that the 'to the extreme' and 'undesign' techniques were most effective in stimulating creative thinking. In addition, the 'shift normative framework' technique was experienced as useful for framing a design project.

In the succeeding case study, conducted with thirty master students, the 'to the extreme' technique was combined with role-playing, as investigated earlier. This technique helped participants generate many different ideas. However, some ideas became too extreme for effective role-playing. Therefore it should be stressed that the extremes must be related directly to the design. This technique needs to be developed further, to overcome designers' hesitation about using ethics in a creative exercise. ■


Values overview
Safety
Creativity
Equity
Efficiency
Inclusivity
Courage
Accessibility
Mastery
Respect
Tranquility
Freedom
Curiosity
Autonomy
Honesty
Sustainability
Pleasure
Privacy
Trust
Health
Community



04. Application

This chapter describes the application of the empirical knowledge gained throughout this project. A vision on ethics in design is described to ground this project in ethical theory and inspire the development of ethical tools for designers. Furthermore, a framework for incorporating ethics into the design process is presented, along with a set of three skills designers need to be able to do so. Finally the development of a practical toolkit for designers to develop these skills is described. An overview and examination of each tool is provided in this chapter, building on the empirical foundations and research context discussed in the previous chapters.

4.1. A virtue-ethical approach to ethics in design

This vision serves to (1) ground the approach of this project in ethical theory and (2) inform and inspire the practical development of ethical tools for designers.

In contrast to most classical ethical theories which focus on a person's moral duty by attempting to answer the question 'what should I do?', virtue ethics focuses on answering the question 'what sort of person should I be?'. The importance of this focus is made clear in an example. Consider a police officer who obeys the law, but only reluctantly. This officer does the bare minimum required of him to live a good life. If he could get away with it he would tamper evidence or blackmail witnesses. He does not do these things, but only because he is afraid of getting caught. This example shows that despite acting morally and fulfilling his moral duty, the officer does not have a good character. Strictly adhering to ethical rules promotes obedience or compliance rather than autonomy and responsibility for one's actions. (Shafer-Landau, 2014)

Virtue ethics is seen as an important theoretical foundation for ethics in design because it rejects the idea of any universally applicable ethical rule. For virtue ethicists, it is crucial to investigate each situation in itself. Ethics is thus seen as a complex, often messy area of decision making embedded in reality. This relates very well to design because every design project is different. Because there are no simple rules that determine how to act, virtue ethics requires a good deal of moral understanding. Moral understanding is more than knowledge of moral facts and ethical theory. It is described as a kind of practical wisdom, referred to as *phronesis* by the ancient Greeks. Phronesis is acquired through experience, emotional maturity and a great deal of reflection and training. This consists of understanding how people work and how certain virtues are defined in specific situations. An important construct in virtue ethics is the role emotions play in moral understanding.

Three main roles are recognised in virtue ethics: (1) emotions can signal what is morally relevant in a given situation, (2) emotions can help understand what is right and wrong and (3) emotions motivate to do the right thing. In the context of design, the importance of

emotions is also recognised. The feeling one gets in the stomach when something is 'off' or 'not right' is a good indicator of important ethical issues that should be taken into account in the design process. Meta-ethicist Sabine Roeser confirmed this importance of emotion in ethical decision making (S. Roeser, personal communication, January 24, 2017). Roeser (2006) investigated the role of emotions in risk perception and found that emotions are an important source of moral knowledge because they trigger people to engage in moral reflection. To be able to constructively use emotions for ethical reflection, designers too should be trained in their emotional and moral abilities (Roeser, 2012).

Within this project, ethics is referred to as the activity of critically reflecting on one's intentions and actions with the goal to understand and live a good life. This requires a sense of reflexivity, responsibility and willingness to cope with uncertainty. Ethics is not as much about finding answers as it is about asking the right questions. Foucault (1984) aptly describes ethics as '*askesis*', meaning self-formation. This definition focuses on ethics as a skill, a set of learned techniques to design oneself and one's life. The concept of ethics as a form of askesis provides a rich foundation for a vision on ethics in design.

Ethics in design is centred on value trade-offs. Throughout the design process, a large series of interrelated design decisions must be made which each, in turn, influence the design outcome. These decisions are influenced by practical constraints such as time, budget and available resources. But the skills, intentions and beliefs of the designer contribute as well. Therefore it is important that designers are aware of this influence and learn to take responsibility for their actions.

Designing ethically is not a solitary act. It is a continuous process best performed in dialogue with stakeholders. As every individual has a different moral compass it is crucial to discuss ethical concerns, exchange perspectives and align views. The contribution of ethics in design should not be reduced to an evaluation of arguments for and against the development of a new technology (Verbeek, 2014; Van der Weele and Driessen, 2013; Fesmire 2003). Engaging with ethics in design should be an imaginative activity, rather than solely intellectual. It is about exploring opportunities and generating ethically acceptable outcomes, rather than strictly evaluating the ethical impact of a design. ■

"For virtue ethicists, it is crucial to investigate each situation in itself. Ethics is thus seen as a complex, often messy area of decision making embedded in reality. This relates very well to design because every design project is different."

- Sabine Roeser, head of the Ethics and Philosophy of Technology Section TU Delft

4.2 The ethics in design framework

The insights gained throughout the project by means of literature, interviews and case studies are boiled down into an accessible framework of how designers can cope with ethical issues within design. This framework is deliberately kept broad in order to inspire the development of ethical tools.

The framework in Figure 22 serves to describe the flow of phases the designer goes through upon engaging with ethical issues within a design project.

1. Recognise

First, the designer must be able to recognise the ethical implications of a certain design project. It is important to be able to distinguish moral issues from, for instance, usability issues, because they require a different approach. The skill needed to be able to recognise ethical issues is moral sensitivity. This skill is described in Chapter 4.3.1 below. Being sensitive to moral issues is the key skill for engaging with ethics in design.

2. Act

In order to incorporate ethics in the design process, it is important that ethics is not reduced to a theoretical analysis. Therefore the designer must be able to act upon encountering ethical issues. The skill needed for this is moral creativity, which is described in Chapter 4.3.2 below. It is an interesting research area to uncover the possibilities of 'using' ethics in design. One approach that has been investigated within this project is the notion of using ethics as a driver for ideation, which is described in Chapters 3.3 and 3.8.

3. Reflect

Since the necessary skills require experience and education it is important for the designer to reflect upon his actions regarding the ethical dimension of his work. This step is key in developing moral sensitivity (see Chapter 4.3.1). Reflecting on one's actions allows the designer to uncover patterns in his moral reasoning, which contributes to a (deeper) understanding of his individual ethical beliefs.

4. Communicate

The final phase is that of communicating which design decisions have been made and

on what ethical grounds. This opens up the discussion to conflicting views of a situation, in order to arrive at a consensus. Furthermore, this phase is concerned with substantiating one's decisions towards other stakeholders. The skill needed for this phase is referred to as moral advocacy and described in Chapter 4.3.3 below. ■

