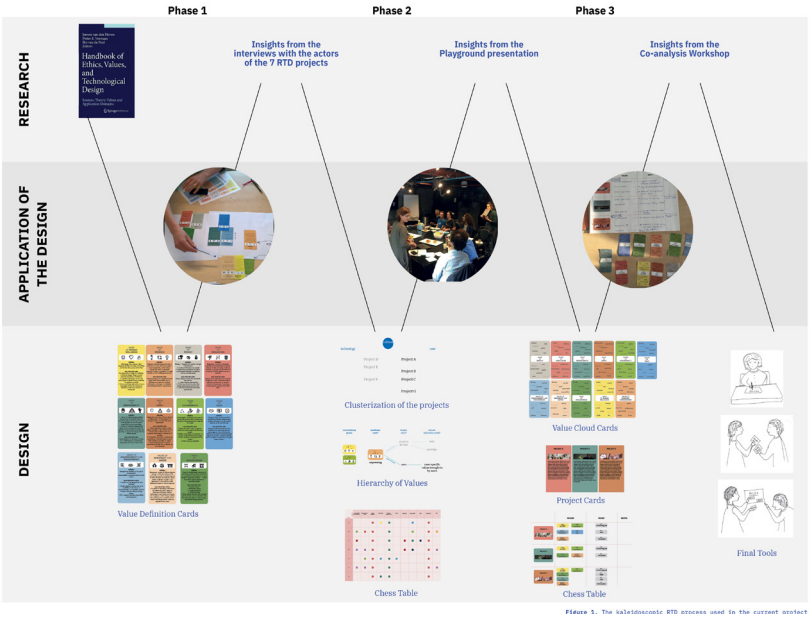
# Proceedings of the 4th Biennial Research Through Design Conference 19–22/03/2019




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Method& Critique *Frictions and Shifts in RTD*

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# Research Through Design for Accounting Values in Design

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**Abstract:** Although Value Sensitive Design offers a theoretical and methodological framework to account for values in design, many questions and controversies are left. The current work aims to contribute to this value debate, by taking stock of a large Research through Design (RtD) programs including their developed artifacts, to explore to what extent the explicit and tacit knowledge generated enabled actors to make public and cultural values explicit. Differently put, seven ongoing RtD projects have been studied in an elaborate RtD process articulated in three phases, differentiating in their focus: 1) understanding the values involved in the RtD projects; 2) share insights to steer peer debate on Research on Values, and 3) co-analyse the data and generate further insights. The current research brings forward two main contributions to the RtD community. On the one hand, using ongoing RtD projects in an RtD approach provides a kaleidoscopic perspective on how research and design constantly inform each other through the application of design. On the other hand, the adoption of this kaleidoscopic RtD approach in the context of multidisciplinary research on values acts as a catalyst that generated knowledge and insights to stimulate the debate on accounting values in design research.

**Keywords:** artifacts; awareness; definition; ethics; explicit; tools, values;

## Introduction

Values are oftentimes defined as major beliefs steering our behavior and driving our everyday actions. However, when it comes to the design discipline, and in particular technology development, this has been perceived, until the late twentieth century, as a value-neutral task that only meets functional requirements (Florman, 1987). Interestingly, recent years have seen a growing tendency to include moral and societal values in design, leading to the development of different values-oriented approaches such as: Values at Play (Flanagan et al. 2005; Flanagan and Nissenbaum, 2007), Values in Design (Detweiler et al. 2011; Knobel and Bowker, 2011) and Value Sensitive Design (Friedman et al. 2002). Among these, the latter is generally considered to be one of the pioneering approaches defining "a theoretically grounded approach to the design of technology that accounts for human values in a principled and comprehensive manner throughout the design process" (Friedman et al. 2002, p. 1). In other words, Value Sensitive Design can be conceived as an effort to provide a theoretical and methodological framework to handle the value dimensions of design work (Friedman et al. 2002). As a matter of fact, Friedman and colleagues (2002) argue that, even though consciously addressing values in the design field has gained relevance over the years, it is still lacking a systematic way of actually doing that. Additionally, recent works emphasize the need for more deliberate support to account for values in multidisciplinary projects featuring a diversity of actors (Yetim, 2011). For example, Yetim (2011) argues that Value Sensitive Design is lacking systematic methods and tools to promote a shared reflection on values during the design process in the dialogue between stakeholders. Other scholars, such as Kujala and Väänänen-Vainio-Mattila (2008) and Pommeranz and colleagues (2011) highlight the importance of a conscious reflection on stakeholders' own values, while Borning and Muller (2012) argue that stakeholders' values should have greater participation and relevance throughout the entire design process, starting from its earlier stages. This latter point of attention is also identified by Van den Hoven and colleagues (2015) as one of the three characteristics shared among the various approaches for accounting values in design. The other two characteristics mentioned are: 1) the belief that designers can use their artifacts to communicate and express specific values, eventually steering users' behavior in a certain direction; and 2) the claim that explicitly addressing values can add a significant and positive moral relevance to the design outcomes. The current work has been positioned with the Delft Design for Values Institute (Delft Design for Values Institute, 2018), where 'Design for Values' is used as an umbrella term that encompasses a diversity of design approaches, theoretical backgrounds, considered values, and application domains. We, therefore, derive from a general definition of values and refer to values as "the principles or standards of a person or society, the personal or societal judgment of what is valuable and important in life" (Simpson and Weiner, 1989). The current work aims to contribute to this value debate, by taking stock of a large Research through Design (RtD) program that focuses on scientific and technical research, specifically using design as a research method.



