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Happy moments: A well-being driven design of a Car2Go

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Abstract: User well-being is increasingly addressed in design and design research. Previous work has proposed a design for well-being framework that includes three main ingredients: pleasure, personal significance, and virtue. While useful for analysing the well-being impact of existing designs, it is difficult to use the framework as a resource in well-being focussed design projects. This paper presents a design case study in which two key challenges have been addressed. The first is to understand how to identify relevant pleasures, personal significances and virtues in the context of design practice. The second is to understand how design concepts can be developed that integrates these three ingredients in a meaningful way. The design case was to develop a car interior for a car sharing service. The first challenge was addressed with two user studies where it was found that especially conflicts or tensions between ingredients stimulated design creativity. The second challenge was addressed by including the factor of time in the design concept (creating a concept in which experiences unfold over time). The design case is presented and the techniques that were used to address the well-being-specific design challenges are discussed and reflected on.

Keywords: well-being, automotive design, positive design, car-sharing

1. Introduction

In the last decade, user-centred design research has evolved from having a mainly utilitarian view on product-user relationships to one that embraces a more holistic interpretation that also includes subjective user experiences and emotions. User experience (UX) research has flourished, resulting in experience-focused theory and methodology (for an overview, see

Schifferstein & Hekkert, 2011). More recently, UX researchers have expanded their interest to adopt an even more holistic view, including not only momentary experiences, but also more an indirect and long-lasting subjective impact of design, like mood and well-being. In 2013, the International Journal of Design published a special issue on the topic of design for well-being, with contributions that discussed how design can contribute to user well-being (Desmet & Pohlmeyer, 2013), how designers can wilfully design for well-being (Hassenzahl, et al., 2013), ethical issues of design for well-being (Dorrestijn & Verbeek, 2013), and implications for marketing (Sääksjärvi & Hellén, 2013). Since the publication of this special issue, the domain has propelled, with explorations in both human-computer interactions (e.g., Calvo & Peters, 2012) and in product design (Vermaas & van de Poel, 2015).

There are many definitions of subjective well-being in various domains of inquiry, including psychology, sociology, economics, and philosophy. In this paper we adopt the definition of Lyubomirsky (2007, p. 32), who defined subjective well-being as "the experience of joy, contentment or positive well-being, combined with a sense that one's life is good, meaningful and worthwhile." In this definition, well-being refers to happiness as an enduring sense of appreciation of one's life (i.e., being happy with one's life), rather than a momentary feeling. Design for well-being aims to address this enduring sense of appreciation; in the words of Desmet, Pohlmeyer, & Forlizzi (2013, p. 1): "Design for subjective well-being supports this definition by presenting itself as the activity of designing with the explicit intention to support people in their pursuit of a pleasurable and satisfying life, and, even more important, in their desire to flourish."

In order to facilitate well-being driven design, Desmet & Pohlmeyer (2013) introduced a framework that includes three main sources of well-being that can be addressed with design: pleasure, personal significance, and virtue. Each source can act as a design ingredient, but the combination is what they consider to be "Positive Design". Some initial explorations on how this framework can be used in well-being driven design projects have been reported (e.g., Jimenez, et al., 2014; Lin, 2015; De Francisco Vela, 2014). These researchers report that, although the framework can be inspiring, designers encounter several challenges when applying it in design practice. In general, these authors identified two main challenges. The first is the challenge of determining which specific pleasures, personal significances and virtues to design for. This challenge includes two sub-challenges: (1) To determine which pleasures, personal significances and virtues are relevant for the specific design case at hand, and (2) to understand how to select from this large set those that are most interesting and relevant. The number of sources of pleasure, for example, is countless and therefore an important question is, which source of pleasure to focus on, and the same applies to the other two sources of well-being. The second challenge is to understand how design concepts are created that integrate the three sources in a meaningful way. Although each of the three sources can be used as the basis for developing

design concepts, Desmet & Pohlmeyer (2012) state that the 'sweet spot' is in the middle, representing design that address all three sources simultaneously. When aiming to address all three sources in one design, there is a risk of creating a 'collage concept' that combines different ideas in a non-integrated fashion. The current paper reports a design case in which these two challenges were explicitly addressed.

The design brief was to design a car interior, specifically designed for car sharing. This paper provides a brief overview of the design process, including key design decisions. The case was explorative: the aim was to explore how the positive design framework can be made useful for design activities, what challenges are encountered and how these challenges can be addressed. Details of the project were reported by Author (2014); this paper focuses on those steps in the process that illustrate how well-being can be operationalized in design practice. Below, first the framework of positive design is introduced. Next, the design process is described, focusing on those activities that addressed the two above-described challenges. With this design case, we hope to take a step in exploring how theory of subjective well-being can inform design processes, and to inspire those who are interested in understanding how user well-being can be addressed in design processes.

2. Positive Design Framework

Desmet & Pohlmeyer (2013) introduced a framework that includes three ingredients of design for subjective well-being. Their 'Positive Design Framework' (see Figure 1) is a reductionist framework, which argues that human flourishing can be achieved through design that harmoniously integrates all three ingredients. The three main components of subjective well-being are based on well-established tenets in positive psychology and philosophy: pleasure, personal significance, and virtue. In design, each component can be seen as an ingredient that can contribute to people's well-being. The corresponding foci differ in scope, methodological emphasis, and outcome. Yet, each in its own right can be regarded as a variant of design for well-being:

Design for Pleasure

Subjective well-being that is achieved by the sum of a person's momentary pleasures: "Am I enjoying myself?"