Figure 22. The ethics in design framework.
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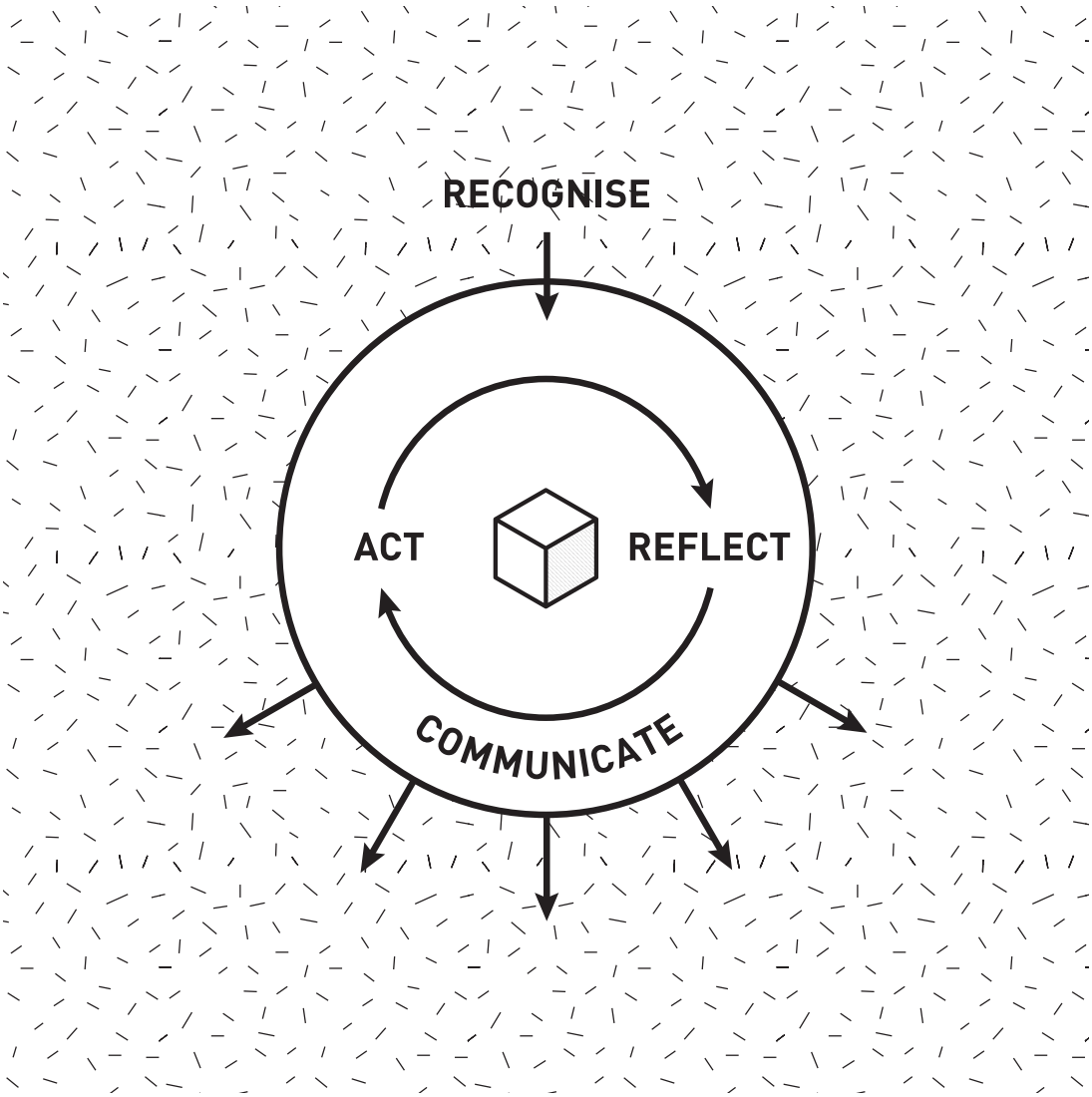

4.3 Skills for designers to incorporate ethics

This chapter describes the three skills designers need to constructively engage with the ethical dimension of their work: moral sensitivity, moral creativity and moral advocacy. These key components are described as skills because they are not clear-cut actions to execute or rules that should be followed. Rather they are abilities that can be acquired and trained by means of education and practice. Designers should acquire and exercise their moral wisdom, as described in the virtue-ethical approach in Chapter 4.1.

The three ethical skills can be mapped on to the framework presented in the previous chapter, as shown in Figure 23. As illustrated, moral sensitivity is used in both the 'recognise' and 'reflect' phases; moral creativity in the 'act' phase; and moral advocacy in the 'communicate' phase. Each skill is focused on a different domain of designing, as shown in Figure 24. These focus points are described in terms of the outcome each skill produces, namely personal, concept and industry development for the three skills respectively.

4.3.1 Moral sensitivity

Moral sensitivity is the key skill for designers to incorporate ethics into their design process. It refers to the ability to recognise the ethical aspects of design in general and within a specific design project at hand. Becoming aware of moral issues related to design could be achieved in various ways.

One way is to investigate the underlying intentions of existing products. Learning to 'see through' a design and distill its core impact can help improve a designer's moral sensitivity. One technique devised for this purpose is the 'de-scribing' of products. This involves figuratively uncovering the 'script' of a certain product within a specific context.

Referring to the 'script' concept of Bruno Latour as described in Chapter 2.1.1 of this thesis. It requires the designer to recognise

the ethical view a certain product embeds and how this guides the user's actions.

The ability to recognise this script in other designs, in turn, makes designers more aware of their own influence on users. Questioning one's intentions and thoughtfully determining the script of a design to be, contributes to a more ethical approach. Such investigations can be seen as questioning and (re)defining one's moral compass.

The focus of this skill lies on the personal development of the designer.

4.3.2 Moral creativity

The skill of moral creativity refers to the ability to explore creative solutions to moral problems. This way of thinking suits the designerly approach and could make ethics a more accessible and useful construct for designers. The central question surrounding this skill is whether ethics could indeed function as a driver for concept development. Investigations into this concept are described in Chapter 3.3 and Chapter 3.8. ►

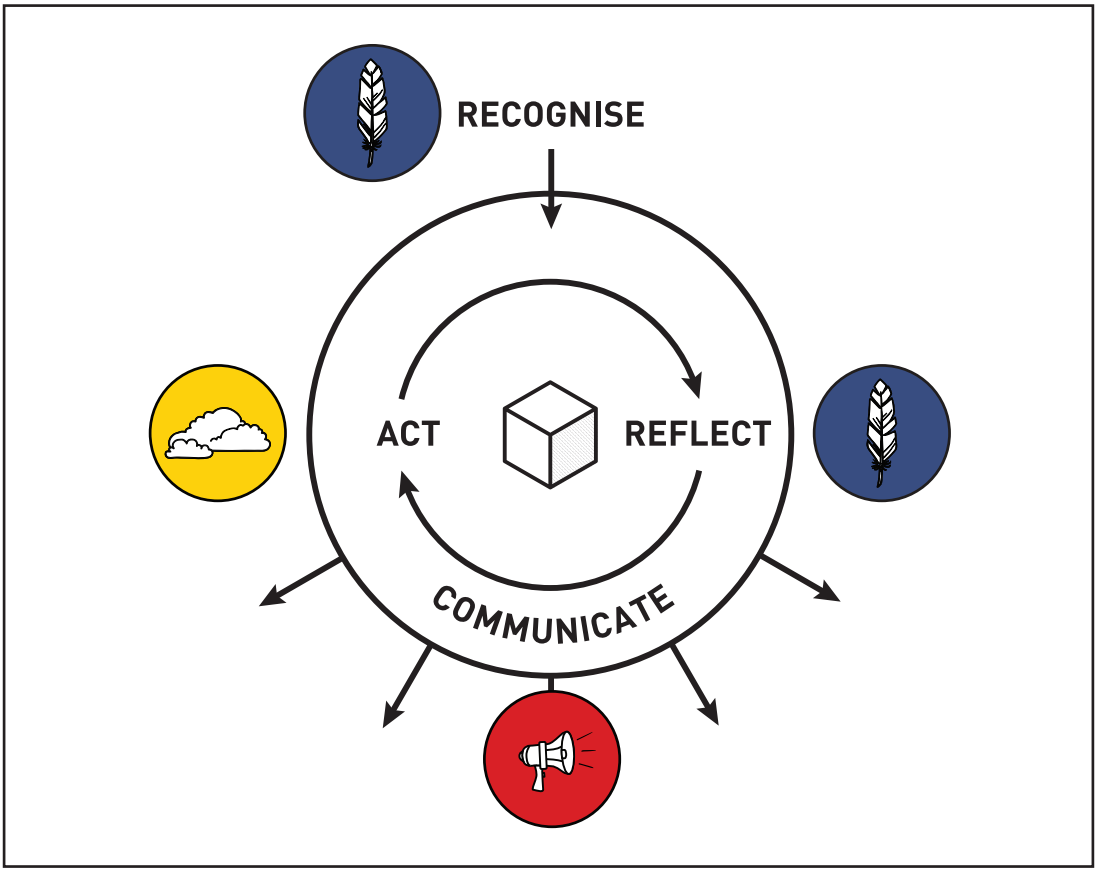

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Figure 23. The three skills mapped on to the ethics in design framework.

"You really need to know how to detect ethical issues. That's something all designers should be able to do. You need to have a moral compass. Everyone does."

- Pieter Jongerius
Fabrique [brands, design & interaction]

Inspiration for the development of this skill draws on the concept of dramatic rehearsal by American pragmatist philosopher and educational reformer John Dewey, as described in Chapter 2.1.2.

The focus of this skill lies on the content of the design process, the actual concept development.

4.3.3 Moral advocacy

Design is hardly an individual activity. Within each design project, designers collaborate with various stakeholders, such as users, clients, manufacturers, governmental institutions etc. The skill of moral advocacy is the ability to communicate the importance of ethics to other stakeholders and fellow designers. Training this skill involves being able to stand up for your own moral beliefs.

For the development of tools that support designers in acquiring and training this skill, it is important to urge transparency. If designers are transparent about their decisions, it becomes easier to discuss their consequences with other stakeholders. Discussing one's ethical framework with other stakeholders could help to constructively determine ethical starting points for design. Furthermore, designers can practice such discussions and take the various concerns of different stakeholders into account.