## Context: Research through Design (RtD) program

In order to stimulate the research in the creative industry and in the field of different design disciplines, in 2014 the Netherlands Organisation for Scientific Research (NWO) launched a research program called 'Research through Design' (NWO, 2014).
This unique program aims at clarifying distinctions and characteristics of design research in relation to the more established fields of science. More specifically, the program aims at high-quality design as a research method and a broad translation of the knowledge developed in the projects into practice, also enlarging the body of knowledge and skill of the design disciplines. The awarded RtD projects are expected to add a reflective element via an artifact; in addition to exploring new technological possibilities, they focus on creating and transforming social meaning, public and cultural values, and aesthetics. The main focus of the RtD program was on the gained knowledge situated within language, drawings, artifacts, processes and models to strengthen the scientific status of the design field. Nonetheless, the artifacts that are studied and developed during design research do generate explicit and tacit knowledge, which is a promising resource to make public and cultural values explicit.
The main objective of the current work is to collect and safeguard insights from this program to inform our research on Design for Values, using the particular RtD projects as "Lab", "Field" and/or "Showroom" practices (Koskinen et al. 2011). Seven ongoing RtD projects have been selected, including their RtD process and developed artifacts, to explore to what extent they manage to address human values. These seven RtD projects lasted for about two years, collaborated in multidisciplinary consortia of at least two universities, one or multiple designers, and at least another stakeholder (such as municipalities). Together they cover a broad array of topics and stretched a variety of societal or technological challenges. Figure 1 shows an overview of the seven RtD projects featuring for each one of them a brief description, the parties involved and the knowledge and artifacts generated.
The next section describes the elaborate RtD methodology that has been used throughout the current project; first in a general way and then detailing the methods used for each of the three phases. Next, the most useful insights of the research are presented. After that, the discussion of the analysis' outcomes brings forward key elements for the design of the final prototypes. To conclude, by means of explaining our final outcomes, we draw the attention on how our final design contributes both to Research through Design and design for values programmes.

