A Clash of Concerns: Applying Design Thinking to Social Dilemmas

Nynke Tromp

Delft University of Technology, Delft, The Netherlands

Paul Hekkert

Delft University of Technology, Delft, The Netherlands

Abstract

Design thinking is currently repeatedly promoted to play an important role when dealing with pressing social issues. In line with this, we witness an increasing interest among designers to take up these challenges that go beyond the regular design scope. However, understanding how design thinking can be applied to social issues and what value this might have, is still relatively unexplored in design research.

This paper reflects on two graduation projects in Industrial Design that explored how a designer would cope with a social problem rather than a user problem or an engineering problem. Analysing these projects on the basis of what has been described in literature as either design thinking or typical designer skills, we suggest that the designer's integrative thinking and human centeredness are important when dealing with social problems. On the basis of the typical characteristics of social problems, we will show the value of these skills in this new domain.

Next to this, in reasoning from the complex social problem to an appropriate product aim, both cases represent a similar pattern. This pattern of reasoning, resembling what has been described in literature as systems thinking, seems essential in coping with the typical complexity of social issues. We conclude the paper with discussing whether this tendency of designers to take up social problems will bring unique value to this social domain.

1. Introduction

Although design thinking has never been precisely defined, the traditional turn in design thinking research has originally been to understand the designer's reasoning patterns (Roozenburg 1993) what design ability is (Cross 1995) or what cognitive operations are used when designing (Stempfle & Badke-Schaub 2002). Regularly, this reasoning has been researched in relation to the type of problems designers aim to resolve, e.g., ill-structured problems (Simon 1973) or design paradoxes (Dorst 2006), and how they particularly go about this, e.g., by (re)framing the problem (Dorst & Cross 2001; Schön 1983), by generating solutions until one 'satisfices' (Simon 1969, p.64), or for instance by using visual representations.

However, in current practice, design thinking has been used to describe more than only the designer's cognitive skills used to get from design brief to design. In the context of business and organizations, design thinking refers to an approach to take or a strategy to apply (Brown 2009). In this context, taking a human-centered approach or a systems view are said to be part of design thinking. Moreover a design thinker is ascribed a wide range of qualities like for instance being a collaborator, an experimentalist and an optimist (Brown 2008; Owen 2007). Although the term refers to a wide variety of concepts and processes, it mainly indicates that the role of the designer in practice is changing. And this change is of relevance to design think-

ing research. The notion that designers move from a tactical to a more strategic role (Brown 2009; 2008) opens up new challenges for understanding what design thinking is or can be.

In this paper, we reflect on two projects in which the designers took up a social problem to design for. We analysed both cases to see what particular design thinking skills are important or of value in relation to social problems. Next to this, we studied both cases to see whether reasoning patterns emerged that are not so easy recognized as typical design thinking, but do seem important when dealing with social issues.

2. Design for Social Problems

Before describing the two design cases in larger detail, two general aspects of both cases are described: the type of problem, i.e., social problems, and the design approach, i.e., Vision in Product design (ViP). We shortly discuss the typical characteristics of social problems and why they may be attractive to designers. Subsequently, the Vision in Product design method is shortly explained and why this approach seems appropriate when dealing with social problems.

2.1 Social Problems

Social problems are typically problems we face everyday in the newspapers. They concern us as society and therefore are called *social* problems. Immigration issues, littering, obesity, high unemployment rates or crime are typical problems of social kind. A core aspect to all these problems is that to resolve them, people substantially need to change their behaviour. However, behaviour change is not an easy goal in itself but even gains in complexity in the light of social problems.

Social problems often represent what are called social dilemmas (Van Lange & Joireman 2008). The typical characteristic of social dilemmas is the fact that they rise when peoples' collective concerns (that often focus on the long term) and individual concerns (that are often directed at the short term) are clashing. Because people are more easily driven by individual and short-term gains, people can behave in a manner that is undesired from a social perspective. To give an example, we all know that driving to work by bicycle would be better for our environment. Still we often prefer taking the car, as it is a convenient, efficient and comfortable means of transport. Because a car addresses these latter individual concerns so well, taking the car becomes hard to resist.