Design for Personal Significance

Subjective well-being that is achieved by addressing personally held values and goals. It relates to pursuing goals and acknowledging achievements: "Am I achieving something?"

Design for Virtue

Subjective well-being that is achieved by living a virtuous life. Here, the emphasis shifts to morality: "Am I behaving honourably?"

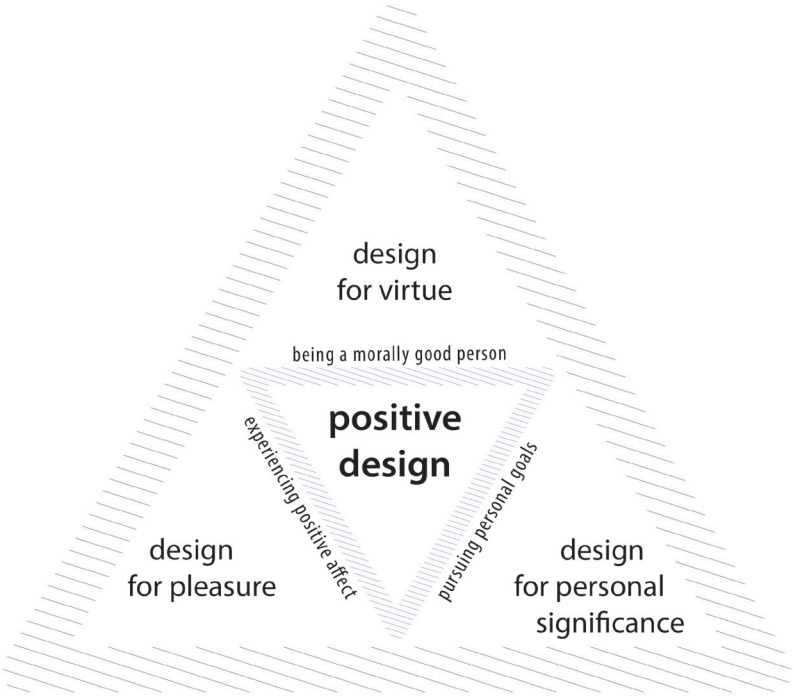

Figure 1 Positive Design Framework (Desmet & Pohlmeyer)

In the Positive Design framework, design for well-being targets the overlap of pleasure, personal striving, and moral values, i.e. the model's centroid (see Figure 1). This can be achieved by combining the different ingredients or by emphasizing one or two elements, as long as the three do not conflict with one another.

The authors provide some reflections on the corresponding design process. In their view, positive design aims to achieve a **long-term impact** in people's lives by enabling them to flourish, and thereby to find **balance** between pleasure and meaning, short- and long-term goals, and individual and societal concerns. Moreover, the focus is on seeking supportive **possibilities** in a design solution, rather than on looking for a 'quick fix' by reducing an immediate problem. A 'one-size-fits-all' approach does not seem appropriate in the field of subjective well-being. Rather, a **personal fit** should be achieved through a thorough understanding of users and their context. Last but not least, **active user involvement** is required for the design to exert its intended effect. Involving users in the design process itself is therefore recommended.

3. Design case

The design case was to redefine the interior of a Car2Go vehicle. In 2008 Daimler's business unit introduced Car2Go, a car sharing service for the city centres. Car2Go is mostly used for

leisure and commuting purpose. In average, 70% of the European users are male, varying in age from 19 to 39+. Car2Go identifies four user groups: the inactive driver (no driving), the fading driver (drives 1-6 times in six months), the active driver (drives 1-3 times a week), and the heavy driver (drives 4 times or more a week). Amsterdam is one the cities in which Car2Go operates with only electric vehicles (Car2Go data, 2013). A car interior is a complex human-centred design that includes technical, ergonomic, functional, experiential, and interactive product aspects. This complexity makes it an interesting case to explore how well-being can be addressed in a design process. An additional interesting aspect of this design case is that, to date, no cars have been designed specifically for car sharing programs.

4. Identifying sources of (dis)pleasure

The first step in the design process was to address the 'pleasure' ingredient of design for well-being. The aim was to obtain an overview of pleasures that users can experience (a) in relation to the interior, and (b) in relation to interacting with the interior, and (c) in relation to driving the car. Since regular car interiors are used for car sharing systems, it was decided to first explicitly focus on (potential) displeasures. This approach was motivated by the idea that design for well-being can only be effective if sources of displeasure are eliminated first. The adopted approach was to use a customer-journey type method that focuses specifically on all emotions in a user experience and the underlying causes of thereof (the Emotion Capture Card procedure, ECC as introduced by Ozkaramanli et al., 2013).

This procedure was done with eight Car2Go users (4 male, 4 female, ages between 24 and 55). They were followed and interviewed in real-life Car2Go usage cycles, which took approximately 30 minutes each. All interviews were taken in the city of Amsterdam. The observations started at the first encounter with the interior when opening the door and ended when the user checked-out of the rental. The ECC were sampled in different stages; in stage one, people were asked to drive their normal Car2Go drive, while the emotions were captured through shadowing. These emotions were reported by the participant and prompted by the observer. Following, the participant was interviewed using a laddering-type technique to deepen the understanding of his or her underlying goals.