| Project name and main investigator | Brief description | Parties involved | Knowledge generated | Artifacts generated |
|---|---|---|---|---|
| **Double Face 2.0**<br>Martin Tenpierik, Associate professor of Building Physics (Faculty of Architecture and the Built Environment) | DoubleFace is a translucent system of blocks filled with Phase-change materials, that can lead to a huge reduction in energy costs when used in walls | Delft University of Technology and Eindhoven University of Technology | "A computational designable element that can be tailored to and produced for any given design and environment. " | 3D Printed Prototypes |
| **Participatory City Making**<br>Ingrid Mulder, Associate professor of Design Techniques (Faculty of Industrial Engineering) | "The aim of the project is to develop a framework that can enhance participatory city making of the various groups, in particular between grassroots initiatives and the public administration" | Delft University of Technology, Erasmus University Rotterdam and Rotterdam University of Applied Sciences (Research Centre Creating 010)" | Insights on how to "enable heterogeneous stakeholders to participate actively, explore the collaborative envisioned potential, and articulate their own role in the new city making process" | Tools and Prototypes "for new city making practices" |
| **Resourceful Ageing**<br>Elisa Giaccardi, Professor of Interactive Media Design (Faculty of Industrial Engineering) | "The project promotes a view of older people as very well capable of creatively dealing with the everyday challenges they encounter as they age" to empower those to age resourcefully | Delft University of Technology and Avans Hogeschool, Philips Design | Data to find design solutions for elderly people "better suited to their needs and everyday practices, and avoids the waste of investment and lack of adoption of existing "fool-proof" technologies." | Objects and services to "support the everyday practices of resourcefulness of elderly people" |
| **Smart Clothing**<br>Kaspar Jansen, Professor of Emerging Materials (Faculty of Industrial Engineering) | The project aims at developing "new and innovative solutions for clothing which can actively control our body temperature" | Delft University of Technology and Hogeschool van Amsterdam, Teijin Aramid, Tanatex and Inuteq | "Details of the design of actual clothing products using smart technologies depending on many parameters ,different for each application" | "A Tool (a thermal model) for designing thermoregulating clothing" and prototypes |
| **My Futures**<br>Pieter-Jan Stappers, Professor of Design Techniques (Faculty of Industrial Engineering) | "The aim is to come to solutions to empower individuals to better confront their possible futures, think about them, and act toward them." | Delft University of Technology and Design Academy Eindhoven, Muzus, KoDieZijn, STBY, Zuidzorg and Vivent, Achmea and CZ, Cities of Rotterdam and Eindhoven, Vereniging Nederlandse Gemeenten | Three specific moments in lives "where people seem to have a need to discuss their thoughts, feelings and expectations with others." | Set of toolkits and templates to "trigger and support the involved people to think and discuss about their thoughts and feelings." |
| **Beyond the Current**<br>Clarine Van Oel, Assistant professor at Architecture (Faculty of Architecture and the Built Environment) | The project aims to address "energy-efficient renovation not only as a technological challenge, but also as an architectural and a social challenge." | Delft University of Technology and Utrecht University of Applied Science, De Alliantie, Mitros, Haag Wonen, Eigen Haard, Stadgenoot, Van Schagen Architecten, INBO, FARO, BNA, NRP and Huren met Energie | "Solutions for increasing the energy efficiency of four-storey apartment blocks" | 3D virtual design models to be used by tenants to test the proposed solutions |
| **Mycelium-based Materials for product design**<br>Elvin Karana, Associate professor of Emerging Materials and Design Engineering (Faculty of Industrial Engineering) | The project explore the potential of fungi-based materials for product design | Delft University of Technology, Utrecht University and Design Academy Eindhoven | "Feedback for the development of the material for improving the properties of the mycelium" | Toolkits and prototypes to gather users' input and to inspire designers for product application ideas of mycelium based materials |

Figure 1. Overview of the seven RtD projects. The information has been retrieved from the respective project website.

## Methodology

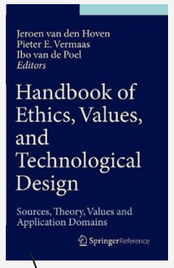
The current work has adopted an elaborate RtD approach, in keeping with the recent encyclopedic chapter by Stappers and Giaccardi (2017), to enrich the debate on Design for Values. Figure 2 visualizes our kaleidoscopic RtD process and shows its three core components: Research, Design, and the in-between moments, which we refer to as the Application of the Design. More specifically, the Research component refers to knowledge generated and not embedded (yet) in any design outcomes, whereas the Design component refers to the development of stimulus materials to interact with. In this way, the designerly interventions aimed to provoke discussion and to showcase in an interactive yet informative manner the knowledge gained. The third component of the RtD process, that we coined as Application of the Design, highlights the interaction between the designed outcomes (such as tools, guidelines and data visualizations) and the people using them, and brings forward the generated insights guiding our current work. The visualized process shows the iterations that eventually led to the final design outcomes, aiming to generate further knowledge and to reflect on values in design. In order to better support the articulation of our process, we de-structured it in three different phases, related to the chronological development of the project. Each phase contains the three components previously mentioned: some kind of knowledge (Research) informed the design of a tool or of an artifact (Design) which generated further knowledge when used by people (Application of the Design). The three phases are defined as follows:

1- Understand the values involved in the seven RtD projects;
2- Share insights to steer peer debate on research on values;
3- Co-analyze the data and generate further insights.

In the next sections, these three phases are introduced in more detail.

**Phase 1** **Phase 2** **Phase 3**

**RESEARCH**




**Insights from the interviews with the actors of the 7 RtD projects**

**Insights from the Playground presentation**

**Insights from the Co-analysis Workshop**

**APPLICATION OF THE DESIGN**







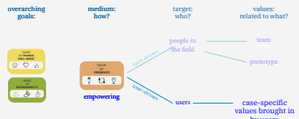
**DESIGN**




Value Definition Cards



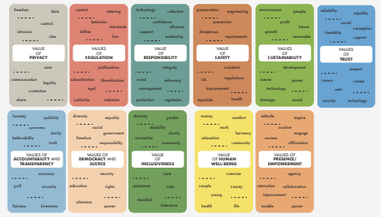

Clusterization of the projects




Hierarchy of Values



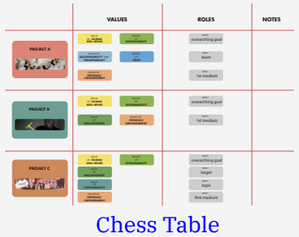
Chess Table



Value Cloud Cards




Project Cards




Chess Table




Final Tools

**Figure 2.** The kaleidoscopic RtD process used in the current project

## Phase 1: Understand the values involved in the seven RtD projects

The first phase aimed to elicit the values that were at hand in the various projects and to understand which roles the values did play. Hereto, interviews with the actors of the seven RtD projects were conducted.

