

Jun 8th, 9:00 AM - Jun 12th, 5:00 PM

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### Citation

An, Y., Bos-de Vos, M., and Wang, Y. (2026) Reconciling Values in Multidisciplinary Design Teams through Structured Dialogue, in Simeone, L., Gray, C. M., Verhoeven, A., de Götzen, A., Bakırlioğlu, Y., Zohar, H., Stead, M., and Buwert, P. (eds.), *DRS2026: Edinburgh*, 8–12 June, Edinburgh, United Kingdom.  
<https://doi.org/10.21606/drs.2026.831>

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# Reconciling Values in Multidisciplinary Design Teams through Structured Dialogue

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[doi.org/10.21606/drs.2026.831](https://doi.org/10.21606/drs.2026.831)

**Abstract:** Value has been conceptualised differently across disciplines, while the negotiation of values is inherent to design collaboration. In many multidisciplinary design projects, professionals struggle to articulate or align values due to disciplinary differences, limited value awareness, and imbalanced value prioritisation, which can lead to communication difficulties or even collaboration failure. Reconciling diverse values and underlying motivations is therefore essential. This paper explores how structured dialogue can help participants in multidisciplinary design teams work towards value reconciliation. Using a qualitative approach, six structured value dialogues involving twenty participants were conducted, followed by twenty post-dialogue interviews to capture participants' reflections. The findings reveal that structured value dialogue helped participants become more aware of their own values as well as those of others. By recognising value differences and reinterpreting value tensions, participants developed a basis for value reconciliation, thereby fostering more conscious and cooperative communication within their multidisciplinary design practice.

**Keywords:** value; value reflection; value reconciliation; multidisciplinary design collaboration

## 1. Introduction

As contemporary design problems increasingly span multiple domains and knowledge areas, interdisciplinary collaboration has become a critical competence for design projects (Dorst, 2015). Participants are required to integrate diverse forms of expertise and work across disciplinary boundaries. Although such diversity can enrich creativity and expand the scope of design possibilities, it also introduces divergent value orientations that influence team communication, collaboration, and collective decision-making.

Values, understood as the principles and criteria that guide individuals' behaviours and judgements, plays a central role in shaping how participants interpret problems, prioritise goals, and negotiate with others (Schwartz, 2006). However, existing research highlights that designers, particularly those early in their careers, often lack explicit awareness of their own values and the ways these values may influence collaboration (Kaland et al., 2016; Van



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Onselen & Valkenburg, 2015). Moreover, although value tensions are inherent in multidisciplinary teamwork (Carlile, 2002), limited attention has been given to how such tensions surface, how they are interpreted, or how reconciliation takes place within collaborative design settings.

Structured dialogue offers a promising approach for revealing implicit values, encouraging participants to express personal viewpoints, encounter differences, and make sense of emerging tensions in a guided environment (Weaver et al., 2023). It creates opportunities to observe, document, and analyse how members of multidisciplinary design teams articulate and reflect on their values, thereby uncovering the underlying patterns through which value negotiation and reconciliation unfold.

Building on this premise, this study investigates the research question: *How does structured dialogue support value reconciliation among participants in multidisciplinary design teams?*

The paper first reviews literature on the divergent meanings of values, the need for value reconciliation, and approaches that facilitate value reconciliation. Through thematic analysis of six structured dialogue sessions and post-dialogue interviews, the study examines how value reflection unfolds, how tensions between values are recognised and reframed, and which conditions support value reconciliation. In doing so, it demonstrates how structured dialogue can serve as a scaffold for reflective, value-conscious teamwork and contributes empirical insight into value reconciliation processes within design collaboration.

## 2. Background

### 2.1 Divergent meanings of values in design

“Value” is a term that is frequently used in project discussions within design practice, yet it is rarely reflected upon or clearly articulated (Den Ouden, 2012). The concept of value carries divergent meanings and interpretations across different contexts. It can represent a certain amount of quality or utility that actors can make use of, often referred to as worth. It can also represent a belief that expresses what is considered good or desirable for individuals, according to an organisation, or for society (Bos-de Vos, 2020). As Gulbransen-Diaz and Hepburn (2024) suggest, value in design can be understood through three grand narratives. Within the economic narrative, value is pursued as measurable utility and experience, manifested through branding and design-driven innovation. The sociological narrative frames value as a result of negotiation and co-creation, exemplified through Participatory Design and Value Sensitive Design. The linguistic narrative perceives value as provocation and reconstruction, generating new meanings through the creation of difference and narrative reflection, as seen in Critical and Speculative Design.