The captured emotions provided an overview of the momentary pleasures and displeasures experienced during a Car2Go ride and the causes of these emotions. Users experienced both positive emotions like surprise, enjoyment, security, pride, and freedom, and negative emotions like hastiness, annoyance and insecurity. Positive emotions (e.g. fun, surprise and freedom) were experienced frequently (by 5+ people) when driving through the city and parking, because of the manoeuvrability and the size of the car, but also because of the knowledge of not owning the car. A feeling of pride was measured several times (by 3 people) as the car drives electrically which feels like doing good for the world.

One of the participants was having fun while driving because of the manoeuvrability and small size of the car: "This thing turns really fast". As a negative emotion one of the

participants recalled a feeling of disgust about sharing the steering wheel with so many people: “It is really an unhygienic idea when you think about it ”.

Measuring all experienced emotions during the use of a Car2Go was important to analyse the positive factors that should be maintained in the final design and the disturbing factors that should be resolved (see Figure 2).

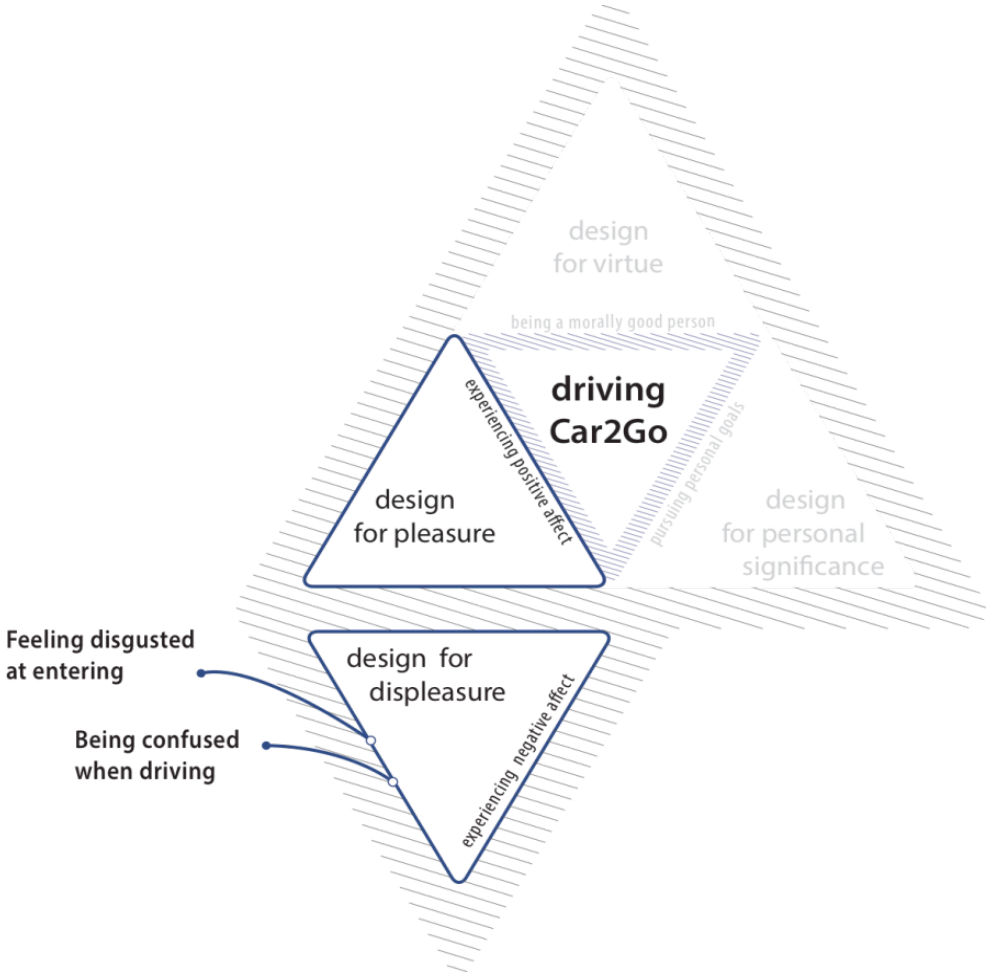

Figure 2 Design for displeasure in the Positive Design Framework

The first conclusion, drawn on the basis of the insights that were obtained with the ECC procedure was that Car2Go should “stay Smart” by maintaining its biggest advantage; simply being a small sharing car. The second conclusion relates to momentary displeasures. Most negative emotions were experienced in the first steps of usage and related to the cleanness of the car and the intuitiveness of logging in and starting the car. In order to achieve a positive contribution to well-being, these disruptive factors that cause instances of displeasures must be solved first. The insights about pleasure and displeasure were applied to create an initial design concept (Figure 3).

Figure 3 The simplified, intuitive interior of the Car2Go

In the initial design phase, the design concept was given smooth surfaces and simplified interior parts in order to stay cleaner and be to cleaned easily. The intuitiveness of the product was improved by guiding users through their interaction steps and by simplifying their actions.

The insights obtained with the ECC procedure were mostly related to (dis)pleasures that users experienced (a) in relation with the original interior, and (b) in relation to interacting with the original interior. In order to design a new interior that facilitates human flourishing, it was needed to take a step back from the current interior and retrieve a deeper understanding of users' (c) relation to driving the car. For that reason, a second study was performed, that aimed to determine the relevant pleasures, personal significances and virtues in relation to driving or owning a car.