**Setup**

The principal investigators of the seven RtD projects were invited via email to participate in a two-hour interview (focus group style) to get more insights about their project, in particular about the design process, the design outcomes and their relation with public and cultural values. At least one member of the team was required, but more members of the consortium were welcomed. In total, fifteen participants, either makers or researchers actively involved in the particular RtD projects, joined the seven interview sessions. The semi-structured interviews were conducted by two authors of the current project, which previously prepared the material. First, the interviewees were invited to briefly explain their projects. Then a set of cards was presented to the participants, and they were asked to point out which values, in their opinion, were included in their projects and to further elaborate on the reason of their choice. Finally, the interviewees were asked to give feedback and final comments.

**Designed artifacts**

The current work is part of the Delft Design for Values Institute (DDFV), to which at least one researcher of each RtD project is affiliated. Therefore, the foundational manual of the DDFV, the Handbook of Values and Ethics (van den Hoven et al. 2015), was considered as the common ground for the seven RtD projects to account for values in design and inform the set up of the current work. More specifically, the book in itself can be seen as an artifact that aims at being a synthesis of the multitude approaches related to the practice of Design for Values, providing a shared base to support further discussion on this practice and eventually "bring technologies more in sync with our values" (van den Hoven et al. 2015, p. 1). The Handbook takes into account eleven values that, according to the editors, represent the "moral values of users and society at large" (van den Hoven et al. 2015, p. 1). The third part of the book is an exploration of these values and of what it means to design according to them. This section of the book informed the design of the main tool used to conduct the interviews: a set of eleven Value definition Cards (Figure 4) depicting each value through its definition and a set of three selected icons. The aim of these cards was to support the participants in identifying which values were included in their projects, and subsequently in relating them to different key moments and/or roles in their RtD process.

**Data collection**

In total seven interviews were recorded and pictures of both people and materials after their use were taken.

**Findings**

When the cards were used by the interviewees ("Application of the Design"), the given definition of the values circumscribed the possible meanings to the specific ones presented in the handbook. Therefore, the definition cards asked for appropriation: some participants felt the need to redefine the meaning of the values so as to be more in keeping with their own perception. In the first interview, for example, the Value of Presence was renamed as Value of Empowerment. This modification to the card encouraged the following interviewees to do the same and to challenge the provided values definitions.

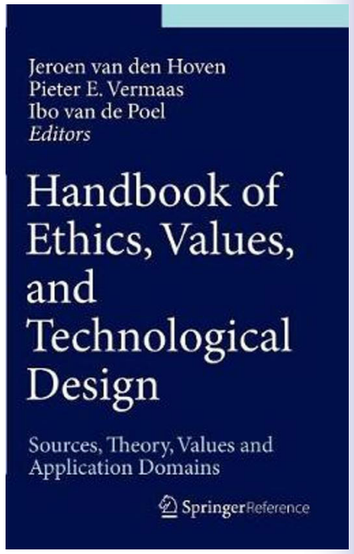



Figure 3. The Handbook of Ethics, Values, and Technological Design by Van den Hoven, J., Vermaas, P.E. and van de Poel, I. (Eds.) (2015)