As design extends from individual or organizational practices toward systemic and societal collaboration, values (i.e., beliefs in what is good or desirable) are no longer treated as stable entities statically embedded in designs, but as lived realities dynamically formed through processes of design and negotiation (Boenink & Kudina, 2020; Boess & Jansen, 2022). According to Meadows (2008), values function as the most crucial and actionable lever for achieving systemic transformation. Recognising and cultivating mutual understanding of

diverse stakeholder values can mitigate collaboration conflicts and enable effective systemic interventions and transformation (Van de Poel, 2013; Van Onselen & Valkenburg, 2015).

While systemic design emphasises value as an engine that motivates collaboration and systemic change, in the field of project management Green and Sergeeva (2019) consider value as a narrative and socially constructed phenomenon. They point out that value is continuously negotiated, interpreted and reconstructed through language, dialogue and storytelling among project participants. This view shows how design collaboration through stories and narratives to co-create and negotiate value, can enable mutual understanding and collective alignment.

Because value carries diverse interpretations across design domains and other disciplines, and can be continuously reshaped through narrative and negotiation, this theoretical background highlights the latent need for value reconciliation and provides a conceptual foundation for exploring its possible pathways.

## *2.2 The need to reconcile values in design collaboration*

As design inherently operates as an interdisciplinary activity, diverse actors participate in the projects with divergent disciplinary values. Bergema, Kleinsmann, and Valkenburg (2012) note that, when diverse actors such as designers, clients, organizations and governmental bodies are organized to participate in co-creation, they often bring divergent expectations and value orientations that should be reconciled to achieve a shared outcome.

Besides professional differences, such value reconciliation often faces several challenges. One is that people often have limited awareness of their own values. Values are embedded in people's thinking and behavior, and are often difficult to pin down let alone explicitly express in collaboration (Schwartz, 2006). Kaland et. (2016) observed that junior designers are often unaware of their personal values, which not only result in difficulties in understanding and responding to the requirements of other stakeholders, but also hinders effective collaboration among them. Another challenge is imbalanced value prioritisation. For instance, Van Onselen & Valkenburg (2015) found that some actors may prioritize economic benefits while overlooking experimental and ethical dimensions of equal importance, resulting in tension and misalignment that hinder collective benefits and satisfaction. As Bos-de Vos (2020) points out, participants of design projects have different levels of expertise, different intentions, and diverse underlying values, many of which could be taken for granted or are implicitly assumed, sometimes leading to misunderstandings, inefficiencies, or tension during the process of teamwork. Therefore, co-creation requires deliberate reconciliation of different values, motivations, and goals (Bos-de Vos, 2020). In these circumstances, designers equipped with the knowledge across multiple disciplines and the ability to analyze and visualize complex relations (e.g. Dorst, 2011; Manzini, 2009), should not regard value divergences as collaboration obstacles, but as opportunity for new meaning. When values are surfaced and negotiated, they can enrich the design process and its outcomes.

## *2.3 Approaches enabling value reconciliation in design*

In recent years, design researchers have increasingly sought to make the process of value negotiation become more visible and approachable. Value Sensitive Design (Friedman et al.,

2006) offers a framework for integrating human value into design projects through systematic identification and investigation. However, it has been criticized for being overly normative and top-down, limiting design expression within local contexts, and lacking opportunities for immediate dialogue and negotiation.

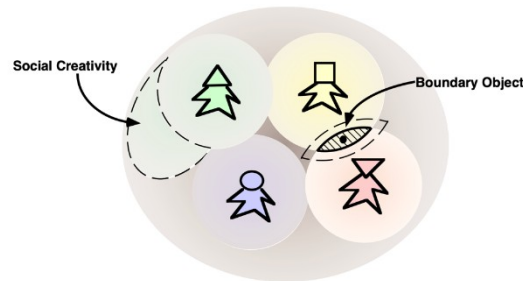


Figure 1 Social Creativity Among Actors Connected Through a Boundary Object (Fischer, 2001).

The concept of Boundary Objects (Carlile, 2002) addresses this. Boundary objects are artefacts, documents, terms, or concepts that facilitate communication and knowledge sharing across different social or professional boundaries (Figure 1). They can act as a mediator translating abstract values into forms that are visible, discussable and collaborative. Examples include the Value Flow Network (Den Ouden & Brankaert, 2013), a systematic map that visualises value flow and exchanges between actors to show how value is created, transmitted and transformed; and Value Pursuit (Rygh, 2014), a gamified card-based tool that allows actors to shift their identity by playing a table game to enable mutual understanding through the lens of another perspective.

While such tangible tools facilitate value negotiation by facilitating dialogue through material mediators, they overlook what kinds of values are being negotiated, how these values differ across actors, and how they interact and evolve during collaboration. Bos de Vos (2020) offers an integrative framework that helps address this limitation by distinguishing between *values as guiding principles*—the ideals and motivations that drive human and cultural behaviour—and *values as qualities with worth*—the tangible or intangible worth that design outcomes create for people and the planet (Figure 2). This dual perspective enables both designers and researchers to more precisely identify and interpret which types of values are in play, and how they evolve during multidisciplinary collaboration.