This skill focusses on the moral development of the design industry, by promoting ethical tools and design outcomes. ■

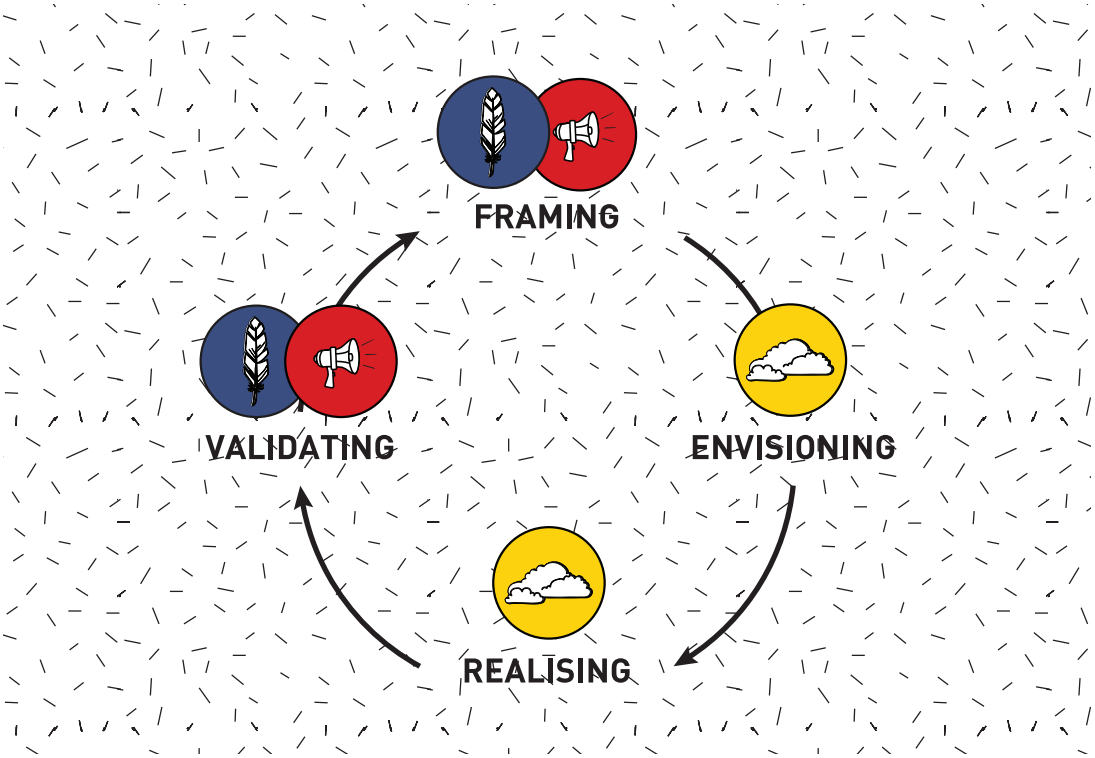

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Figure 24. The three skills in relation to the phases of a design process.

"The common image of ethics is that it slows you down and would, therefore, be boring. But it doesn't have to be that way. It could actually also inspire you, if it steers you away from compliance and moves you towards designing for good. It might just provide that extra bit of motivation."

- Jan Belon
Afdeling Buitengewone Zaken

4.4 Developing an ethical toolkit for designers

A description of the current situation regarding ethics in design shows that there is a lot of room for improvement. The designers, design staff and students that were consulted made clear that designers are in need of guidance and practical tools for considering the ethical implications of their work. The literature review and empirical studies served to investigate which approach would fit the designerly way of working, at what point(s) ethics should be considered in the design process and which tools could help designers overcome the existing barriers.

This chapter provides an overview and examination of each developed tool, building on the empirical foundations and research context discussed in the previous chapters. The tools are grouped in relation to the three described skills: moral sensitivity, creativity and advocacy respectively. A distinction is made between the theoretical foundation (as described in Chapter 4.2 and Chapter 4.3) and the practical application of the toolkit. Therefore of each tool, the purpose, mechanism and phase in the design process are specified within this chapter.

Each tool is based on a different mechanism and serves a different purpose ranging from evaluative to generative. Figure 25 shows an overview of the toolkit and how the different tools relate to each other. Furthermore, the tools are intended for different users: individual designers, design teams, users and other stakeholders.

4.4.1 Criteria for an ethical toolkit for designers

In order for the toolkit to effectively support designers in incorporating ethics into their design process it should fit the following criteria, which emerged throughout the project from the literature review, interviews and case studies.

1. Practical

Both content and form of the toolkit must be practical. Regarding content, this means that referenced examples should be existing examples, for example. Furthermore, the toolkit should respect our human limitations.

Designers should be able to relate to the content from a designer's perspective. Therefore the toolkit should avoid relying solely on general themes or hypothetical examples. Regarding the process, it is important that the toolkit is situated. It should allow for application in any type of design project. Because each design project differs in terms of content, scope, involved parties and expected outcome.

For the toolkit to fit the designerly way of working it should be hands on and promote learning by doing. It should be kept in mind that the toolkit serves as a guideline, rather than a prescriptive protocol for ethical design. Applying the toolkit should ensure that the designer himself takes responsibility for the outcomes. To this end, the toolkit makes use of templates, which designers can access online.

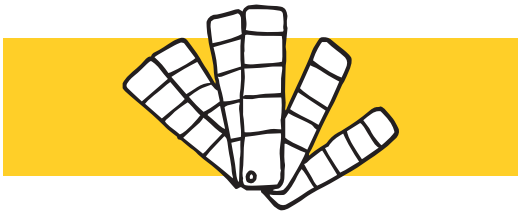
This criterion is substantiated by Rogers (2004), who presents a thorough critique of mindsets, methods and tools developed for use in interaction design practice, originating from various scientific fields of study. Two lessons learned from this investigation are: (1) The toolkit should not be too time-consuming, too difficult to learn, too abstract or too theoretical. And (2) the toolkit should not prescribe predefined ways of approaching reality, instead, it should allow for incorporation into the designer's own design process.

2. Multilevel

This criterion refers to the general levels of WHY - HOW - WHAT of a design, which can be seen either as different phases of a design process or as different levels of a design itself.

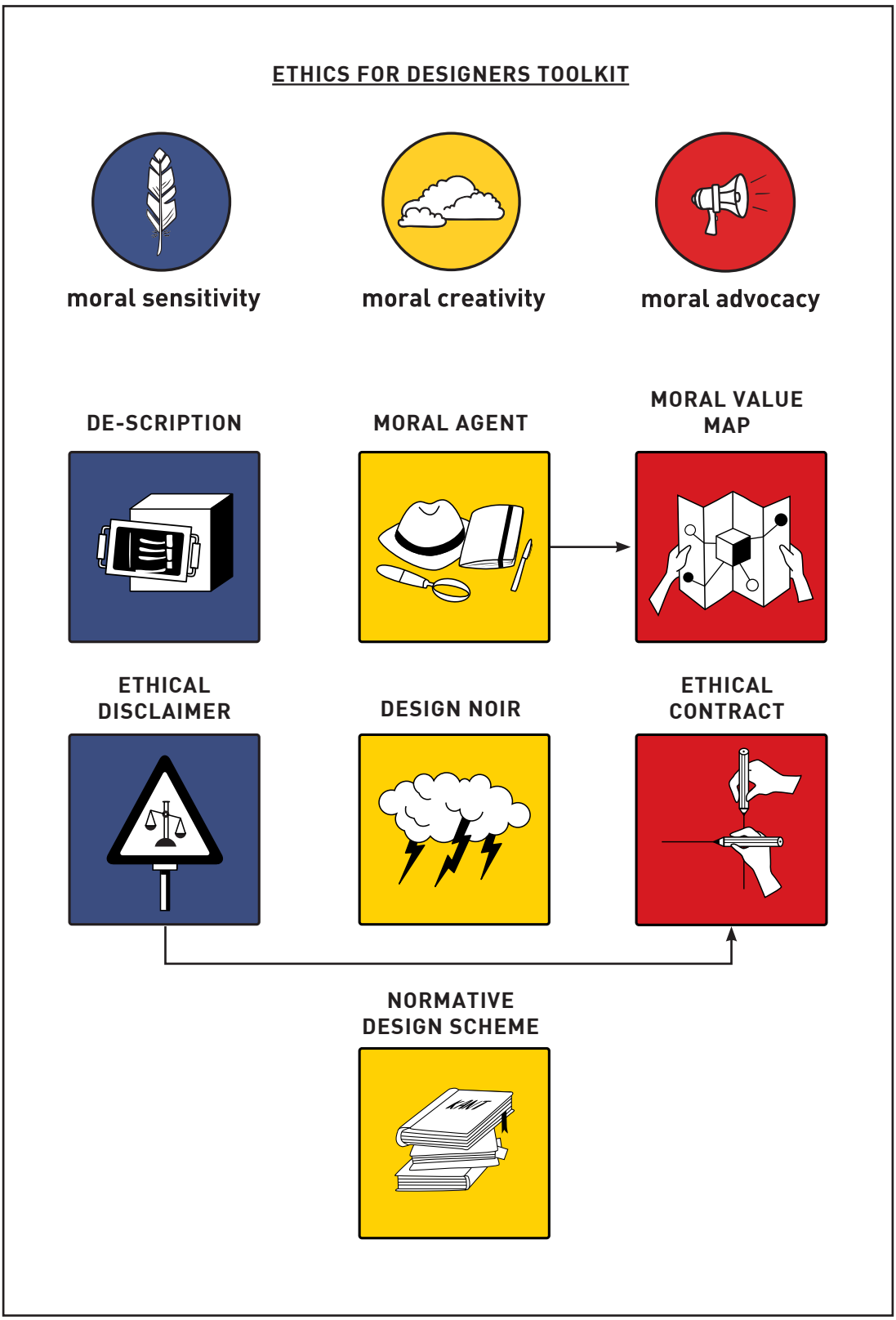
WHY concerns the vision or intention level of a design. This corresponds to the framing phase of the design process. HOW refers to the interaction level of a design or the envisioning phase of the design process. This includes typologies, interaction modalities and defining whether the outcome will be for instance a tangible product or a service. WHAT concerns the product level of a design or the realising phase of the design process. This includes aspects such as functionalities, form, materials and other product-specific design decisions.