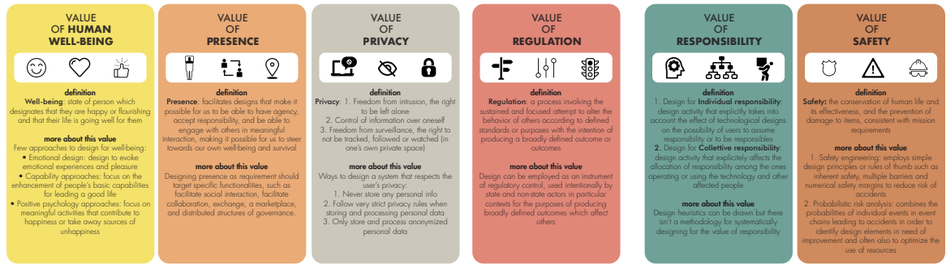



**Figure 4.** Value Definition Cards

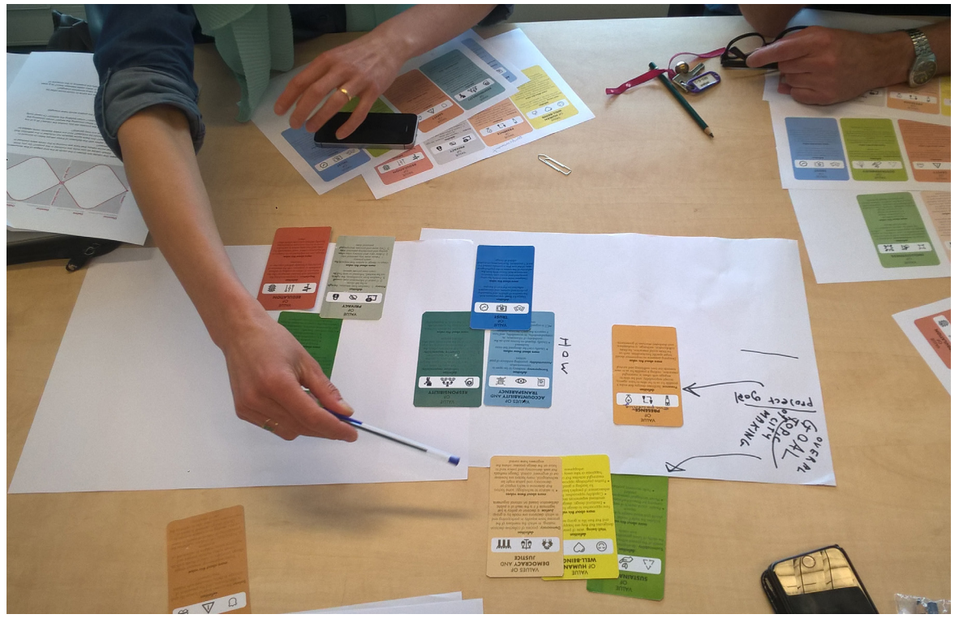


**Figure 5.** The Application of the Design moment when the interviewees were using the cards

## Phase 2: Sharing insights to steer peer debate on research and design on values

The data and the insights from the interviews were analyzed in order to be presented during the so-called Playground presentation to stimulate debate among peers in the Design for Value research program and to gather new insights to continue the research.

**Setup**

The invitation to give a pitch presentation during an informal meeting organized by the DDFV has provided the initial condition for the feedback session. The idea of these informal sessions, that take place monthly, is to share in an interdisciplinary context relevant insights to nourish the debate about values in design. Therefore, a variety of colleagues from different faculties are invited to propose pitch presentations of about ten minutes able to trigger further discussion. For the presentation, the data collected from the interviews were analyzed and embedded into visual artifacts to be showcased to peers. A slide deck presenting the aim of the current research, the projects involved, the initial findings and questions to trigger further discussion, was prepared to be displayed.

**Designed artifacts**

The visualization in Figure 7 shows the clusterization of the projects, that was done in order to identify common patterns and specificities among them. The criterion used was related to the different approach through which the projects were addressing their main challenge, which was for all a cultural one. The first cluster encompasses the projects that used the application of a technology as a starting point while the second one includes those that started from the users' needs and wants. Figure 8 presents the hierarchy related to the roles that the values played within the seven RtD projects. For example, in each one of them, the Value of Sustainability and of Human Well-Being were recognized as overarching goals and the Value of Empowerment as the medium through which achieving those. Figure 9 is a chess table presenting, for each project, the values involved and their roles according to the interviewees. In the left column are located the projects and in the upper row the eleven values at stake. The colors used to distinguish the dots are added to point out the role of every value used in each project. In this way, the chart aims to visually strengthen the features shared among the analyzed projects.

**Data collection**

The insights and feedback from the audience were written down to be elaborated after the meeting.

**Findings**

The exchange of insights in the Playground meeting inspired indeed an interesting debate, due especially to the interdisciplinary atmosphere of the event. The differences in the values perceptions, due to diverse backgrounds of the participants, encouraged us to look at the values from a broader point of view, challenging the knowledge gained from the interviews and synthesized in the proposed visualizations.