5. Defining the values of Positive Design Framework

One of the challenges that designers experience when using the Positive Design Framework in design practise is to identify which pleasures, personal significances and virtues (hereafter called "ingredients for flourishing") are of relevance to their design case. Two moments that were experienced in this design case could be of use when being faced with this challenge. The first moment was to identify which ingredients for flourishing were of relevance for driving and owning a car. The second moment was to understand how to select those ingredients that were most interesting and relevant.

To obtain a broad overview on the ingredients for flourishing an online questionnaire was filled out by hundred participants, representative for the Dutch Car2Go user group. They had the Dutch nationality; were aged between 21 and 68 (67% male and 33% female). It was decided to send the survey to non-users of sharing services to retrieve the underlying ingredients for flourishing of driving a car without linking to pre-defined emotions of any prior use of a sharing service. The questionnaire included questions that represented each of the three well-being ingredients.

Participants were asked to give examples of recent experiences while driving a car. It was found that by asking participants about their latest experiences, it was easier to retrieve these moments of pleasures, personal significances and virtues.

Pleasure question: “What are your moments of pleasure during driving? Name examples.”

Personal significance question: “What are your goals of driving? Name examples.”

Participants were also asked to give three definitions of a virtuous driver, by choosing from a list of commonly addressed virtues, derived from ‘Character Strengths and Virtues’ (Christopher Peterson and Martin E.P. Seligman, 2004). It was also possible for the participant to propose additional virtues that they found to be relevant.

Question: “Can you give three definitions of a virtuous driver? Please give examples of experiencing this in a real situation.”

The study resulted in a large data set with a total variety of 17 pleasures, 15 personal significances and 20 virtues. The ingredients for flourishing that were experienced to be most relevant were identified by the number of times that hey were mentioned.

5.1 Pleasures

This source concerns the momentarily enjoyment, pleasure, where the focus is on the moment and the positive.

In total 17 different moments of pleasures were experienced, Most pleasure in driving was experienced when listening to good music, experiencing freedom, racing, passing along nice scenery, interacting with other users and when they enjoyed nice company (see Figure 4). These listed happy moments were rated by 25% of the people or more, which was significantly higher than the other 11 moments of pleasure that reached a maximum percentage of 10%.

> “ I would wave at the person that drove the same car even though I didn’t know him, that was so funny!”

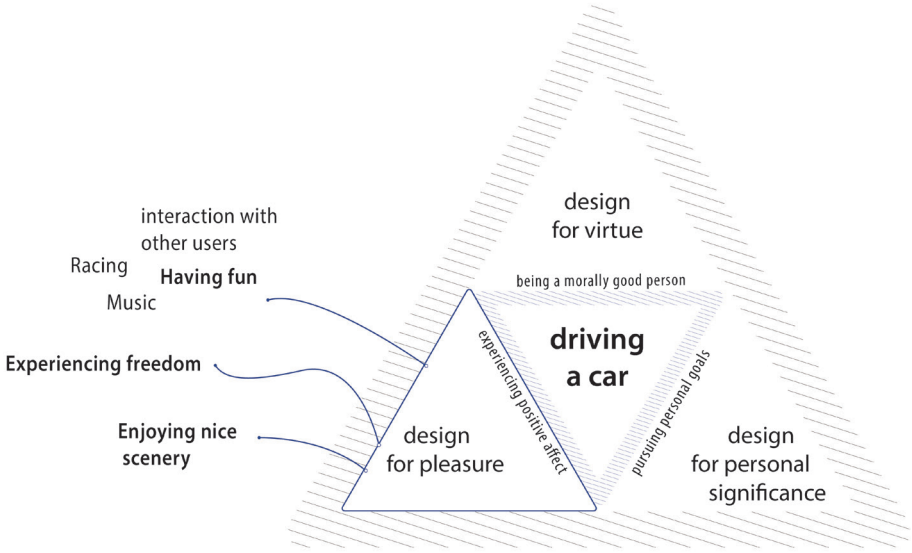

Figure 4 Outcomes of design for pleasure

5.2 Personal significance

Personal significance focuses on long or short-term strivings, goals and aspirations within the experience of driving a car. Four out of fifteen goals were mentioned by 40% of the people as most important. Goals that were pursued most often during a drive: making efficient use of time, experiencing a moment of contemplation and transporting goods (see Figure 5).

> " Driving always gives me a moment to think things over, and like I was on the autopilot, all of a sudden I was at my destination. "