The ethical toolkit should fit the flow of a design project. This could be done by applying the tools at various stages of a design process or using them to think through the ethical implications of a design on the three levels described above.



3. Creative

Finally, the toolkit should have a generative approach. Rather than solely evaluating the ethical implications of a design, applying this toolkit should account for the incorporation of ethics while designing to generate an ethical outcome. ▸


ETHICS FOR DESIGNERS TOOLKIT
moral sensitivity
moral creativity
moral advocacy
DE-SCRIPTION
MORAL AGENT
MORAL VALUE MAP
ETHICAL DISCLAIMER
DESIGN NOIR
ETHICAL CONTRACT
NORMATIVE DESIGN SCHEME

◂

Figure 25. An overview of the ethical toolkit.

Furthermore, the toolkit should fit the creative mindset of designers to be accepted as useful. An important parallel between ethics and creativity is the notion of constraints. Within a design project, the outcome must always fit within a set of constraints, such as financial constraints, time constraints and limited resources. Rather than limiting the outcome, working within constraints fuels creative thinking because it forces designers to think outside the box. Thus using constraints to spur creativity could capitalise on the restrictive reputation of ethics.

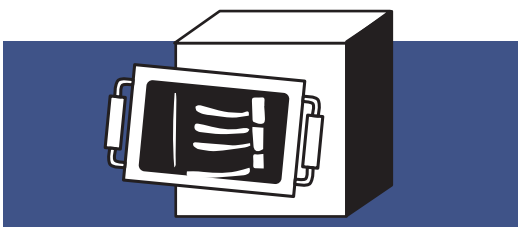
Regarding content, the toolkit should stimulate a creative approach to ethics. Rather than judging whether a product is either 'good' or 'bad', ethics in design is just as much concerned with defining what 'good' or 'bad' design is (within a specific context) and exploring what possibilities lie in between. Designers should be triggered to think creatively about the possible outcomes of their project, from an ethical perspective.

4.4.2 Moral sensitivity tool 1: De-scription

De-scription is an evaluative exercise for designers. This tool is inspired by the 'script' concept of Latour as explained in Chapter 2.1.1. It is based on the notion that every design contains a script for use. Using this tool trains a designer's awareness of such scripts in order to promote using them responsibly in their own work. Besides prescribing how a design should be used, a script also contains a more fundamental view of what a good life is and how this specific design contributes to that. Uncovering the view underlying existing designs helps designers reflect on their own worldview.

The template, as shown in Appendix D, guides the designer in describing the design, by posing questions. First the WHAT; followed by the HOW, which is used to determine the script and finally the WHY, which is used to formulate a worldview. On the accompanying website, further explanation of the script concept is provided, along with examples of both scripts and philosophical worldviews.

It is suggested to use this tool in duos because this allows for quick discussions. De-scribing the same design with a fellow designer might result in different outcomes. This illustrates how each designer makes different decisions based on their own worldview. Such discussions nuance the designer's understanding of design and his own work. ▸



"You want ethics as one of the constraints. Designers are very used to working based on constraints, creating something within that. Because then you have to be creative and think of alternative solutions."

- Jan Belon
Afdeling Buitengewone Zaken

Since the de-scription tool does not focus on the design project at hand, but rather on any existing example, it is self-contained. However, it could also be helpful during a design process. At the start of a project, for instance, it could be used to deconstruct existing solutions to the design problem. This might help designers understand the problem and could inspire different approaches.

4.4.3 Moral sensitivity tool 2: Ethical disclaimer

Ethical disclaimer is a framing tool for the start of a design project. This tool is based on the case study with design students as described in Chapter 3.7. The ethical disclaimer serves to define clear ethical constraints and provide an overview of the designers' responsibilities. It helps the designer think about the impact of their design on the different people involved. And how they can take responsibility for this impact (in their design).

The template (see Appendix E) guides the designer in setting up the disclaimer by providing sections to (1) describe the current situation, (2) list all the stakeholders, (3) define the design intentions, (4) generate unethical situations and finally (5) divide the situations to determine the ethical scope. On the template guiding questions are provided as well as ethical themes to come up with unethical situations.

An ethical disclaimer should be set up with the whole design team and preferably also different stakeholders. The tool is used to align expectations and discuss which ethical concerns deserve further consideration. Using this tool at the start of the project makes sure everyone is on the same page and knows what to expect in terms of ethical implications. However, to align the disclaimer with the project outcome, it should be updated regularly.

In addition, this tool is the input needed for using the 'ethical contract' tool, which is explained in Chapter 4.4.8. There the ethical disclaimer is used to divide the ethical responsibilities among the project stakeholders.

4.4.4 Moral creativity tool 1: Moral agent

'Moral Agent' is an ethical ideation game for designers. The game is based on brainwriting and a game mechanism with hidden roles. Each player is responsible for a specific moral value during the game. The goal is to promote your value without the other players noticing, which stimulates integrating ethics into design. The force-fit creativity technique (Geschka et al., 1976) is employed by giving each player a card with a moral value, which they must infuse into their design solutions. Brainwriting is used to trigger players to build on each other's ideas. This way participants can alternate between generating and elaborating ideas.

▲

Figure 26. An impression of the Moral Agent game components.

The game is played in two rounds of ideation, an idea auction and finally counting the score. The first round of ideation is played openly. Players are provided with time constraints and ethical prompts, but ideate without the pressure of wanting to win. Then a round of strategy and bluff pushes the players to use their creativity to win. Moral Agent is best used in the 'envisioning' phase of a design project. The game provides a fun way to generate ideas which successfully integrate different moral values.

'Moral Agent' consists of instructions, value cards, an overview of the moral values, blank index cards, name cards and score sheets (see Figure 26). There are 20 value cards, each with a moral value and some guiding questions. Please consult Appendix F for an overview of all the game components. These values are based on the universal human needs by Martin Ford (1992). For documenting the ideas it is recommended to use blank index cards so that the cards can easily be stacked and shuffled. Furthermore, the name cards provide templates to write down which value each player has. The final element is a scoresheet for noting down the players' names and points.

Play is used to trigger active engagement of the designers. The element of competition makes players focus on generating many ideas, rather than thinking critically about the ethical concerns. This breaks the barrier of ethics being experienced as restrictive, as explained in Chapter 3.2.3. The complete procedure of the game is described below.

Preparation

First, all necessary components must be downloaded, printed and cut. The game starts by placing the design goal in the middle of the table. All ideation centres around this design goal. Then each player receives a value card, which they place face up in front of them. Finally, each player receives a stack of empty idea cards.

Open ideation round

Now each player has 2 minutes to generate ideas for the design goal based on their ethical theme. Then players pass their ideas to the person on their right and take to 2 minutes to build on the ideas using their ethical theme. The ideas are passed around until they have made a complete round. All the ideas are ►

▲

Figure 27. A designer guarding his moral value card while coming up with design ideas.

placed on the table so that everyone can see and each player selects their favourite idea.

Secret ideation round

Each player receives a new value card and a stack of empty idea cards. This time the players do not reveal their value cards (see Figure 27). Players now have 10 minutes to generate as many ideas as possible, based on their moral value. When the time is up, all the ideas are collected face down and shuffled.

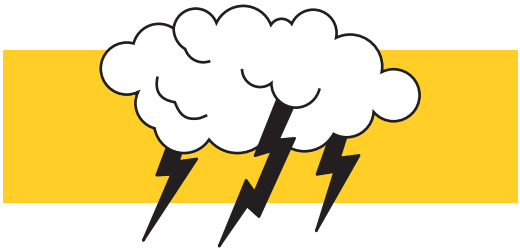
Idea auction

During the auction, the goal is for each player to bid on as many ideas with their value in them, without revealing which value that is. Players take turns presenting an idea while making sure no one else can see what is on the card. The other players can bid on each idea by calling out the word "sold". Whoever responds first, gets the idea card. Then the next player presents an idea and the others bid. Players repeat this process until all ideas have been presented. At this point, the players can bluff about the ideas they present and should observe the bidding behaviour of their fellow players.