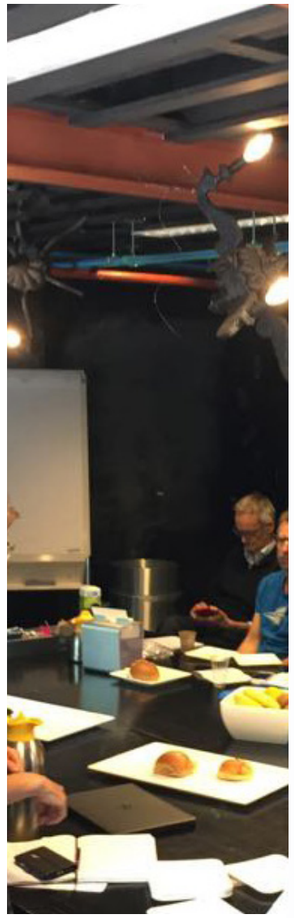


**Figure 6.** The informal atmosphere of the Playground presentation




**Figure 7.** Clusterization of the 7 RtD Projects

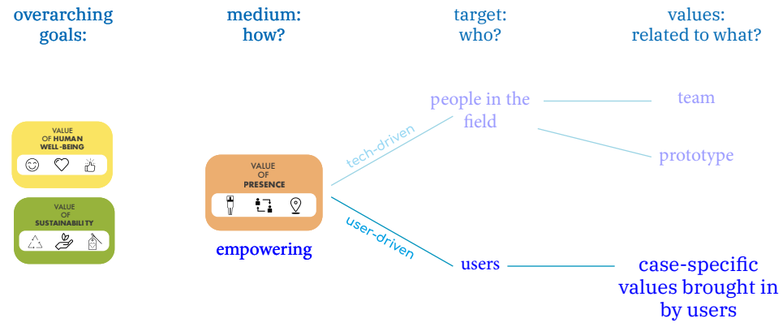



**Figure 8.** Hierarchy of Values

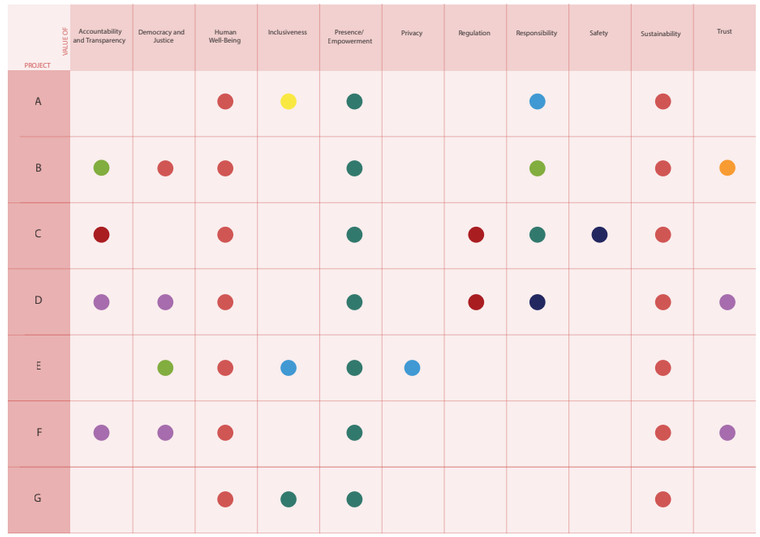



**Figure 9.** Chess Table presenting the values of the 7 RtD projects and their roles

## Phase 3: Co-creation of insights and consolidation

The objectives of the third phase were threefold. First, we wanted to create awareness about the values in the design field by keeping the discussion ongoing. Second, we aimed at generating new lenses through which read the data collected in the interviews, by gathering inspiration from people not directly involved in the research. Finally, we wanted to foster the debate about the roles that values play in design projects by providing our insights as fertile ground. Therefore, a co-analysis workshop has been organized to achieve these three objectives.

**Setup**

The knowledge generated from the Playground presentation informed the setup of this phase. To achieve the aims of the current phase, a co-analysis workshop of two hours was organized. The invitation for the workshop was diffused through the DDFV newsletter and through personal emails that the researchers sent out to the actors of the seven RtD projects previously contacted. Five respondents from two of the RtD projects accepted the invitation. For the workshop, a tripartite structure has been chosen to mirror the three objectives of the phase. Next, three supporting tools were designed to facilitate the knowledge generation process. At the beginning of the workshop, the participants were asked to come up with a personal definition of the eleven values at stake. By means of providing space to personally reflect on the meaning of the values, the aim was to fulfill the first objective of the workshop.After that, the attendants were asked to share their personal interpretation of the values with the others in order to broaden the values definition. In the third part of the workshop, they were provided with a written description of three RtD projects and they were asked to identify the values that in their opinion were related to the projects and the roles they played within them. This exercise was articulated in two moments: the first one of personal interpretation and the second one of sharing and debate.The last step was the comparison of the table filled in by the participants and the one that we previously composed with the data gathered from the interviews. To wrap up, feedback and final comments were collected.