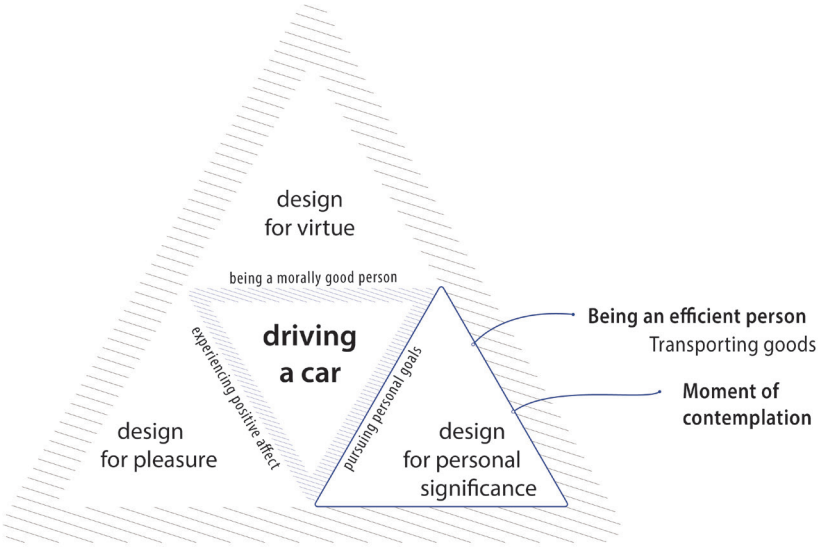

Figure 5 Outcomes of design for personal significance

5.3 Virtues

Design for virtue represents the moral level, i.e. happiness that comes from being virtuous. The results showed what a virtuous driver meant for 75 participants; being social, friendly and controlled on the road (see Figure 6). For 77% of those 75 participants 'controlled' was one of the properties of a virtuous driver. Examples showed such a driver to be constant in their behaviour, anticipating traffic and comfortable behind the steering wheel. For 52% of the participants a virtuous driver was seen as social when following rules, giving priority to 'weaker' traffic and by communicating their actions clearly with others. 29% of the participants choose friendly as one of the virtues of a driver, showing gratitude when given priority by other road participants and by laughing and waving to each other.

> " I treat people with respect, and expect they will return the favour. "

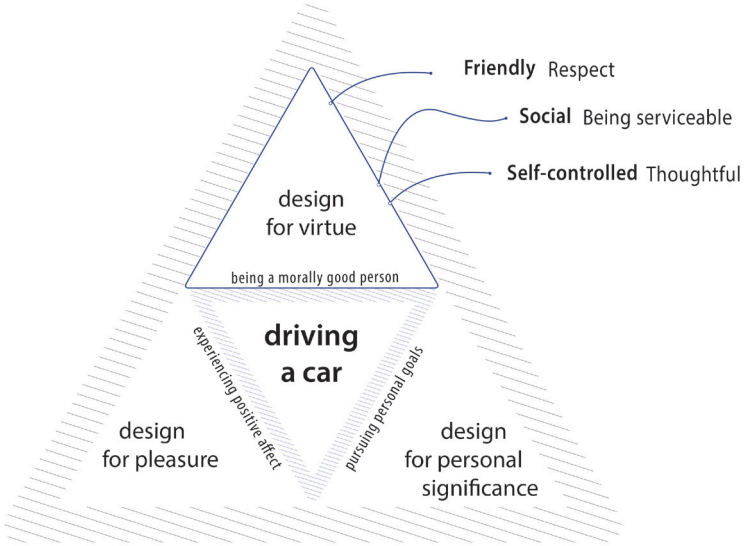

Figure 6 Outcomes of design for virtue

Though pleasures, personal significances and virtues of relevance were found, it was still the question, which of these are most interesting to design with.

6. Conceptualizing by finding conflict fields

Framing the relevant outcomes along the sources of the Positive Design Framework showed that some pleasures, personal significances and virtues stood in conflict with each other.

According to the principles of Positive Design, long-term happiness can be obtained by solving areas of conflicts that elicit happiness independent of each other (Desmet & Pohlmeyer, 2013). Solving a conflict can be a form of happiness, because it makes it possible for people to have important values simultaneously (Ozkaramanli & Desmet, 2012).

During an afternoon session a list was made of the users interest found during the research. Together with a group of Car2Go researchers interesting conflicts were listed within this set of interests. Three areas of conflict in this direction were found and resulted in the most interesting and relevant sources of pleasure, personal significance and virtue for this design case.

The first area of conflict was found in 'being a social and self-controlled driver' while 'having fun in driving'. Fun in driving was mostly perceived as 'racing' through the city, sharing good company, interacting with others or putting loud music on (see Figure 7). 'Having fun' and 'being distracted' are expected to influence virtuous behaviour, making it less social in traffic and less self-controlled.

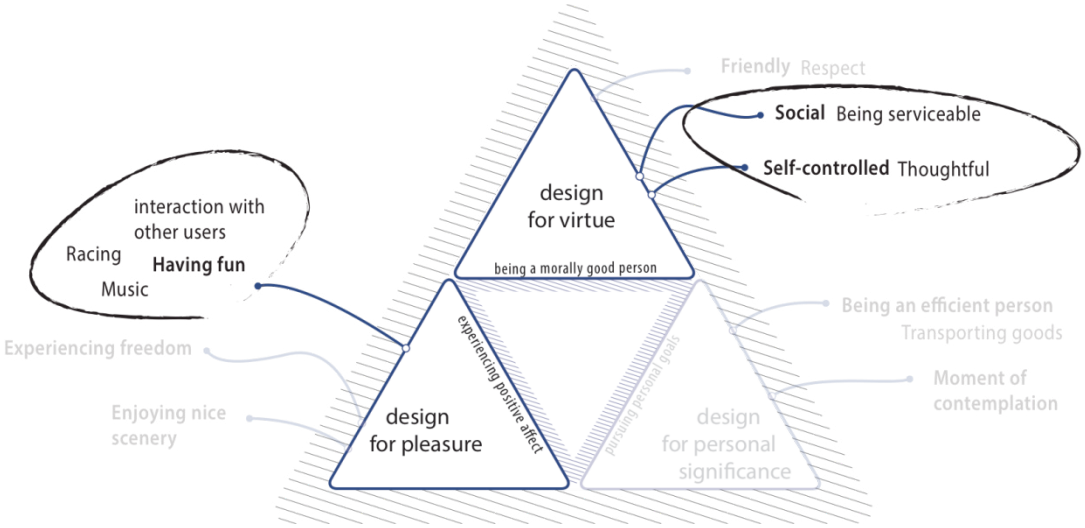

Figure 7 Conflict field 1

The second area of conflict was found in 'experiencing a moment of contemplation' while 'being serviceable for the community' (see Figure 8). Allowing people to contemplate about who they are, where they are going and where they just came from, makes them pre-occupied with their own personal goals instead of aware of the presence of others in the Car2Go community.