While the framework brings clarity into the different types of value that may need to be reconciled in collaborative design projects, it does not provide guidance on how to work on such reconciliation. Structured dialogue can support reconciliation of divergent values by enabling teams to reflect on and navigate value differences and tensions in multidisciplinary collaboration (Weaver et al., 2023). Building on this, the present study addresses the research question: *How does structured dialogue support value reconciliation among participants in multidisciplinary design teams?*

|                                                                                                                                                                                                                                        | TYPE OF VALUE                                                                                                                                                                                                                        | MOTIVATIONAL GOAL                                                                                                                                          | VALUE EXAMPLES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>VALUES AS GUIDING PRINCIPLES</b><br><br><br>Influence strategic decisions related to value co-creation and value capture (Rindova & Martins, 2017) | <b>OF INDIVIDUALS</b><br><br><b>Human values</b><br>(e.g. Schwartz & Bilsky, 1987)                                                                  | Enjoyment<br>Security<br>Achievement<br>Self-Direction<br>Restrictive-conformity<br>Prosocial<br>Social power<br>Maturity<br>(cannot be actively attained) | pleasure, self-indulgence, gratification, sensuous enjoyment, happiness at work, ...<br>physical safety, psychological / mental health, integrity, ...<br>achievement, competence, success, ...<br>autonomy, self-efficacy, independence, intellectualism, ...<br>conformity to social expectations, ...<br>altruism (e.g. acting in best interest society/client), benevolence, kindness, love, ...<br>dominance, status, influence, social control, power, leadership, authority, ...<br>wisdom, tolerance, faith in one's convictions, deep emotional relationships, appreciation for the beauty of creation, ... |
|                                                                                                                                                                                                                                        | <b>OF GROUPS</b><br><br><b>Cultural values</b><br>(e.g. Schwartz, 2008)<br>* e.g.:<br>• teams<br>• organizations<br>• economic sectors<br>• nations | Autonomy<br>Embeddedness<br>Egalitarianism<br>Hierarchy<br>Harmony<br>Mastery                                                                              | Intellectual autonomy: broadmindedness, curiosity, creativity, ...<br>Affective autonomy: pleasure, exciting life, varied life, ...<br>social order, respect for tradition, security, obedience, wisdom, ...<br>equality, social justice, responsibility, help, honesty, ...<br>social power, authority, humility, wealth, ...<br>world at peace, unity with nature, protecting the environment, ...<br>ambition, success, daring, competence, ...                                                                                                                                                                   |
| <b>VALUES AS QUALITIES WITH WORTH</b><br><br><br><b>FOR PEOPLE</b>                                                                                    | <b>Use value</b><br>(e.g. Bocken et al., 2013; Ravasi et al., 2012; Elstner, 2011)                                                                                                                                                   | Utility<br>Well-being & development<br>Symbolic meaning<br>Emotional meaning                                                                               | functionality, convenience, usability, efficiency, durability, time management, accessibility, appropriateness, compatibility, ...<br>health, comfort, safety, growth, knowledge development, ...<br>expression of identity, signal of social status, prestige, stature, ...<br>historic value, brand value, political value, aesthetic value, ...<br>fun/joy, pleasure, appreciation, ...                                                                                                                                                                                                                           |
|                                                                                                                                                                                                                                        | <b>Social value</b><br>(e.g. Brinkhorst, 2016; Den Ouden, 2011)                                                                                                                                                                      | Social property<br>Social wealth                                                                                                                           | human health, safety, security, justice, privacy, ...<br>minimize/no labor exploitation, fair living wages, maximize opportunity for workers, efficiency, ...                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                                                                                                                                                                                                                        | <b>Economic value</b><br>(e.g. Bosman & Arndtson, 2000)                                                                                                                                                                              | Money<br>Other economic value                                                                                                                              | income, profit, wealth, affordability, rents, economic sustainability, ...<br>reputation, competitive advantage, innovation, commercial relationship, ...                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|                                                                                                                                                                                                                                        | <b>FOR PLANET</b><br><br><b>Ecological / environmental value</b><br>(e.g. Bocken et al., 2013)                                                      | Preservation of the planet                                                                                                                                 | emission regulations / reduction, product safety, re-use of existing material, sustainability, long lasting neighborhood, ...                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

Figure 2 Framework as a basis for designing for divergent values (Bos-de Vos, 2020).

By examining how value reflection and reconciliation unfold within a structured and facilitated value dialogue, this study seeks to uncover how different value dimensions are surfaced and recognised in multidisciplinary collaboration, and how the tensions underpinning these values are subsequently reinterpreted.