**Designed artifacts**

The tool presented in Figure 10 is a set of Value Cloud Cards: an iteration of the one used in the interviews modified according to the insights gained throughout the other steps of the process. These cards were not providing the participants with a given definition but with the name of the value and a cloud of words related to it. This was meant to trigger the participants to question their perception of the eleven values. The project cards shown in Figure 11 provided the attendants with a written description and an image of three chosen RtD projects. The third tool designed for the workshop (Figure 12) was a set of two chess tables featuring three columns. One contained the name and a picture for each selected project, one was for the values included in the projects and one for the reasons why those values were included. One chess table was left empty to be filled by the participants while the other had been previously filled in with the data resulting from the interviews conducted in the first phase of the research.

**Data collection**

The workshop was recorded and pictures of both people and materials after their use were taken.

**Findings**

The chess table completed during the workshop showed a different compilation of values than those chess tables resulting from the interviews with the respective project partners. It can be concluded that the values and roles identified by the participants of the workshop were not matching those that the interviewed actors pointed out to be included in their work.

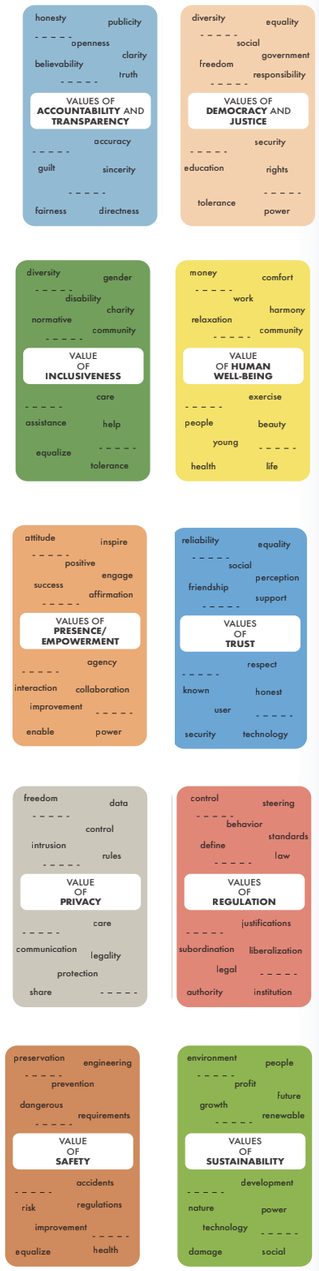



**Figure 10.** Value Cloud Cards




Figure 11. Projects Cards

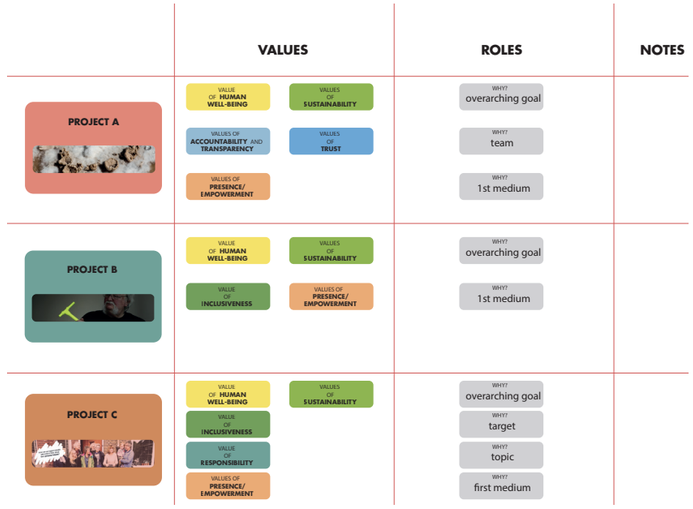



Figure 12. Chess Table filled with the data collected in the interviews




**Figure 13.** The tools after their use in the workshop

## Discussion and Conclusions

Our findings show that main insights were generated in the three intervening moments, which we referred to as the Application of the Design, more specifically when the design outcomes informed by the research were experienced by people. In the remainder of this section, we further elaborate upon these valuable insights. By combining and reframing these Application of the Design moments, three particular actions, keys in triggering a proactive and insightful dialogue on values, could be extrapolated. These identified actions seemed to contribute to the reflective attitude of the participants and they refer to the following: *1.Personal interpretation of values.* The fact that the participants felt the need to redefine the value definition when provided with a specific one, showed that giving space for personal reflection on values interpretation adds explicit relevance and deeper consideration to values *2.Enrichment of values definition.* The fact that the participants were considering others' interpretations of the values at stake, seemed to broaden the individual perception of the values and brought forward a variety of nuances to the initial meanings. *3. Alignment of different stakeholders regarding the roles that values play within the same project.* The fact that the participants were invited to point out the roles that, according to them, values played within the projects, guided them towards a mutual and shared project vision. Interestingly, each of the Application of the Design moments unlocked one of these key actions described above. When, during the interviews, participants interacted with the Value Statement Cards, a discussion was generated regarding the definitions of the values. The given definition on the cards stimulated participants of the interviews to articulate and clarify their interpretations of the values when they seemed to disagree with the presented ones. The encouragement and inclusion of personal reflection on value definitions seemed to bring forward a beneficial contribution to the actual debate on accounting for values. In the second moment, when assisting to other peers' presentations during the Playground meeting, we, as researchers, had the chance to broaden our perception on values and to include in our research deeper and more extensive knowledge. In the third moment, the importance of the roles that values play within a project (such as overarching goal, medium, prototype, team, etc) was a major discussion point. The workshop stressed the need for a common understanding regarding the roles that values play in a project, in particular when multiple actors are involved. Values can be a powerful means to guide (multidisciplinary) project actors in order to avoid misalignments and misunderstandings and to diffuse the outcome of the project in a more thorough and meaningful way. Hereto, this third moment highlighted the relevance of a conscious reflection on stakeholders' values, in line with the work of Yetim (2011), Kujala and Väänänen-Vainio-Mattila (2008) and Pommeranz and colleagues (2011).It can be concluded that