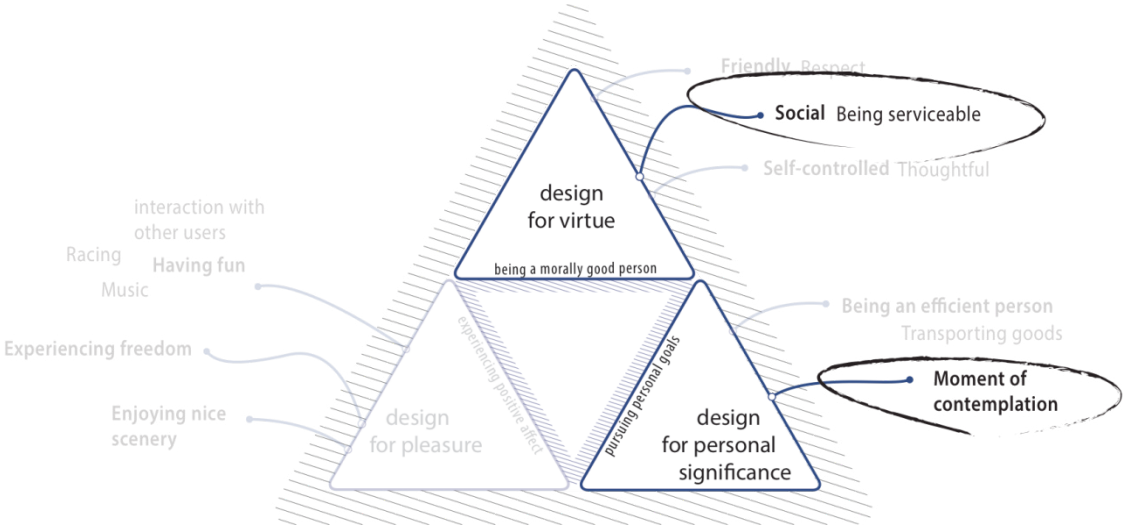

Figure 8 Conflict Field 2

The last area of conflict was found in the pleasure of 'experiencing a moment of freedom' and 'being a thoughtful and self-controlled driver' (see Figure 9). Acting with a sense of freedom can mean acting spontaneous and adventurous, which stands in contradiction with thoughtful and self-controlled driving.

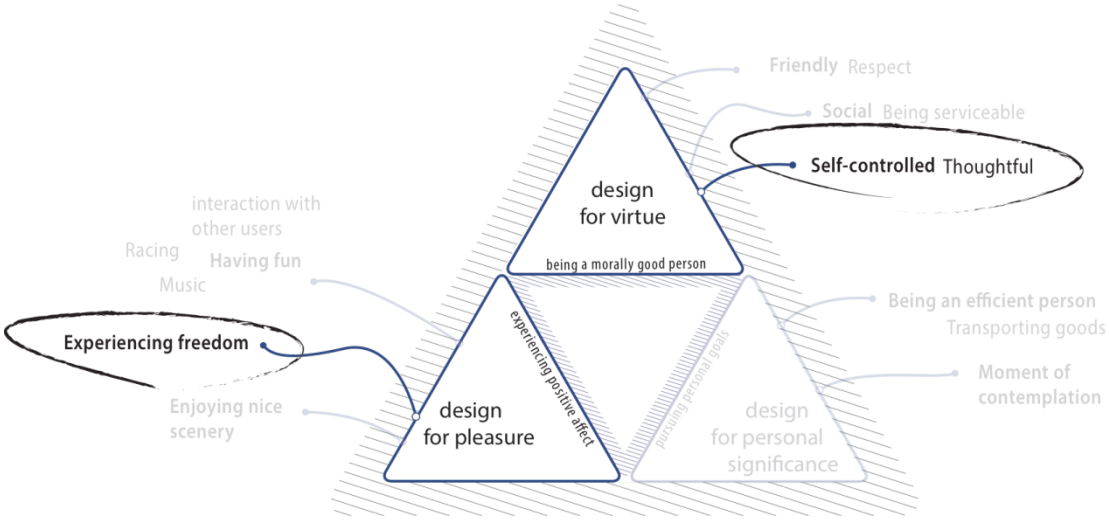

Figure 9 Conflict field 3

Solving the conflict fields should result in design elements that will contribute to human flourishing in a specific design case. To find solutions for these areas of conflict, a method for idea generation should be used.

In this design case a brainstorm was conducted to find solutions for these areas of conflict. All three areas were written down on three large sheets of paper and within three hours, several ideas were generated. Through conceptualizing it became clear that well-being

driven design, for this design case, was not simply a redesign of the seat or dashboard. It was about defining a new interaction between the user and the city by means of the product. Positive design research showed that users almost never see a product as a source of happiness, but as an important resource that contributes to activities that are sources of happiness (Desmet, 2011).