## 3. Methodology

### 3.1 Participants and sampling

The study focused on student design teams working full-time for a period of one year on a real-life design project at the institution of the authors, in close collaboration with industry and external sponsors. The students participating in these projects came from different disciplines and were selected through a rigorous selection process. The project teams resemble real-life design teams as they must meet clear project objectives while adhering to time, budget and quality requirements. During this process, they need to reconcile various stakeholder interests and values. Purposive sampling was adopted to recruit participants who met the criteria of belonging to a multidisciplinary team with a balanced composition of manager, engineer, designer or more roles, and who had worked together for at least six months. After selecting a few suitable teams, snowball sampling helped to reach additional groups. In total, the study involved twenty participants from six multidisciplinary teams. All participants were studying design engineering in different fields, including mechanical engineering, industrial design engineering and aerospace design. Ten fulfilled the role of manager or team lead, eight had a role as engineer/designer, and one was an operator and

one was a partnership lead. None of the researchers personally knew the participants prior to the study, ensuring independence in data collection.

### **3.2 Structured value dialogue**

A structured value dialogue was organised in each of the six multidisciplinary teams, lasting approximately 60 minutes and following a predefined structure consisting of four stages. First, participants were asked to identify and articulate the core values guiding their project collaboration, aiming to surface underlying and often implicit personal or professional values. In the second stage, participants were asked to exchange and challenge their viewpoints by adopting different professional roles. This allowed them to experience contrasting value positions and tensions. In the third stage, participants were guided to examine the value differences that had surfaced earlier and to consider these tensions from alternative angles. This stage aimed to help them revisit value divergence with structured prompts that encouraged looking beyond initial assumptions. Finally, teams collaboratively mapped and discussed these reflections to transform emerging conflicts into shared insights about their collective design practice.

Throughout the process, a facilitator guided the structured dialogue and encouraged participants to express their opinions freely. This method was chosen because it provides a deliberate and reflective space for participants to externalise implicit values, become aware of the diversity and divergence of values, and ultimately co-create new collective meanings in response to value differences and tensions.

### **3.3 Data Collection**

#### **3.3.1 Observations**

During each structured dialogue, non-participant observation was conducted to capture participants' behaviours, interactions, and expressions related to values in real-time. An observation protocol was developed to systematically document participants' experiences across four dimensions—individual behaviour, group dynamics, emotions, and value interpretation—throughout the four stages of the structured dialogue.

Observers documented participants' value expressions and interactions, including explicit value statements, personal stories, and moments of agreement or disagreement. Particular attention was given to behavioural and emotional cues observed at critical moments when conversations became challenging or emotionally charged. These structured notes captured key signs and moments of value reflection and were later triangulated with interview data during thematic analysis.

#### **3.3.2 Post-dialogue Interviews**

Immediately after each structured dialogue, semi-structured interviews were conducted with all 20 participants individually to capture reflections based on fresh memory and experience. Each interview lasted approximately 20–45 minutes. The interviews focused on participants' experiences during the workshop, perceived shifts in personal or shared values, and their interpretations of tensions arising in the collaboration. The interviews also served as a reflective extension of the structured dialogue, encouraging participants to reconsider

and verbalise their experiences of value negotiation and tension transformation, which further enriched the collected data. Informed consent was obtained from each participant before the dialogue and all audio recordings were transcribed verbatim and anonymised, with transcripts securely stored within the university research environment.

### *3.4 Data Analysis*

All qualitative data, including interview transcripts and observation notes, were analysed through inductive thematic analysis, following Braun and Clarke's (2006) approach. The analysis aimed to capture how value reflection, negotiation, and reconciliation unfolded through the structured dialogue. The process proceeded through six iterative steps. In the first step, each researcher manually cleaned the transcripts and repeatedly read both transcripts and observation notes to develop a deep understanding of the context. Second, open coding was conducted to identify meaningful expressions and value-related interactions using Atlas.ti. Each transcript produced between 35–60 codes. Examples of codes included "explicit articulation of personal value" and "recognises misalignment between different disciplines". In the third step, the research team met to discuss coding alongside their corresponding transcripts. This step aimed at ensuring researcher triangulation and confirming the consistency of interpretations. For instance, the excerpt "some engineers just want to build and fix, but others want to discuss and reflect" was reinterpreted as reflecting disciplinary frictions rather than individual value differences. Fourth, codes were exported into Miro, colour-coded per participant, and compared to check interpretive consistency. Related codes were grouped into clusters representing recurring ideas or tensions within collaboration. Four initial thematic directions were identified: self-value awareness, awareness of others' values, interaction between values, and perceptions of tension. Each cluster was discussed and renamed several times until the wording captured its shared conceptual meaning. Similar codes such as "importance of knowing values of others" were merged into "awareness of different values" after discussion. In the fifth step of theme refinement, we conducted a deeper analysis of the kinds of value awareness that were present, and identified (1) individual value awareness, (2) awareness of value differences, and (3) collective value awareness. We also further refined value negotiation into two observed patterns: (1) tensions between specific values, and (2) values for reconciliation. For example, codes referring to "recognising others' viewpoints," "empathy," and "mutual understanding" were integrated under the broader theme "Empathy as a pathway to reconciliation" which is a subtheme of (2) values for reconciliation. Through this process, empathy, openness, respect, and social safety were identified as preconditions for effective value reconciliation. Participants also demonstrated a reinterpretation of value tensions, recognising it not merely as a source of conflict but as a constructive and balancing force within collaboration. In the final step, we produced a visual map of the overarching patterns we identified through our thematic analysis. Figure 3 shows how participants moved from recognising different layers of value awareness, to encountering and reconciling recurring value tensions, and finally to identifying four values that facilitated this reconciliation.