Governments have limited means when dealing with social problems. At best they can change legislation or provide subsidies to actually stimulate behaviour change. But although legislation might be effective in some cases, not every type of behaviour allows for legislation. In most societies stealing is agreed as a deviant behaviour for which legislation exists, but going to work by car can hardly be considered deviant. For these matters, campaigns are being developed that aim to make people aware of the benefits of a particular behaviour change. However, campaigns appear less effective than hoped for (Rijnja, Seydel & Zuure 2009). The fact that social problems are complex problems, for which the government has few solutions, might explain partly why designers feel challenged to take up such problems.

2.2 Vision in Product design

The Vision in Product design approach (ViP) developed by Hekkert and Van Dijk (2010) puts emphasis on the need to think of the product's raison-d'être before thinking of the product as such. Designers are driven to first understand what it is they want to offer to people and why, before they are supported in thinking of how this should be given form. By doing so, the method supports the designer to a large extent in taking a strategic position. ViP gained acknowledgement from both students and practitioners since 1992 onwards and is part of education at the faculty of Industrial Design Engineering in Delft, The Netherlands.

When taking up a social problem to design for, the actual product to-be-designed is not defined beforehand. This means that the designer is challenged to first decide upon an (product) aim, which is a strategic choice, before he can think of the product as such. The fact that the ViP approach offers guidelines in this strategic phase of the design process has been the one of the main reasons this approach has been applied in both graduation projects.

3. Two Design Cases

The projects that will be described next represent graduation projects in which two students developed a product with the aim to contribute to social change. Both projects represent graduation projects carried out at the faculty of Industrial Design Engineering at Delft University of Technology for the master program Design for Interaction. Both projects were initiated by the student and originate from a personal fascination for the topic and a personal drive to improve the situation. The issues, i.e., the 'failed' integration of immigrants (Tromp 2007) and the gender inequality on the labour market (Borgonjen 2009), have been proven hard to tackle with traditional interventions like campaigns and regulations. In the following sections we will describe first the steps that were taken by the designer to define the aim of the design, and second how the product was designed to realize this aim.

3.1 Case 1: Design for Social Cohesion

The first step in this project was reframing the social problem. This reframing was done to overcome the logical 'solution' to the problem of 'failed integration of immigrants', which is to design something to help immigrants integrate. Defining the starting point as 'social cohesion' stimulated thinking of new ways of living together that are desirable rather than focusing on resolving an undesired situation.

Defining the aim

In reasoning from 'social cohesion' to the aim of the design, Tromp took various intermediate steps supported by literature, interviews and observations. These steps represent reasoning that is reflected in a series of decisions. After each decision, Tromp asked herself: "OK, but how?" The sequence of decisions, including a short argument, are presented below:

1. Social cohesion
Social cohesion is a double-sided sword: strong cohesion in a group inevitably means strong exclusion of outsiders. Therefore a 'light' version of cohesion is desired when a neighbourhood has to deal with newcomers from various backgrounds.

2. Number of relationships
Simply put, cohesion is about relationships. Realizing cohesion thus means realizing relationships, in this case between people from various backgrounds. However, based on the 'light' cohesion aimed for, we do not aim for deep friendships but 'only' try to increase the number of starting relationships.

3. Contact Initiatives
To realize relationships, one needs to realize contact in the first place. Realizing contact between people from various backgrounds has been the aim of several existing initiatives, e.g., neighbourhood barbeques. However, it has been shown that simply putting people from various backgrounds into contact with each other in a group setting often only increases stereotyping. Based on this insight, Tromp wanted to optimize the conditions for contact based on own initiative rather than to bring people into contact.