For every conflict area, one concept was chosen that solved the duality in a meaningful way without affecting the commercial heritage and strategic advantage of Car2Go. Above all it had to be implementable in the existing Car2Go system. These factors were important for Car2Go to address, because the design concept must align with the core values of the company.

7. Finding the sweet spot

The second challenge designers encounter is how to integrate all three sources in a meaningful way i.e. finding the sweet spot (see Figure 10). Positive Design targets the overlap of pleasure, personal significance and virtues to enable human flourishing, which entails proper functioning and living in a balanced life (Desmet & Pohlmeyer, 2012). Using the conflicting areas to solve dualities in the Positive Design Framework can be seen as the first step in finding the sweet spot.

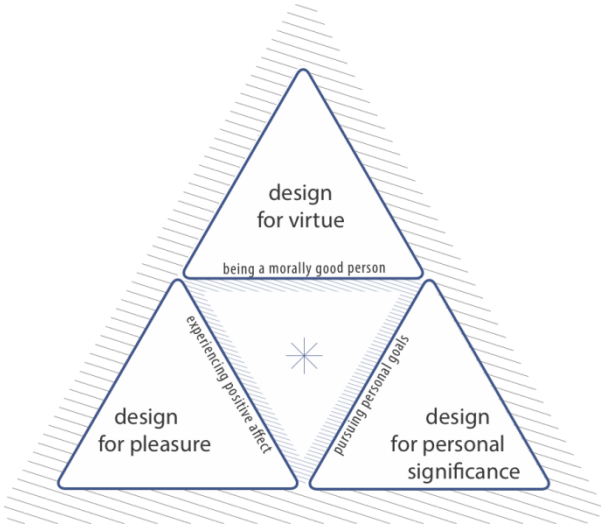

Figure 10 The sweet spot, the centroid of the Positive Design Framework

The second step is to integrate the design outcomes of these conflicts into one design. In this design case the only way of implementing all design outcomes in one design, without interfering with the simplicity and intuitiveness of the product, was to add the extra dimension ‘time’, in which experiences would unfold. Hereby, the user experiences the different sources of well-being at different stages of the usage cycle. Here the different stages of usage correspond with the user groups identified by Car2Go; the fading, the active and the heavy driver.

7.1 Fading driver: Being a social and self-controlled driver while having fun

This interaction looks at how social behaviour could be stimulated in a controlled manner while at the same time being fun. The fading driver will have social interaction with other Car2Go users, by being able to give or receive driving rewards for social behaviour in traffic (see Figure 11).

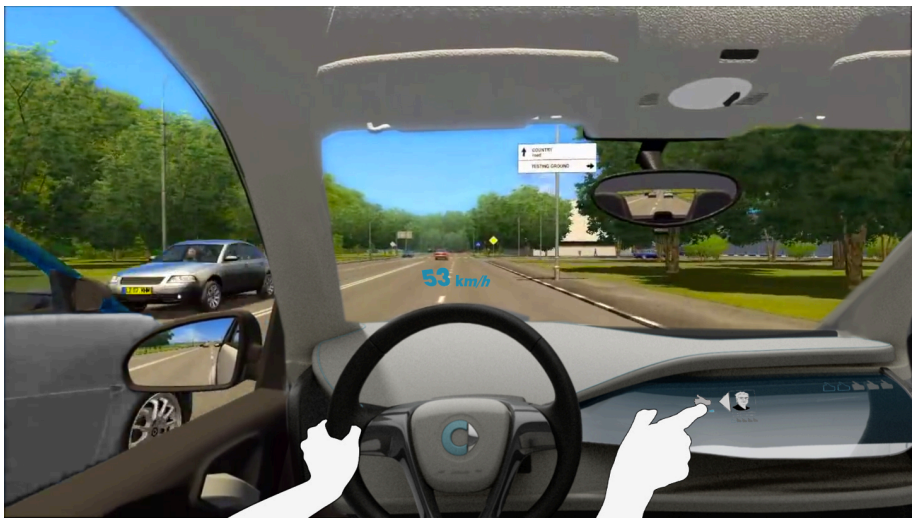

Figure 11 A rewarding system to interact playfully and stimulate social behaviour.

7.2 Active driver: Experiencing a moment of contemplation while being at service to the community

The active drivers will become aware of the possibilities of collective collaboration in the city by being mutually visible on each others navigation displays, and actively interact by giving or receiving social driving rewards (see Figure 12). Adding a map and seeing each other's position makes the user aware of its own position in a larger system.

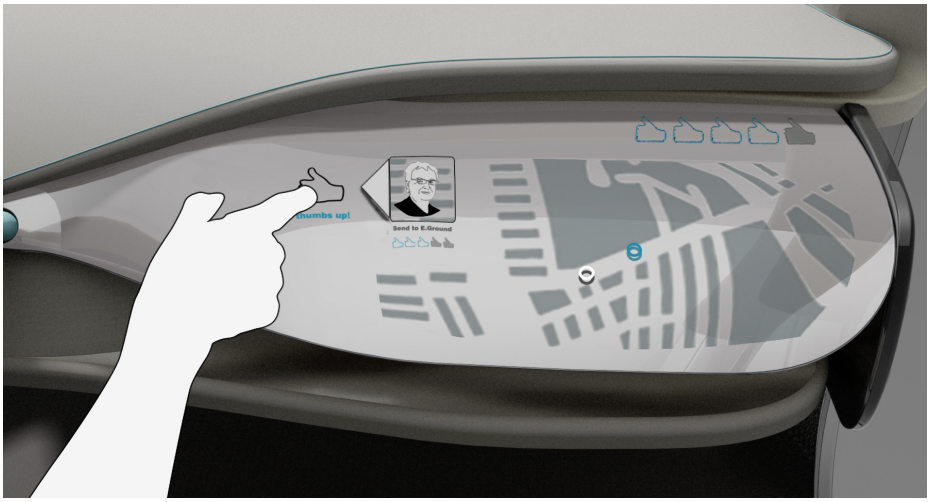

Figure 12 Adding a radar map to actively interact with fellow users by anticipating on others behaviour.