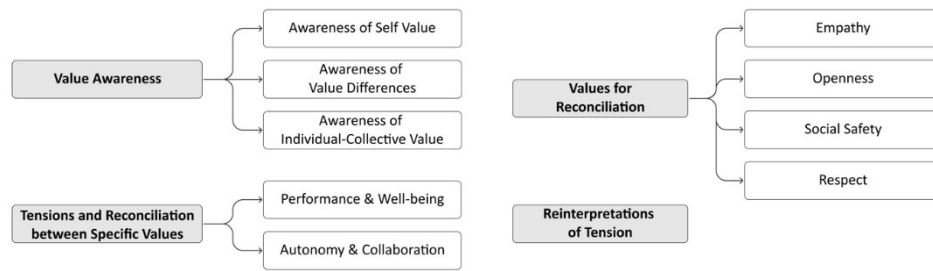


Figure 3 Thematic Analysis Map: Main Themes and Subthemes

### 3.5 Ethics and Reflexivity

This study strictly adhered to human research ethics guidelines. All participants were fully informed about the study's purpose, procedure, and data handling prior to participation, and written consent was obtained before the start of the dialogues and interviews. Participation was entirely voluntary, and participants could withdraw at any time without providing a reason. All audio recordings were transcribed, anonymised, and securely stored within the institution research environment. Throughout the process, the researchers maintained reflexive awareness of their dual roles as facilitators and analysts, employing collaborative coding to enhance transparency and minimise potential bias in data interpretation.

## 4. Findings

The analysis revealed how participants' understanding of values evolved through the structured dialogue, progressing from individual reflection towards collective recognition and reconciliation. In addition, we identified recurring patterns of tension and reconciliation between specific values, four values that positively facilitated value reconciliation, and participants' reinterpretations of value tension within team collaboration. Together, these findings illustrate how structured dialogue enables multidisciplinary design teams to surface, reflect on, and reconcile diverse values through an ongoing process of collective learning and negotiation.

### 4.1 Value Awareness: From Self to Collective Understanding

Through the post-dialogue interviews, participants demonstrated an expanded awareness of values, evolving from the individual level to recognising differences between themselves and others, as well as their dynamics within the collective.

At the individual level, most participants explicitly articulated their core values such as respect, autonomy, and efficiency. A few participants, however, admitted that they were initially uncertain about their personal values before the structured dialogue, yet later gained clarity through the dialogue. As engineer-T14 expressed, "I now know that value for me, caring is really the most important one. Yeah, now I know that." This illustrates a transition from an unconscious or implicit awareness of one's values to a conscious and self-affirmed understanding.

At the level of recognising value differences, most participants indicated that it was the first time they became aware of the existence of distinct value orientations and priorities within team collaborations. For example, marketing manager-T18 said: "I always thought we all

had the same view on what's important, working hard, getting results, but during the workshop I noticed that others care more about the atmosphere and how they feel in the team." These moments of recognition suggest that value differences had long remained implicit within everyday practices and interactions, becoming visible only through the structured dialogue.

At the level of individual–collective values, participants became aware that certain personal aspirations did not always align with the team's collective goals. As engineer-T14 admitted, "If the team's growth does not match with my personal goal, I'm not motivated." Such reflections revealed subtle tensions, where differing priorities shaped participants' engagement and motivation. Team leader-T8, however, emphasized the reciprocal relationship between individual and collective motivation: "Personally, I think personal growth is more important... however, if there's no team growth, motivation also drops. The best scenario is when your personal goal fits into the team growth." Team manager-T20 echoed this interdependence, stating that "the best situation is when your personal development naturally contributes to the team's growth." Participants moved from recognising misalignments between personal and team values to understanding their interdependence. They came to realize that the relationship between individual and collective values is dynamic and mutually affected.