4. Acquaintance

Acquaintance is a condition for contact. People need to have a first impression of the other person before they will start any contact. Especially with people from different backgrounds, this acquaintance is hard to realize and is easily based on group identity. This means acquaintance can increase stereotyping. Acquaintance is gained through information gathering, but to avoid stereotyping, this has to be personal information.

Therefore the aim was defined as: *support people in exchanging intimate and personal information.*

Designing the means

Iterative testing of various concepts and ideas gave insight in where to realize this information change (supermarket, library or housing complex), through what medium (photo's, written text, objects or voice recording), and in what setting (group, dual or chain-like exchange of information). Based on the tests, Tromp got insight in what individual concerns to address with the design to effectively elicit information exchange.

The Gift Box

The final design is a box including audio recording. The box asks a resident of the area to put in a personal object that (s)he would like to present as a gift to a neighbour. Attached to the gift (s)he is asked to record a personal message that explains how the object is related to her/him. The service delivers the gift to someone living nearby, but who is unknown beforehand. Afterwards, the giver will receive a postcard explaining which address received her/his gift.

Receivers get the box unexpectedly which aims to trigger their curiosity and thereby persuade them to open the package. Receiving a gift from someone in the neighbourhood accompanied by a personal message should trigger people's reciprocity norm. This norm increases the chance that people will respond positively to the question to pass on a gift to someone else in the neighbourhood.

By means of the box, one resident is linked with two neighbours; one with whom he gets acquainted and one who gets acquainted with him. Thanks to the gift it should not only become easier to get into contact with each other, the gift also offers a concrete starting point for conversation.

Figure 1. Tromp's (2007) final design: 'The Gift', a product-service combination to increase the social cohesion within a multicultural neighbourhood.

3.2 Case 2: Design for Women's Position at The Labour Market

In contrast to the often-mentioned phenomenon of 'the glass ceiling' that women who aim for top positions can be confronted with, Borgonjen focused on the so-called 'sticky floor'. This term symbolizes the fact that women, even highly educated women, often get stuck somewhere halfway the company's hierarchical ladder. This phenomenon was the starting point for her project.

Defining the aim

Similarly to the first case, the decisions made in this project were taken by continuously asking the question: "OK, but how?" The sequence of decisions, including a short argument, are presented below:

1. Career Mobility
Based on her research, Borgonjen found that women do not necessarily aim for top positions, but do aim for continuous personal development and challenges. She therefore wanted to increase women's career mobility in order to improve their positions. She believed that by increasing mobility in general, mobility towards the top would be facilitated at the same time.

Borgonjen took a holistic view and recognized the influence of family on work choices. She, for instance, considered designing something that would increase the (male) partner's commitment to family care to increase a woman's career mobility. However, based on her conviction that women should be empowered to change their situation, she focused on women in their work situation.

2. Job Opportunities
Increasing a woman's career mobility requires organizations to offer women opportunities to move within the organization.

3. Recognition
Before being able to offer opportunities to women, a company needs to be able to recognize and value female talents in the first place, e.g., a woman's talent to think holistically.

4. Visibility
Logically, perception precedes recognition. In other words, visibility of these talents is a condition for valuing them.

The aim of the design was therefore defined as: *support women in audaciously communicating their visions for the company* (e.g., for future directions of the company or projects to initiate).

Designing the means

Based on this aim, Borgonjen developed several concepts. By making mock-ups of these concepts and discuss them with future users, Borgonjen got insight in what women valued in each concept. Based on this feedback she chose a concept and used her gathered insights to optimize it. In order to understand whether the design indeed addressed the concerns she intended to address, she carried out a longitudinal user test.

Label

The final design is a product-service combination that supports women in developing a vision in such a way, that they feel challenged to work on it and feel confident enough to present it within the organization. The most important aspect of the design is that it supports women to develop their visions in a social setting. The product is a USB device including a camera and led-display. The led-display randomly shows a word related to the theme of interest and for which the woman wants to develop a vision. By visibly carrying the USB-device that displays the word, she and colleagues are triggered to discuss the theme of interest. By means of these small talks, she is encouraged to check her ideas with colleagues and subsequently to collect inspiration and arguments. The camera allows her to capture the moment in a visual manner. When the USB-device contains 5 pictures, the device indicates that uploading needs to be done.