End of the game

Each player takes a name card and fills in which value he thinks each player has. A value has to be provided for each player, even if players are not sure. Players can consult the overview of values if needed. Once everyone has filled in a name card, the themes are revealed. If a player guessed correctly which theme another player had, that player receives 4 points. These points are recorded on the scoresheet. Finally, the players take turns going through each player's collected ideas and discuss if his theme is represented in each idea. For each idea with the theme in it, the player receives a point. These points are added to the scoresheet. The player with the most points wins.

4.4.5 Moral creativity tool 2: Design noir



Design noir is a role-playing tool used to uncover and experience potential unethical situations and use this to improve a design. This tool is based on the case study with design students as described in Chapter 3.8. Design noir is about using empathy to uncover and experience potential unethical situations. The technique uses role-playing and humour to open up new possibilities. By acting out various unethical situations with their design, designers experience the ethical implications themselves. Having fun while viewing the design in an absurd way, helps to further detail the design and allows for discussion within the design team.

The template (see Appendix G) allows for documenting the role-playing process. First, the design goal or, if used later in the design process, a description of the design is written down on the template. Then two extreme situations which the design (goal) could evoke are described. For example, if the design goal is "We want to protect police officers on duty, by increasing public surveillance" the extremes would be to have complete surveillance of public space and to have no surveillance whatsoever. Using these extreme situations as inspiration, designers generate design ideas for each extreme. Then two ideas are selected, one for each extreme, which are acted out. Finally, the team plays back the video of each extreme and discusses how to improve the design.

As observed in the case study with students, the use of extreme unethical situations really sparks creative thinking. Design noir is about letting go of constraints, experiencing what that would result in and using those insights to morally improve a design in development. This approach is grounded in the concept of dramatic rehearsal by John Dewey. It can be used either in the 'envisioning' or the 'realising' phase of a design process.

4.4.6 Moral creativity tool 3: Normative design scheme

The normative design scheme tool provides designers with an accessible and practical introduction to normative ethics. To complement the other more design-focused tools, this tool is based on ethical theory. However, the tool is structured from a design point of view, making it understandable for designers and directly applicable to a design project.

The template shown in Appendix H provides designers with an overview of classical ethical theories, which they can use to further develop a design. In contrast to the ethical disclaimer, this tool has a broad view and is more objective because it is based on theory rather than a designer's personal morals. The overview is based on a design goal format, which highlights the focus of the three classical normative domains: (1) virtue ethics, (2) deontology and (3) consequentialism. ▸

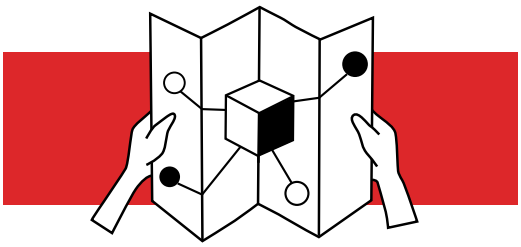
These domains focus on whether the intention, action or consequence are morally acceptable, respectively.

On the normative design scheme web page, these main domains and views of ethics are presented. The use of a dropdown menu structure helps to keep the content compact and accessible. For each domain of normative ethics suggestions for further reading are provided. Visitors are encouraged to browse through the information and use the theories to morally assess their design. However, it should be kept in mind that no single ethical theory is universally true. In each case, the designer should critically reflect on the outcome of such an assessment.

As a moral creativity tool, it is important to shift the attention from morally assessing a design to creating new solutions. Therefore the different normative theories are presented as ideation questions on the template. This triggers the designer to view them as a creative prompt, rather than a critical thinking exercise. While this tool can be used individually to explore one's personal ethical beliefs for instance. It is also recommended to work together when using the normative theories to ideate. Building on each other's ideas is a very effective approach to opening up to divergent thinking. This tool is best used in the 'envisioning' or 'realising' phase, but could also serve as a moral assessment tool in the 'validating' phase of a design project.

Alternatively, the normative design scheme could be communicated in the form of a small booklet. Such a booklet could serve as a reference guide by presenting a normative principle per page to strike a balance between depth and accessibility. An example of an effective reference guide is the Positive Design reference guide which includes an overview of various theories from positive psychology and positive design. The guide is intended as a source of inspiration, which helps designers frame their questions, sparks creativity and provides a language for positive design (Jimenez et al., 2015, p.3).

4.4.7 Moral advocacy tool 1: Moral value map



Moral value map is a practical mapping tool based on the concept of Value Sensitive Design, as described in Chapter 2.1.3. With this tool designers look at which values are relevant to their design and how their design affects these values. Making a moral value map with different stakeholders helps to understand everyone's value priorities. The core purpose of such a map is to be able to discuss value conflicts with stakeholders.

The values used for this tool are based on the universal human needs by Martin Ford (1992). This makes it easy to exchange the outcomes of this tool with those of Moral Agent. Where Moral Agent asks designers to force-fit random values with their design goal, this tool maps which values are important. To this end either the ideas generated with Moral Agent could be used to determine which values are relevant for a moral value map or the mapped values could be used as input for the ideation game.

Making a moral value map is a fairly straightforward exercise. First, the design is described and any values that are relevant to the design are selected. To ensure that everyone knows what this value means in

relation to the design the values are translated into concerns. These concerns describe how a specific value is present in the context that is being designed for. Using post-its the relations between the different concerns are mapped.

Once the map is made it is used to discuss the design with the various stakeholders. Relations or conflicts between the values might be experienced differently by different stakeholders. Not all conflicts must be resolved. Some tension could, in fact, inspire the design. But it should be clear which values everyone agrees to prioritise. To this end, the design's effect on each concern is described. The template, as shown in Appendix I, provides a format for doing this. Finally, the stakeholders discuss the effect of the design on these concerns and any changes that should be made to the design.

The moral value map can be used at different stages in a design project. It is advised to make a moral value map during the 'envisioning' or 'realising phase of a design process. At that point, it serves to validate if the design fits the intentions. However, at the start of a project a moral value map could also help to set up or detail the design brief.

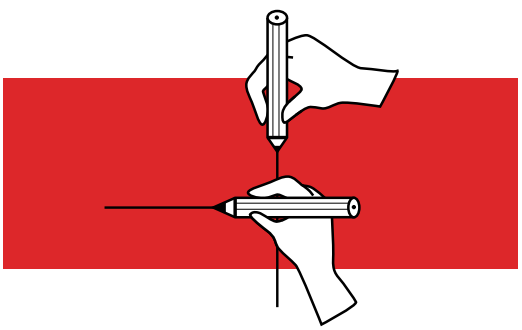
4.4.8 Moral advocacy tool 2: Ethical contract

Ethical contract is a tool focused on aligning expectations among stakeholders. This tool builds upon the ethical disclaimer described in Chapter 4.4.3. It supports designers in discussing their ethical disclaimer with stakeholders. The main goal of this tool is to agree on the ethical objectives and divide the responsibilities. As can be seen in Appendix J this is made clear by visually referencing a contract. By stimulating all stakeholders to place their signature below the main objectives, they are triggered to commit to a shared goal.

The skill of moral advocacy can be understood as 'selling' ethics to clients and other stakeholders involved in design projects. With this skill, designers take the initiative in discussing complex ethical concerns. For inspiration on how to guide such a process to a constructive outcome, resources on negotiation and sales techniques were consulted (MindTools, 2016; Sherwin, 2013; Caprino, 2013; Farrington, 2006). Additionally, the insights from the observation of the project meeting for Democracy by Design (see Chapter 3.4) were used as inspiration.

Setting up an ethical contract is done as follows. First, the ethical disclaimer is explained to all involved stakeholders. Then the group goes through the unethical situations and collects important ethical themes. These themes are then collectively defined to make sure everyone is on the same page. Once the themes are clearly stated, the responsibilities are divided and recorded on the template. To sum up what has been discussed, the group formulates three main ethical objectives that everyone agrees on. Finally, an updated version of the design goal is written down and all stakeholders place their signature.