the three key actions identified above trigger the integration of cultural and social values in design projects, and help in avoiding misalignments among stakeholders. The corresponding reflections seem to be particularly important for multidisciplinary Research through Design projects, especially in the early stages, where a diversity of stakeholders from different fields are involved. Moreover, the three key actions informed the design of the final outcome: a set of three tools to be used in a multidisciplinary context, where each tool aims to foster one of the above-mentioned activities. Furthermore, the design choice of a set of tools contributes to the need of a systematic methodological framework identified by several researchers in the research on values (Friedman et al. 2002; Yetim, 2011). Hence, our work contributes to a systematic way of addressing values in stakeholders' dialogue from the early stages of a design process. Each key action ("Personal interpretation of values", "Enrichment of values definition" and "Alignment of different stakeholders regarding the roles that values play within the same project") is embedded in the design of two specific set of tools for two different scenarios (Figure 14). The first one is a project brief meeting where different stakeholders are involved. The aim is for them to explicitly account for values in their design project and to be helped in achieving a common understanding of the roles the values play in it. The second scenario is the RtD Conference 2019. Here, through the designed set of tools, the visitors will be able to experience the three key actions relevant to the research on values in relation to the seven RtD projects, showcased in an interactive manner. With this exhibit setup, we aim, through showcasing a kaleidoscopic RtD process, including the richness of the seven RtD projects and the corresponding artifacts, to bring a timely and lively debate on accounting for values in design to the conference exhibit floor. In conclusion, the current research contributes to the RtD community in two different ways. On the one hand, using ongoing RtD projects in an elaborate RtD approach provides a kaleidoscopic perspective on how research and design constantly inform each other through the application of design. On the other hand, the adoption of this kaleidoscopic RtD approach in the context of research on values acts as a catalyst that generates knowledge and insights to stimulate the debate on accounting values in design research. We aim to communicate this unique contribution to the RtD community and beyond through stimulating reflection-on-action and reflection-in-action during the RtD 2019 Conference exhibit. Our designed tools embody the knowledge generated throughout the process and aim to communicate the three identified actions both for the RtD 2019 Conference and for more general use.

| | **1. "Personal interpretation of values"** | **2. "Enrichment of values definition"** | **3. "Alignment of different stakeholders"** |
|---|---|---|---|
| **General use: project brief setting with multiple stakeholders** |  Individually, the different stakeholders of the project select three words (by choosing from the given ones or by adding new ones) that for them describes the value. |  Each actor shares one value and the three words chosen to describe it, elaborating a little on what the value means to him/her. The other actors share the words they chose to interpret the same value. |  Different labels named with values and roles (such as goal, medium, team, etc) are given. Together, the actors discuss which are the roles that, in their opinion, different values should play in the project. In this way, the stakeholders have the chance to openly discuss their perception of values within the project, with the guidance of the given tools. Here, personal, societal and professional values are explicitly addressed and discussed. |
| **RTD 2019 Conference** |  At the conference, empty boards depicting the name of values will be exhibited. The participants are invited to write a couple of words that in their opinion describe the values. In this way, the board will be filled with different words linked to that value. |  The participants are invited to read what other peers wrote on the board to broaden their meanings of the values. By knowing what the same value means to someone else, the definition of the values for the participants should be enriched. |  Each one of the RTD projects is showcased as composed by several "building blocks" which represent different roles in the projects (such as goal, medium, team, artifact, ...). Each role is showcased through pictures, visualizations, written descriptions and artifacts of the projects. The visitors are invited to assign value labels to the different roles by matching them. |

**Figure 14.** The tools designed for the two different scenarios

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