Figure 2. Borgonjen's (2009) final design: 'Label', a product-service combination to improve women's position at the labour market.

When plugging in the USB-device, automatically a software program will be activated. The program allows her to structure the pictures in an intuitive manner, add labels to them to explain what was collected, and subsequently to either quit the program to collect more pictures, or to make a presentation based on the material.

The product supports women in pre-checking their ideas to strengthen their confidence for presenting; first, by verbalizing their ideas and checking whether arguments are sound, second, by creating a feel of whether her ideas are supported by colleagues. By making it challenging to work on a vision, Borgonjen optimizes the conditions for women to actually present it and to become more visible in the organization.

4. Analysis of Cases

An analysis of the process in both projects is done to understand what decisions were made, how they were made and on what grounds. This concerns the sequence of decisions made to decide upon the aim of the final design. Subsequently, both designs have been analysed to understand how they intend to realize this predefined aim.

4.1 Systems Thinking

In both cases a similar reasoning was shown to bring the large-scale complexity of the social problem back to a manageable aim to design for. Both designers converged the social problem to a design problem by intermediate decisions based on probability. A typical decision in case 1 was to increase acquaintance in order to make contact initiatives more probable to occur. Similarly, the visibility in case 2 makes it more probable that female talents will be recognized

within the organization. Both projects aimed to optimize the condition for particular change to happen rather than directly changing the situation.

This chainlike reasoning is similar to what is done in the field of system dynamics and what is called systems thinking. Especially in businesses but also in other systems this reasoning is applied to understand and foresee so-called side effects of interventions (e.g., Sterman 2000). By understanding the relationships between concepts and by modelling these, it is tried to understand how an intervention might unintended change these existing relationships and thus produce so-called side effects. However, in such modelling the intervention often is known. In the design projects we described in this paper, we saw this reasoning was done backwards to understand what the intervention should be to realize a desired 'side effect'.

4.2 Integrative Thinking

What we recognized in both cases are the different perspectives that were taken to first define the aim of the design and second how to realize this by means of design. Both the aim *'to support people in exchanging intimate and personal information'* and *'to support women in audaciously communicating their visions for the company'* were defined with a specific social implication in mind. In the first case, this aim was defined to increase social cohesion and in the second case, to increase women's position at the labour market. These implications are typically based on concerns we have as society. Collective concerns about safety and harmony underlie the need for cohesion, and concerns about gender equality underlie the need for a better position of women at the labour market.

This social perspective differs from a user perspective that is more common in designing. Both aims, that refer to support of particular behaviour, are based on what we need as society rather than on individual needs and desires. Although the individual is part of society and therefore shares these collective concerns, the behaviours the design aims to support do not clearly address individual concerns as such. Even more so, the behaviours are said to occur too sparsely in current society, which means there are reasons why people do not display the mentioned behaviours. People simply do not happily exchange intimate and personal information with people they do not know or even fear. And women do not easily audaciously communicate their visions in a company culture that is masculine and in which prejudices about women's competences can still exist. In other words, the behaviours are obstructed by several individual concerns about competence, safety, acceptance or privacy. The proposed designs address different individual concerns to overcome these clashes between individual and collective concerns.

This skill of designers to handle conflicting perspectives has been described as a fundamental characteristic of a design thinker. According to Brown "the willing and even enthusiastic acceptance of competing constraints is the foundation of design thinking" (Brown 2009, p.18). Ever since we design products, the aim is to achieve the best balance between product aspects, e.g., usability and aesthetics. In line with this, Dorst proposes to regard design problems as paradoxes established by a clash of, what he calls, competing 'discourses' (Dorst 2007). In doing so, design paradoxes are not limited to product aspects, but can be formed by competing value systems of the various stakeholders in the project. Having incorporated this theory in a student design project, Hansen, Dorst and Andreasen (2009) show that these stakeholders can be the various people that are somehow dealing with the product in use, or members of the design team.