If used at the start of a project, the ethical terms for the project are set early on. Then it could be hung up on the wall as a reminder. However, later in the project, it could serve to check if the ideas fit the ethical disclaimer. ■



4.5 Ethics for designers website

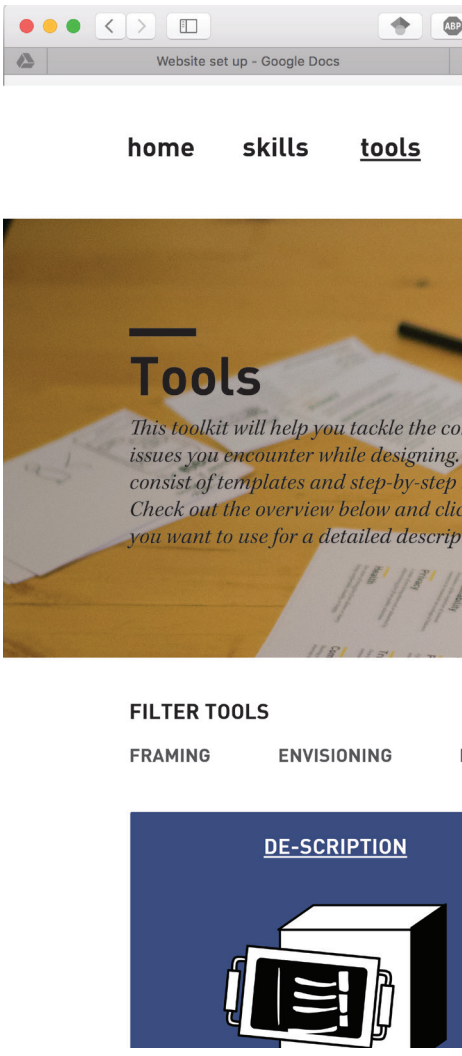
To allow designers to freely access the tools described above, they are integrated into a website: www.ethicsfordesigners.com. This website also functions as an online platform for designers to discuss and engage with the ethical dimension of design.

The homepage introduces the toolkit by explaining why designers need ethics. Furthermore, the three skills are described. On the 'tools' page, users can access an overview of all the ethical design tools (see Figure 28). Tools can be filtered on different criteria, such as skill, phase of the design process, time or purpose. Each tool has its own page on which the purpose and process are explained. These pages also contain links for downloading the template of each tool and examples of filled-in templates.

Besides an overview of all the tools and how to use them, the website also functions as a discussion platform. On the 'articles' page designers can read, comment on and upload articles relating to ethics in design and on the 'examples' page, they can view and upload examples of (un)ethical designs.

Visitors of the website can create a profile to document their use of the ethical tools.

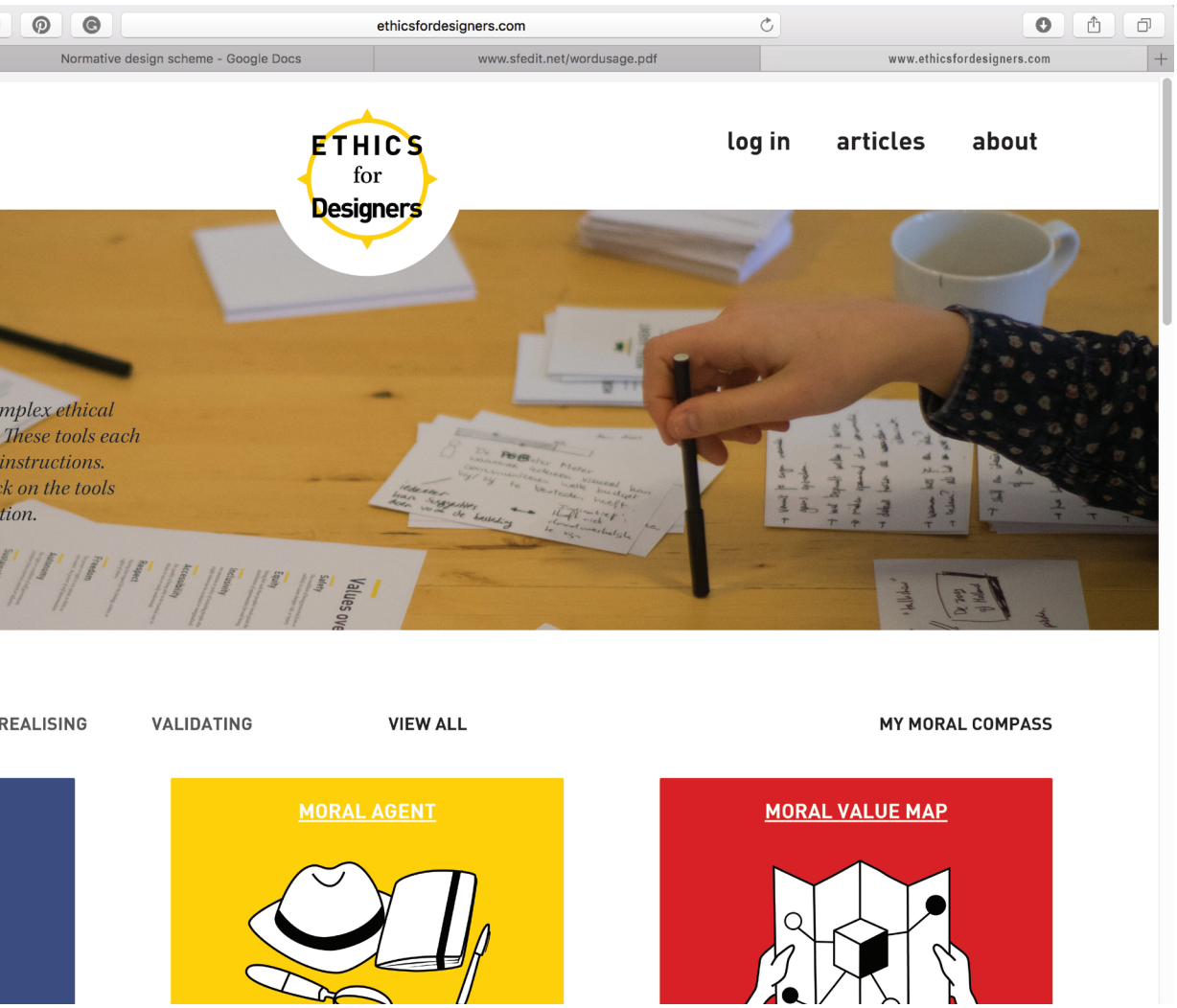
Figure 28. An impression of www.ethicsfordesigners.com.



This profile is called 'my moral compass' and can be updated by the user. This profile functions as a moral compass in that it guides designers in their ethical decision making. Viewing and updating the profile is seen as defining, consulting and calibrating your moral compass.

The moral compass relates to all three ethical skills. To train their moral sensitivity designers record concrete examples of ethical dilemmas they encountered in design projects. By then reflecting on these examples and on how they handled the dilemmas, they can improve their moral creativity. And finally the moral compass guides designers in defining what their personal definition of 'good design' is. Which they can then share and discuss with fellow designers to build on their moral advocacy.

Finally, the 'about' page provides background information on the toolkit. Here the motivation for the development of the toolkit is explained as well as a short bio of the author. Furthermore, contact information is provided for designers who want to share their experiences with or contribute to the development of the toolkit. ■



4.6 Conclusion Chapter 4

A virtue-ethical approach to ethics in design

Virtue ethics is seen as an important theoretical foundation for ethics in design, because it rejects the idea of any universally applicable ethical rule. This relates very well to design because every design project is different. Foucault (1984) aptly describes ethics as '*askesis*', meaning self-formation. This definition focuses on ethics as a skill, a set of learned techniques to design oneself and one's life. This research is based on this concept of askesis.

Furthermore, it is important that the contribution of ethics in design is not reduced to an evaluation of arguments for and against the development of a new technology (Verbeek, 2014; Van der Weele and Driessen, 2013; Fesmire 2003).

Framework ethics for designers

The insights gained throughout the project by means of literature, interviews and case studies are boiled down into an accessible framework (see Figure 29) of how designers can engage with ethical issues within design.

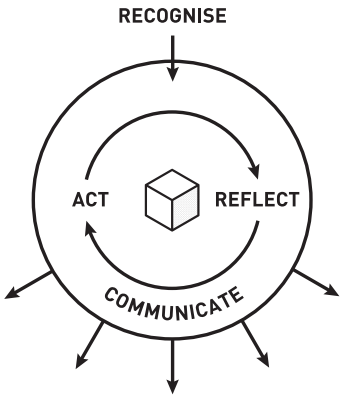


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Figure 29. The ethics in design framework.

Skills designers need to incorporate ethics into their design process

Three skills are proposed which designers need to constructively engage with the ethical dimension of their work: moral sensitivity, moral creativity and moral advocacy.

Moral sensitivity is defined as the ability to recognise the ethical aspects of design in general and within a specific design project at hand. Moral creativity is defined as the ability to explore creative solutions to moral problems. And moral advocacy is the ability to communicate the importance of ethics to other stakeholders and fellow designers.

Developing an ethical toolkit for designers

Building on the empirical foundations and research context a toolkit has been developed. The tools are grouped in relation to the three ethical skills. For the development of this toolkit three criteria were leading: (1) practical, (2) multilevel and (3) creative. This means that: (1) the tools should be easily accessible and applicable to any kind of design project; (2) using the tools should be useful at various stages of a design process and on the three levels (WHY - HOW - WHAT); and (3) the toolkit should have a generative approach.