7.3 Heavy driver: Being a controlled and thoughtful driver, yet experiencing freedom

The heavy driver will have more privileges and personal bonding with the system by being guided through the city with the use of rewards to stimulate explorative behaviour (see Figure 13). These incentives make people explore the city, which is valuable to experience freedom, according to whatever the system indicates to be acceptable.

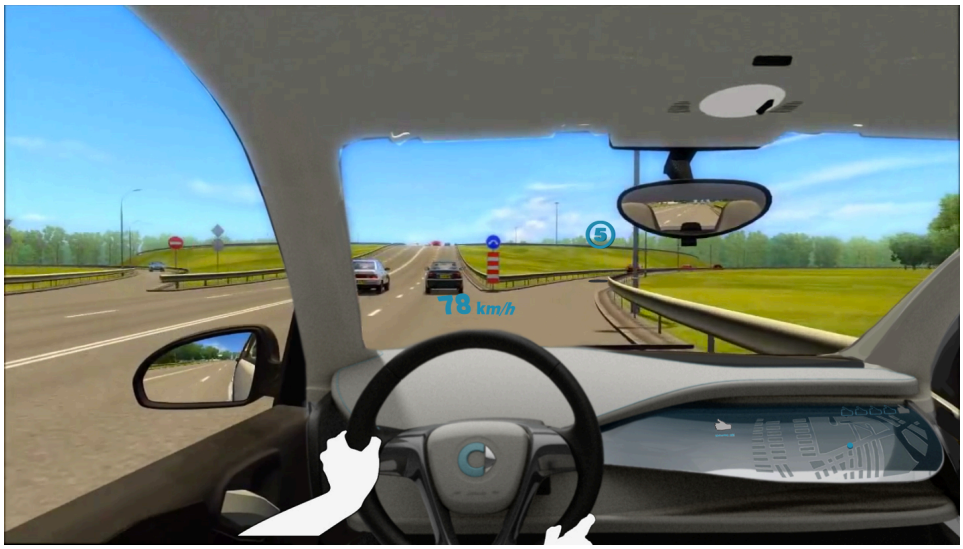

Figure 13 A Head-up display gives the user the possibility to learn more about its city environment by rewarding explorative behaviour.

The conflict areas were consciously placed in these stages of use to correspond with their needs and behaviour. The fading driver is a driver that should get to know the system and the drivers, as they do not make use of the system that often. They will learn and have fun while doing so. The active driver already knows the system and grows from a simple user to a participant by being more serviceable to the community. The heavy driver already knows the community and is out for adventure by feeling free to take own actions and getting to know the city.

9. Conclusion & Discussion

This paper describes a design case in which a Car2Go car (for car sharing) was designed with the explicit intention to design for subjective well-being. While all design has an effect on well-being, not all design processes deliberately envision a positive well-being effect. Although some theoretical insights are available about how design can contribute to well-being, we found that these insights are not easily implemented in the design process. While the three ingredients of design for well-being included in the model of Desmet & Pohlmeyer (2013) are easy to understand, it remains a challenge to use them effectively in the practice

of product design. At the same time however, the design case indicated that the three ingredients can be of use when designing and organising user research. This may indicate that the ingredients can be made more concrete by formulating associated research questions. These questions can help bridging the abstract ingredients to concrete design considerations. While the current design case focused on product design, it may be possible to formulate such questions to be applicable to other design domains, like interior and interaction design.

The two studies that were conducted in this design case did generate valuable insights on how to design for pleasure, significance, and virtue. We found that especially conflicts or tensions between ingredients stimulated design creativity. In addition, we found that the challenge of integrating insights about three ingredients was possible by introducing the factor of time in the design process: various sources of well-being unfold during a usage episode. Thus, the use of time as a design variable has been shown to be of use when designing for meaningful experiences (Hassenzahl et al., 2013).

The choice of such a complicated product in a new scenario (car sharing) proved to be ambitious. This makes it more difficult to compare the outcomes with other design projects. Therefore, to determine if this approach can also be of use to the design for well-being in other product categories, further exploration will be valuable.

Because time was added as a factor in the design, it would be valuable to measure the impact on subjective well-being over a longer period of time. A 1:1 mock-up of the interior was build to test the initial effect on momentary pleasures, with promising results. However, to measure the long-term impact on e.g. flourishing, a mock-up is not sufficient. That requires a working prototype in practice.

Because currently no ‘positive design’ methodology is available, the approach to designing a Car2Go concept was partly based on improvisation, as is inherent in design practice. As a consequence, the process was not linear and it can be made more efficient. More design cases like these will further broaden the scope of Positive Design in practise and can be the stepping-stones towards a Positive Design methodology.

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