The idea of design as a means to overcome paradoxes caused by clashes of value systems therefore applies very well to the projects discussed in this paper that show that design can overcome clashes between individual and collective concerns.

4.3 Human Centeredness

Another important skill we recognized in both cases to realize the product aim, was the designer's human centeredness. To overcome the barriers to display the behaviour, both designers took a, what is often referred to as, human-centred approach. They gathered the insights to understand how to design a product that makes the behaviour nice, pleasant, comfortable, intriguing or normal for the user. In case of the Gift Box, the design makes use of people's reciprocity norm to give something back when something has been given. By first receiving information, giving information becomes simply a normal thing to do. The fact that the gift triggers curiosity and greed aims to make it a pleasant experience. And by providing the service as an in-home service, people are not physically confronted with each other and do not have to make effort to leave the house. In this way, barriers like being fearful or being unwilling to put effort have been overcome. In case of Label, the design provides an intriguing means to develop a vision for the company and thereby aims to make it a pleasant experience to do so. The fact that it stimulates social interaction amongst colleagues should support the development of sound arguments and social support for her ideas. These aspects should realize confidence to actually present the vision and thereby overcome concerns about competence or social acceptance.
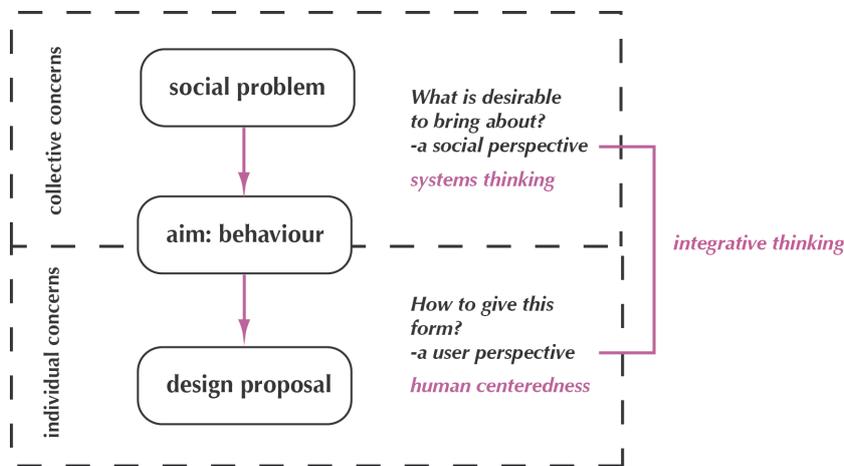
Figure 3. The two steps in the process when designing for social problems, i.e., defining the aim and developing the design, and the three important skills in this, i.e., systems thinking, integrative thinking and human centeredness.

5. Discussion

On the basis of these cases we would like to discuss whether designers bring unique value into this new domain of social issues. The Gift Box is currently being realized as one of the projects that social workers from Foundation 'Boog' offer to governments as intervention to increase cohesion. On the basis of an extensive pilot study on the effects of the Gift Box, the foundation saw the Gift Box appealed to many people including people who were not attracted by regular interventions. Anecdotes exist of lonely people who normally would be too anxious to visit public events, realized contact with others by means of the Gift Box. This feedback supports our idea that the capability of designers to be human-centered in developing interventions is a valuable skill in this domain.

Although we cannot proof these designs will eventually contribute to society as intended, the type of solution can be evaluated in relation to current solutions. As said before, design is unique in comparison to subsidies and legislation in both the form and the strategy it uses to change behaviour. Subsidies and legislation are top-down interventions that try to set the norm of what is 'good' behaviour in a very explicit manner. The designs, i.e., the Gift Box and Label, are product-service combinations that aim to optimize the conditions for particular behaviour

to happen rather than explicitly propagating the behaviour. Based on what we know about how product influence can be experienced, the designs are seductive rather than coercive or persuasive, adding a pleasant experience to the behaviour (Tromp, Hekkert & Verbeek, accepted). The fact that design can thereby transcend clashes of concerns appears to be a unique aspect of the solution in comparison to other solutions that use the strategy of forcing or persuading people to act on the basis of collective concerns.