## *4.2 Tension & reconciliation between specific values*

### **4.2.1 Performance & Wellbeing**

Participants frequently revealed an ongoing tension between performance and well-being. Initially, many perceived achievement as paramount, often sacrificing personal health for collective goals: "You end up working those last few extra hours... placing achievement above your own well-being." (T18-manager). Such statements reflected a performance-oriented mindset grounded in efficiency and goal attainment. However, through the structured dialogue, participants began to critically question this orientation. Engineer-T3 asked the question, "For those who work very hard, is that smart, or will they collapse in two weeks?" Furthermore, acknowledging the importance of understanding other's limits, T3 also suggested that leadership behaviour should be moderated accordingly, noting that, "People who go really hard, you have to kind of slow them down, because no one will admit they're feeling a lot of work pressure." This further indicates that many participants came to recognise well-being as not secondary, but rather a prerequisite for sustainable achievement.

Some participants even deepened their reflections and considered dealing with the tension, "It's really the balance between deadlines, time and well-being. You have to work with the tension instead of against it." (T6-designer)

Across reflections, performance and well-being were no longer seen as competing values but as two interdependent conditions that require to be fulfilled simultaneously. The structured dialogue thus facilitated a shift from a performance-driven mindset towards a more holistic understanding of value balance, where tension itself becomes an opportunity for adaptation, collaboration, and collective growth.

#### 4.2.2 Autonomy & collaboration

Another frequently observed tension concerned autonomy and collaboration. Several participants pointed out that such tensions sometimes stemmed from disciplinary differences. “Engineers think differently from non-engineers, they focus on personal learning and progress, while others emphasise teamwork and shared goals” (T9- Partnership Lead). Rather than viewing this difference as a barrier, T9 reflected that “I’m not surprised by that clash. Maybe more fascinated. I understand it and respect it. It’s just a different vision.” Similarly, several other participants expressed comparable shifts after the structured dialogue, developing curiosity and respect towards diverse working mindsets and coming to see such differences as complementary rather than conflicting.

Designer-T6 reflected that autonomy was integral to her self-development: “I had to figure out what to do myself... I really enjoyed that freedom.” Yet, she emphasized that autonomy did not equate to isolation, as she frequently sought advice from engineers and managers. For her, freedom and collaboration coexisted as mutually reinforcing forces that fostered both individual and collective development.

Manager-T5 initially described autonomy as “intellectual autonomy”, closely tied to creativity, inventiveness, and independent problem-solving. “I chose intellectual autonomy because it really spoke to me: creativity and curiosity. I’m someone who loves inventiveness and problem-solving. ...I think autonomy is a crucial condition for that — that you have your own space to experiment.” However, holding this perspective had previously created friction within the team, as he recalled: “During the past year in our team, we noticed these differences and frustrations.” However, after the structured dialogue, he realised that autonomy requires openness and communication to prevent misunderstandings. “You have to create a situation where everyone can say what they are really here for.” This suggests that the dialogue enabled a reinterpretation of autonomy from an individual preference to a collective reconciliation.

#### 4.3 Values for Reconciliation

Based on the thematic analysis results, four values were commonly discussed by participants regarding their ability to value reconciliation. Some considered these values as ground rules for group collaboration, while others saw them as foundations for better teamwork. The following paragraphs explain these values and participants’ views.

Most participants highlighted that showing empathy during discussions opened a pathway to understanding the reasoning behind different value perspectives, which ultimately facilitated value reconciliation. Engineer-T3 illustrated this by stating, “I think it’s good to occasionally put yourself in the position of people with other roles, because then you understand better ...” Partnership Lead-T9’s reflection also focused on difference in professional fields: “I think the biggest clash was that you see an engineer thinks differently from a non-engineer. ... If I look at it from his role, I understand it very well.” Both participants considered perspective-taking as a key means of connecting diverse viewpoints and fostering mutual understanding.

Another value commonly noted was openness. Several regarded openness as the foundation of trust, honesty, and transparency in teamwork. Manager-T16 reflected:

“Before the workshop, I thought openness just meant being transparent about work progress ... But during the dialogue, I realised it’s also about showing a bit of yourself — saying when you’re struggling or uncertain.” Designer-T6 also linked openness to honesty and transparent feedback within collaboration.

Social safety was also regarded as an essential condition for healthy value reconciliation and collaboration. Manager-T2 emphasized that the lack of an accepting environment could undermine team motivation for collaboration: “If I know that my values are not accepted or not listened to, then I would be less motivated to speak up.” Furthermore, safely built team environments were seen as resilient enough to face challenges and disagreements. As PR coordinator-T12 explained, “In our team, we have already built such an safe atmosphere — where everyone can freely do so. ... We’ve learned how to stay open in discussion without getting angry or feeling provoked.”