The following ethical tools have been developed:

De-scription is an evaluative exercise for designers. This tool is inspired by the 'script' concept of Latour, based on the notion that every design contains a script for use.

Ethical disclaimer is an ethical framing tool which serves to define clear ethical constraints and provide an overview of the designers' responsibilities.

'Moral Agent' is an ethical ideation game based on brainwriting and hidden roles. Each player is responsible for and promotes their moral value without the other players noticing. Playing the game stimulates integrating ethics into design.

Design noir is a role-playing tool used to uncover and experience potential unethical situations and use this to improve a design.

Normative design scheme provides designers with an accessible and practical introduction to normative ethics. This tool complements the other more design-focused tools.

Moral value map is a practical mapping tool based on the concept of Value Sensitive Design. With this tool designers select values relevant to their design and map how their design affects these values. The map then serves to discuss value conflicts with stakeholders.

Ethical contract is a tool focused on aligning expectations among stakeholders. This tool supports designers in discussing their ethical disclaimer with stakeholders. The main goal is to agree on the ethical objectives and divide the responsibilities.

Ethics for designers website

To allow designers to freely access the tools described above, they are integrated into a website: www.ethicsfordesigners.com. This website also functions as an online platform for designers to discuss the ethical dimension of design. ■

05. Discussion

This final chapter provides an evaluation of the toolkit, the conclusions of the research and how it has addressed the research question and defines the contribution to new knowledge that this master thesis has developed.

5.1 Evaluating the toolkit in design practice

5.1.1 Pilot study

Before thoroughly evaluating several tools, a pilot study was conducted. This pilot served to gain initial insight into the understandability of the toolkit. To this end, a walkthrough of all the tools was performed with Robin Hoenderdos, Creative Director of Flex/design.

The participant received printed instructions of the tools and the corresponding templates. The participant was then asked to simulate using each tool and think aloud while doing so (see Figure 30). A compact digital compact served as a product example. In between simulations, the researcher asked more general questions about the toolkit.

Key findings

Some general improvements to the instructions and templates were suggested to make them more clear and accessible. Firstly, the text should be kept to an absolute minimum and written in actionable language. Furthermore, the content must be consistent: the terms and tone of voice should be the same throughout the website and templates. For the tone of voice, the participant suggested to use 'Jip en Janneke' language.

The website could include examples of ethical aspects of design, which visitors could click through if they are stuck. Additionally, examples of filled in templates would help the designers get started, by showing them what they will end up with.

De-scription

The 'script' concept should be clearly explained and the template should also provide examples. It helped to do this exercise together because it allows for discussing the outcomes and comparing worldviews. The participant was pleasantly surprised by the outcomes of using this tool. He had never thought of a camera this way before.

Ethical Disclaimer

The order of steps felt strange: it would make more sense to list the stakeholders and then move on to the design intentions. The layout of the template should reflect this by providing more space for the design intentions. Furthermore, it was suggested to place the themes on the template to make it less of a daunting empty canvas.

▲

Figure 30. The participant and researcher discussing the toolkit.

Moral Agent

Because this game should be played by at least three players, it was not possible to simulate it. Therefore the evaluation was limited to reading the instructions. At first, the participant did not understand the purpose of the game. Using the word 'value' instead of theme and making the wording more emotionally charged would improve this. It should be clear that the players have to 'fight' for their value.

Design Noir

The name 'Design noir' motivated the participant to explore the tool. On the template, it was unclear what the sequence of steps was. Moreover the clarity of the instructions could be improved.

Normative Design Strategies

The structure of the template was perceived as clear and helpful because it is formulated from a design perspective. The participant described this tool as 'a practical introduction to ethics' for designers. To this end, it is important that the text is simple and understandable.

Ethical Scoping

The main goal of this tool could be made visually clear by designing the template as a contract. Having the stakeholders place their signature could be a nice way to make them commit. To reflect this purpose, the name of the tool was changed to 'ethical contract'.

Moral value mapping

The order of the moral advocacy tools was perceived as strange. This tool would be of more use before the ethical scoping tool because it should be done with the stakeholders at the start of a project. Therefore it could be quite a personal tool.

Based on these outcomes the tools have been adjusted. The descriptions of the tools provided earlier in Chapters 4.4.2 through 4.4.8 include these adjustments. ►

5.1.2 Goal

The goal of this study was to evaluate the tools of the Ethics for Designers toolkit. The tools have been evaluated on three main aspects: (1) purpose, (2) content and (3) form.

5.1.3 Method

Participants

Jan Belon, Co-founder of Afdeling Buitengewone Zaken (A/BZ)

Jop Japenga, Designer/Researcher at Afdeling Buitengewone Zaken (A/BZ)

Procedure

To evaluate the tools professional designers were asked to use the tools in brief sessions. Instructions of the tools and their corresponding templates were provided (see Figure 31). The procedure was the same as the pilot study: participants were asked to simulate using various tools and describe their experience. In between simulations, the researcher asked more general questions about the toolkit. During the evaluations, the researcher was present to observe the participants and ask questions. Due to time constraints, not all tools could be thoroughly evaluated. Therefore the focus was on the tools that had not been evaluated earlier by means of case studies.

5.1.4 Key insights

The templates should be designed to guide designers in using the tool. Even if people do not read the instructions they should have an understanding of what the template is for. Furthermore, it should be very clear where each tool fits into the design process. One of the participants mentioned that they would include these tools in a project quotation. If A/BZ would use them, they would make it a standard part of their process. Therefore the benefit of using these tools would have to be clearly communicated to clients.

De-scription

The template should allow for drawing connections between the different layers. Moving from HOW to WHY felt sudden for the participants, but once they started talking about the worldview it became more clear what the goal of the tool was. It also became clear that the concentric circles on the template did not support the exercise. When deconstructing something it makes more sense to work from the inside out. In this case, it is more of a linear process, so the template could consist of horizontal layers.

Moral Agent

Playing the game proved a fun way to ideate because it provides a totally different starting point. With this tool, a real design brief was used. It was observed that if a value did not match a person's own values it proved harder to come up with ideas. Passing around the cards to build on each other's ideas was effective because it was easier to add to something then constantly generate new ideas.

While the purpose of the game is very ethical, playing it felt unethical. This could be used to make the game more engaging. In addition, it should be investigated how to trigger people to push the boundaries of the rules.

The participants expected that all players would bid on each idea. Instead, everyone was very cautious which ideas to bid on. This behaviour added a fun dimension to the game. The discussion about and between the different values was valuable and should thus be an explicit part of the game.

"What I like about Moral Agent is that you're brainstorming with human values. That's not common, I think that's interesting."

- Robin Hoenderdos
Creative Director of Flex/design

A difficult issue with this game is that everything is subjective. The game should somehow embody a sense of objectivity because otherwise, players could push their own agendas. It was unclear if there is a hierarchy among the values. Some appeared to overlap a bit.

Perhaps the game could be played with other stakeholders and used to find out how everyone interprets these values. If the game is fun to play and helps to generate 'different' ideas, designers would be more inclined to use it.

5.1.5 Discussion

This study evaluated the Ethics for Designers toolkit on three aspects: (1) purpose, (2) content and (3) form.

Overall using the tools was perceived as useful in terms of engaging with the ethical aspects of a design. The use of templates and instructions from a designer point of view helped participants in applying the tools.

Purpose

The purpose of each tool appeared clear to the participants. However, it was not always clear what the relation between the tools was. After reading the instructions, participants were able to explain the purpose of each tool and relate this to their own practice. The description tool was experienced as quick and effective by all participants. It was suggested to emphasise at which point in a design project the different tools should be used. In addition, it should be explained how often designers should use the tools.

Content

The instructions proved complex to understand. Therefore the text should be edited and more explicitly linked with the ▸

text on the template. Placing questions or unfinished sentences on the templates is an effective way to improve understandability. The Business Model Canvas (Osterwalder et al., 2010) is a good example of this. Most tools vary significantly in content. However, there was some confusion regarding the two moral advocacy tools. It should be clear that they focus on stakeholder dynamics and project objectives respectively. Because the tools are explained from a design perspective they were experienced as compatible with a creative process.

Form

Not all templates effectively guided the participants in using the tools. Consistency between the instructions and the layout of the templates is used to improve this. The visual style of the templates ensures consistency, without distracting from the content. However, more visual elements could make the templates more engaging and easier to understand.

Due to the limited number of participants and the presence of the researcher the validity of the study cannot be confirmed. To fully validate the effect of the toolkit, each tool should be evaluated in real life design projects. Moral Agent specifically should be played more often to work out the details of the game mechanism. Furthermore, the incentive for designers to use these tools should be investigated. In this study participants were provided with the templates by the researcher. Whether the toolkit is communicated as general ideation tools or specific 'ethical tools' would influence the accessibility. ■

◂

Figure 31. The evaluation of the Moral Agent game.