References

Borgonjen, F.M. 2009, 'Female Work Ethic; Participation of Women in the Dutch Working Society', **Master Thesis** (Report No. 3946) thesis, Delft University of Technology, Delft.

Brown, T. 2008, 'Design Thinking', **Harvard Business Review**, vol. 86, no. 6, pp. 84-92.

Brown, T. 2009, **Change by Design: How Design Thinking Transforms Organizations and Inspires Innovation**, HarperCollins Publishers, New York.

Cross, N. 1995, 'Discovering Design Ability', in R. Buchanan & V. Margolin (eds), **Discovering Design: Explorations in Design Studies**, The University of Chicago Press, Chicago, pp. 105-20.

Dorst, K. 2007, 'Design Problems and Design Paradoxes', **Design Issues**, vol. 22, no. 3, pp. 4-17.

Dorst, K. & Cross, N. 2001, 'Creativity in The Design Process: Co-Evolution of Problem–Solution', **Design Studies**, vol. 22, no. 5, pp. 425-37.

Hansen, C.T., Dorst, K. & Andreasen, M.M. 2009, 'Problem Formulation as a Discursive Design Activity', in NA (ed.), **International Conference on Engineering Design (ICED)**, The Design Society, Stanford, USA, pp. 1-145-1-56.

Hekkert, P. & Van Dijk, M. 2011, **Vision in Design: A Guidebook for Innovators**, BIS Publishers, Amsterdam.

Owen, C. 2007, 'Design Thinking: notes on its nature and use', **Design Research Quarterly**, vol. 2, no. 1, pp. 16-27.

Rijnja, G., Seydel, E. & Zuure, J. 2009, 'Communcating from Context: To Higher Effective Governmental Campaigns [Communiceren vanuit de Context: Naar Effectievere Overheidscampagnes]', in W.L. Tiemeijer, C.A. Thomas & H.M. Prast (eds), **People Making Decisions: About The Psychology Behind Choices and Behaviour [De Menselijke Beslisser: Over De Psychologie van Keuze en Gedrag]**, Amsterdam University Press, Amsterdam.

Roozenburg, N. 1993, 'On The Pattern of Reasoning in Innovative Design*', **Design Studies**, vol. 14, no. 1, pp. 4-18.

Schön, D.A. 1983, **The Reflective Practitioner: How Professionals Think in Action**, Basic Books, New York.

Simon, H.A. 1969, **The Sciences of The Artificial**, First MIT Press Paperback Edition edn, MIT Press, Cambridge, Massachusetts and London.

Simon, H.A. 1973, 'The Structure of Ill Structured Problems', **Artificial Intelligence**, vol. 4, pp. 181-202.

Stempfle, J. & Badke-Schaub, P. 2002, 'Thinking in Design Teams—An Analysis of Team Communication', **Design Studies**, vol. 23, no. 5, pp. 473-96.

Sterman, J.D. 2000, **Business Dynamics: Systems Thinking and Modeling for a Complex World**, Irwin/McGraw-Hill, New York.

Tromp, N. 2007, 'Designing Social Cohesion', **Master Thesis** (Report No. 3608) thesis, Delft University of Technology, Delft.

Tromp, N., Hekkert, P. & Verbeek, P.-P. accepted, 'Design for Socially Responsible Behaviour: A Classification of Influence Based on Intended User Experience', **Design Issues**.

Van Lange, P.A.M. & Joireman, J.A. 2008, 'How We Can Promote Behavior That Serves All of Us in the Future', **Social Issues and Policy Review**, vol. 2, no. 1, pp. 127-57.