Respect emerged as another recurring theme. Rather than being treated as a stand-alone value, respect was described as the foundation upon which openness, trust, safety, and value reconciliation could develop. Operator-T1 emphasized that safety arose from mutual respect: “You have to respect each other, and if there is respect then you can feel comfortable to say everything.” Similarly, manager T9 highlighted that respect could trigger openness and trust: “If you respect each other, you also respect each other’s answers and can talk openly about it. It’s not a problem if you don’t agree—it’s actually interesting to talk about it.” These reflections suggest that respect provides a psychologically and ethically safe environment which enables other collaborative values—openness, trust, and care—thereby facilitating value reconciliation.

#### *4.4 Reinterpretations on Tension*

The most recognised form of tension between team members during the structured dialogue concerned the expression of value disagreement. Operator-T1 recalled, “Yeah, the clash. I think you don’t really realise this clash sometimes,” and, “Sometimes you clash in an opinion... you might have a different opinion than I have.” Similarly, many participants referred to the prioritisation of different values as another main source of tension: “The fact that he values wellbeing higher than I did—I saw that as a kind of tension.” (T4-manager)

When reflecting on these experiences, only a few participants described tension with strong emotional responses, while most held a more neutral attitude and sought to reconcile such tension. Engineer-T3 admitted feeling frustrated: “I found it quite difficult to see the positive things in that, because I actually find it quite frustrating that this trade-off exists.” However, most participants held a more rational and constructive stance, recognising tension as a natural element for team collaboration: “Those friction points we really had to deal with. It’s recognizable, but you have to talk them out first”(T5-project manager). T7-Team manager noted that discussing both “what is valuable and what is frustrating about this tension” was an “interesting” process, suggesting that reflection on tension and disagreement can also serve as meaningful lessons.

Several participants further reinterpreted tension as an applicable tool that could facilitate value conciliation. Manager-T4 described tension as a process of balancing contrasting perspectives: “You might see it as tension. I see it rather as what we need to create balance. If I push very hard on one side and he pushes very hard on the other, you end up in the

middle.” Partnership Lead-T9 viewed the management of tension as beneficial for project progress: “If there’s no tension at all, things stand still. When there is tension, it means people care about something...That’s when things can really start moving. You just have to manage it in the right way.”

These reflections show that through structured dialogue, tension was seldom recognised as a negative experience with frustrated feelings but more as a constructive and balancing force within collaboration. Such tension was seen as supporting value reconciliation in some cases, while in other cases it could directly contribute to constructive project development when appropriately managed.

## **5. Discussion**

This research aimed to investigate how participants in multidisciplinary design teams reconcile values through structured dialogue. The findings show that participants’ value awareness progressed from individual reflection towards collective reconciliation. This process involved recognising personal and shared value differences, surfacing common value tensions and their reconciliation pathways, and identifying four values perceived as supportive within multidisciplinary teamwork. Eventually, these insights contribute to how participants of multidisciplinary design teams can reinterpret value tensions in more constructive ways through structured dialogue.

First, the study extends existing literature by reaffirming that individuals often lack explicit awareness of their own values (Van Onselen & Valkenburg, 2015). Our results additionally show that participants were not only uncertain about their personal values but also unaware of value differences between team members and of the interdependent relationship between individual and collective values. The structured dialogue made these implicit assumptions explicit, enabling previously unnoticed misalignments to be openly articulated and negotiated.

A second contribution lies in addressing gaps in current research on value negotiation tools. While frameworks such as Boundary Objects (Carlile, 2002) and the Value Flow Network (Den Ouden & Brankaert, 2013) provide means to make values discussable, they rarely specify which value tensions commonly arise, how these tensions unfold, and which values may facilitate reconciliation. Through thematic analysis, this study identifies recurring tensions, particularly performance vs. well-being and autonomy vs. collaboration, and highlights four values recognised by participants as positively contributing to reconciliation: empathy, openness, social safety, and respect. These findings provide an initial foundation for developing future facilitation techniques that explicitly engage with value negotiation and tension.

Notably, this study primarily focuses on the reconciliation of value differences and the tensions arising from them. However, reconciliation should not be regarded as the only pathway for advancing collaborative work. In certain situations, an overemphasis on reconciliation may even raise ethical concerns, for instance by neutralising dissent, obscuring structural inequalities, or placing the burden of maintaining harmony on those with less power. Future research could therefore further differentiate types of value tensions and explore alternative modes of engagement beyond reconciliation, such as productive

disagreement, accommodation, coexistence, or sustained coexistence. In this way, future studies may move beyond purely consensus-oriented approaches to managing value tensions.

In addition, although this study identifies conditions such as openness and social safety as supportive for value discussions, these conditions are not neutral or equally accessible to all participants in real-world teams. They are often shaped by role hierarchies, institutional authority, disciplinary legitimacy, and broader social structures. From a relational ethics perspective, future research could further examine how such conditions are distributed within teams and how they influence the ways in which value tensions are expressed and negotiated in multidisciplinary collaboration.