5.2 Addressing the research question

The purpose of this research has been to discover, through in-practice explorations, how designers can incorporate ethics in their design process. The framework and skills outlined in Chapters 4.2 and 4.3 respectively frame the core objective of training designers to engage with the ethical dimension of their work. This thesis presents and demonstrates a toolkit for designers to learn these skills.

Overview

Chapter 1 of this thesis provided an overview of the research, setting the objective, approach and significance. Chapter 2 set the context within which this work is positioned and framed through an exploration of the theoretical underpinnings from which understanding and approaches are drawn. From this position, the current situation of ethics in design and various approaches to improve this situation were explored as outlined in Chapter 3, through empirical studies and cases.

Throughout this exploration, there has been an evolution of approaches and tools, that have enabled the distillation of this body of work into a divergent framework of ethics in design. This framework facilitated the development of an ethical toolkit for designers which is described in Chapter 4.

This final chapter provides the conclusions of the research and how it has addressed the research question and defines the contribution to new knowledge that this master thesis has developed.

How to incorporate ethics into design?

In answering the research question of how designers can incorporate ethics in their design process a series of case studies have been carried out to inform the development of a practical toolkit.

This study has shown that designers can incorporate ethics by developing ethical skills for engaging with the ethical dimension of their work. Practical tools have been designed for this purpose. The argument put forth in this research is that the development of skills allows for incorporation of ethics because skills are not limited to specific content.

1. What is ethical design practice?

To answer this main research question a series of sub-questions emerged throughout the explorations. The first sub-question in this research was concerned with defining 'ethical design' practice. Building on the literature review of the ethical dimension of design described in Chapter 2.1.1, the insights from the empirical studies provided ingredients for the formulation of such a definition. These insights suggest that ethical design practice can be defined as being aware of and taking responsibility for the ethical implications of a design in development. Thus designing 'ethically' is concerned with a mindset rather than ethical topics. This line of thought is supported with the virtue-ethical approach detailed in Chapter 4.1.

2. Which skills do designers need?

The second sub-question in this research focused on the skills designers need to incorporate ethics in their process. This question emerged from the argument that skills are not limited to specific content and therefore allow for incorporation of ethics into any design process. The three ethical skills proposed within this research are: moral sensitivity, moral creativity and moral advocacy respectively.

Moral sensitivity is defined as the ability to recognise the ethical aspects of design in general and within a specific design project at hand; Moral creativity is defined as the ability to explore creative solutions to moral problems. And moral advocacy as the ability to communicate the importance of ethics to other stakeholders and fellow designers. These three skills combined allow designers to effectively incorporate ethics into their work.

These results further support the idea of teaching ethics to designers as 'process' knowledge rather than 'material' knowledge (McLean, 1993). Material knowledge being concerned with analytic, factual topics and process knowledge with the range of methods and abilities students learn by completing projects. McLean (1993) claimed that "Presented as material knowledge, ethics becomes a dry and perhaps irrelevant element of the engineering curriculum. However, if presented as process knowledge, the subject becomes implicitly relevant through the context in which it is discussed."

3. Which tools do designers need?

And finally, the third sub-question to be answered is which tools designers need to develop the skills mentioned above. To answer this question an ethical toolkit has been developed, which builds on the empirical foundations and context of this research.

These tools include: an evaluative exercise inspired by the 'script' concept of Latour; an ethical framing tool to define ethical constraints and provide an overview of the designers' responsibilities; an ethical ideation game based on brainwriting and hidden roles, which stimulates integrating values into design; a role-playing tool to uncover and experience potential unethical situations and to improve a design; a practical introduction to normative ethics; a mapping tool based on the concept of Value Sensitive Design and a tool to set ethical objectives and divide responsibilities among stakeholders.

Each tool is focused on a different aspect of the design process, ranging from the deconstruction of previous work to ideation to communication with stakeholders. Thus allowing the tools to find their natural place within an existing design process. As described previously in Chapter 5.1, some of these tools have been evaluated with designers in practice. The main findings of this evaluation study suggest that the tools are compatible with a creative process because they are explained from a design perspective. ■

5.3 Contributions to theory, practice & education

5.3.1 Contributions to new knowledge

This research set out to investigate how designers could incorporate ethics into their design processes, and to illustrate how a set of practical tools could support designers in doing so. With the potential to make a number of contributions to design theory. The following are the main research contributions of this study.

The findings of this thesis could be used to help understand how designers can engage with the ethical dimension of their work. Specifically, the ethics in design framework can be used to describe the flow of actions. Furthermore, the ethical skills proposed within this research provide a language for ethical design. It could support discussions of how designers could learn and apply this way of designing.

And finally, the practical tools for designers could be used to investigate the effect of incorporating ethics into design projects. A first attempt has been made in evaluating the tools and is communicated in the evaluation study in Chapter 5.1.

This research contributes in addressing the lack of (structured) ethical consideration in design, as mentioned in Chapter 1.3. Building on the arguments put forth by Mitcham (1995), Verbeek (2006), Van de Poel (2006) and Fallman (2011) for ethically concerned design, this research has developed practical approaches to ethics in design.

5.3.2 Contributions to design practice

The ethical toolkit is intended to make a contribution to design practice by providing designers with the means to understand and engage with the ethical dimension of their work. In addition, these tools could be used by designers to communicate the importance of ethics in their work to clients. As suggested by Jop Japenga, who participated in the evaluation study, the toolkit could be included in project quotations and become an integral part of a design agency's approach.

The aim of developing a practical toolkit has been to make ethics accessible to designers. This could help open up the discussion about ethics as a dimension of design quality.

5.3.3 Contributions to design education

Various scholars in the fields of science, engineering and design education have argued for the integration of ethics into the curriculum (McLean, 1993; Lofthouse and Liley, 2009; Riley et al., 2007; Lloyd and Van de Poel, 2008). In response, the proposed ethical kills could be used as a foundation for integrating ethics into a design curriculum. Compared to the classic educational approaches of free-standing ethics courses or ethics modules, an infusion of ethics has three clear advantages: (1) ethics is communicated as an integral and 'normal' aspect of the design process; (2) it implies that engineers and designers should be educated in ethical decision making; (3) it shifts the focus from extreme and 'large' ethical concerns to day-to-day 'small' ethical decisions.

Building on the skills as a foundation, the ethical tools could be introduced as practical means to teach these skills. The use of templates would support teachers in teaching these skills and students in engaging with ethics autonomously. Using these tools would allow students to add a new set of skills to their skill set. It is hoped that students who have been integratively taught to incorporate ethics into their work, bring these skills along to their future careers as practising designers. Ultimately the goal of this research has been to contribute to the ethical improvement of the design domain. ■

5.4 Limitations, implications and recommendations

5.4.1 Limitations and implications of this research

This research, having been conducted through practice-based research has allowed for reflection in and on practice, resulting in a practical toolkit for designers based on a theoretical framework for engaging with the ethical dimension of design.

It has not however, allowed for any research into the effectiveness of such approaches in achieving the development of the proposed ethical skills. The intent with this particular body of work was to experiment with different ethical techniques. To this end, it intentionally avoided the testing of effect, and thus has left scope for such approaches to be tested and analysed with more detail in future research.

Within the time frame of this research it has not been possible to thoroughly evaluate all tools. For an efficient approach, the focus has been on the tools that had not been evaluated earlier by means of case studies. The case studies were performed as the opportunities arose throughout the project, drawing from the personal and professional network of the author. Therefore the scope has been limited to Dutch design practice and design education at the Delft University of Technology specifically.

These case studies and the resulting tools present a first attempt to practically incorporating ethics into design practice. These findings suggest that in general ethics can be incorporated into design. Although the current study is based on a small sample of participants, the findings suggest that practical tools that are situated in design projects trigger and improve the ethical understanding of designers.

The results of this research support the idea that designers need practical tools to understand and engage with the ethical dimension of their work. This body of work presents a first attempt to the development of such tools.

5.4.2 Recommendations for future research

To fully validate the effect of the toolkit, each tool should be evaluated in real life

design projects. Furthermore, the incentive for designers to use these tools should be investigated and used for the communication of the toolkit. To this end ways to effectively communicate and distribute the tools should be looked into. Overall it would be interesting to assess the effects of using the tools on: the design outcome, the design process and stakeholder collaboration.

In future investigations, it might be valuable to evaluate the toolkit with with pedagogical experts as well. Such investigations could help determine the educational value of this toolkit. In an educational context it is suggested to use the ethics in design framework and three corresponding skills as a foundation for a design ethics curriculum. Such a proposal should be discussed with various stakeholders of educational institutions to elaborate the practical implications.

It is hoped and intended that the ethical toolkit for designers detailed within this thesis, can contribute to the adoption of ethical approaches in design practice. ■

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