Relatedly, value conflicts within multidisciplinary collaboration rarely unfold under symmetrical conditions. Different roles within teams often carry unequal levels of authority and influence over decision-making processes. For instance, project leaders, domain experts, or organisational representatives may have greater influence over the direction of discussions and over which values are prioritised or legitimised. Future research could therefore further investigate how power relations shape the articulation and negotiation of value tensions, including who is able to express disagreement safely, whose values carry greater weight, and to what extent structured dialogue may mitigate or inadvertently reproduce such power asymmetries.

This study has several limitations. First, it was conducted with student teams, whose power structures and collaboration dynamics may be less complex than those of professional design teams. However, the findings still offer a foundation for investigating value reconciliation in real-world organisational contexts. Second, although all interviewees were native Dutch speakers, parts of the structured dialogue and interviews were conducted in English, which may have led to reduced precision in articulating opinions and recalling emotions, potentially influencing reflection. In addition, the conclusions of this study rely primarily on participants' immediate reflections and therefore mainly capture the short-term effects of structured dialogue on value tensions. Future research could adopt longer-term perspectives to examine whether and how value reconciliation translates into sustained collaboration practices, including its influence on subsequent decision-making and on the distribution of responsibility and care within teams.

Overall, this study offers practical insights for designers, educators, and facilitators who seek structured ways to surface and negotiate values in collaborative design processes. The findings demonstrate the potential of structured dialogue to make values discussable and to support value reconciliation within multidisciplinary teams. Building on this, structured dialogue could help members of multidisciplinary design teams become more aware of their own positions and perspectives, enabling them to better align their motivations within the team and navigate value differences during collaboration. For team leaders and facilitators, structured dialogue may also serve as a practical approach to managing value tensions and supporting more reflective team interaction. For scholars researching value negotiation in multidisciplinary collaboration, this study provides empirical support for the role of structured dialogue in making values discussable and negotiable within design practice. At the same time, such interventions should not be understood as neutral techniques but rather as situated practices that require careful attention to power, positionality, safety, and the legitimacy of ongoing value conflict, as well as to the role of facilitators in shaping these

conditions, rather than focusing solely on interpersonal alignment or reconciliation. Future research could examine value reconciliation in more diverse and professional design settings, involve larger participant groups to further identify value tension patterns, and explore how facilitation techniques can be adapted for different forms of multidisciplinary collaboration.

## 6. Conclusion

Through the collective reflection facilitated by structured value dialogue, participants in our study became increasingly aware of value differences and articulated insights on how reconciliation might be pursued at the team level. They also developed a more neutral and open stance towards value tensions, recognizing them as a constructive part of collaboration. In this sense, structured dialogue fostered a reflective and positive awareness of teamwork and strengthened participants' willingness to engage in collective value negotiation, demonstrating its effectiveness as a mechanism for value reconciliation in multidisciplinary design teams.

**Acknowledgements:** The authors would like to thank the participants of this study for their willingness to participate and their openness to share experiences and reflections. We also thank colleagues and peers from the Strategic Product Design programme at TU Delft for their valuable feedback and discussions during the development of this work.

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## 8. Appendix

| Participants | Dialogue workshop | Participants` Role in Team   | Interview Language | Times of the Interview (Minutes) |
|--------------|-------------------|------------------------------|--------------------|----------------------------------|
| T1           | 2                 | Operator                     | English            | 25                               |
| T2           | 6                 | Team manager                 | English            | 30                               |
| T3           | 1                 | Engineer                     | Dutch              | 25                               |
| T4           | 4                 | Project Manager              | Dutch              | 25                               |
| T5           | 5                 | Project Manager              | Dutch              | 25                               |
| T6           | 6                 | Designer                     | Dutch              | 25                               |
| T7           | 5                 | Team Leader                  | English            | 20                               |
| T8           | 2                 | Team Leader                  | English            | 20                               |
| T9           | 3                 | Partnership Lead             | Dutch              | 27                               |
| T10          | 6                 | Creative Operations Engineer | Dutch              | 25                               |
| T11          | 1                 | Engineer                     | Dutch              | 22                               |
| T12          | 5                 | PR Coordinator               | Dutch              | 18                               |
| T13          | 3                 | Team Captain                 | Dutch              | 45                               |
| T14          | 2                 | Engineer Lead                | Dutch              | 23                               |
| T15          | 1                 | Lead Mechanical Engineer     | Dutch              | 42                               |
| T16          | 3                 | Team Manager                 | English            | 20                               |
| T17          | 4                 | Chief Engineer               | Dutch              | 43                               |
| T18          | 4                 | Marketing Manager            | Dutch              | 45                               |
| T19          | 2                 | AI Engineer                  | Dutch              | 45                               |
| T20          | 5                 | Team Manager                 | English            | 35                               |