Becoming a design professional through coping with value-based conflicts in collaborative design practice

van Onselen, L.

DOI
10.4233/uuid:7f589ae2-a71b-43f5-a605-1791522bfc8d

Publication date
2022

Document Version
Final published version

Citation (APA)
van Onselen, L. (2022). *Becoming a design professional through coping with value-based conflicts in collaborative design practice*. [Dissertation (TU Delft), Delft University of Technology]. https://doi.org/10.4233/uuid:7f589ae2-a71b-43f5-a605-1791522bfc8d

Important note
To cite this publication, please use the final published version (if applicable).
Please check the document version above.

Becoming a design professional through coping with value-based conflicts in collaborative design practice

Lenny van Onselen

Dissertation of Delft University of Technology
This dissertation was funded by the Hague University of Applied Sciences

Cover and chapter artwork by: Marloes Bakker
Booklet design by: Douwe Oppewal
Printed by: Ipskamp printing

ISBN: 978-94-6421-964-7

Becoming a design professional through coping with value-based conflicts in collaborative design practice

Dissertation

for the purpose of obtaining the degree of doctor
at Delft University of Technology
by the authority of the Rector Magnificus, prof.dr.ir. T.H.J.J. van der Hagen,
chair of the Board for Doctorates
to be defended publicly on
Thursday 8, December 2022 at 10 o'clock
by Lenny van Onselen
Master of Science in Industrial Design Engineering,
Delft University of Technology, the Netherlands
born in The Hague, the Netherlands

This dissertation has been approved by the promotors.

Composition of the doctoral committee:

Rector Magnificus,	chairperson
Prof.dr. H.M.J.J. Snelders	Delft University of Technology, promotor
Prof.dr.ir. C.S.H. De Lille	Northumbria University Newcastle, UK
	The Hague University of Applied Sciences, promotor
Dr.ir. A.C. Valkenburg	Eindhoven University of Technology, copromotor

Independent members:

Prof.dr. R. Cooper	Lancaster University, UK
Prof.dr.ir. I.R. van de Poel	Delft University of Technology
Prof.dr. A. Heylighen	Katholieke Universiteit Leuven, Belgium
Prof.dr. P.J. Stappers	Delft University of Technology
Prof.dr.ir. F.E.H.M. Smulders	Delft University of Technology, reserve member

TABLE OF CONTENTS

SAMENVATTING

Junior ontwerpers kunnen moeilijkheden ervaren met samenwerkingspartners (bv. klanten, managers en stakeholders) die waarden anders prioriteren en dit kan leiden tot frustratie, conflicten en stress. Junior ontwerpers kunnen soms moeilijk omgaan met conflicten gebaseerd op onderliggende waarden (i.e. waardenconflicten), omdat ondersteuning niet altijd beschikbaar is. Senior ontwerpers hebben vaak effectieve manieren ontwikkeld waardoor ze met minder frustratie om kunnen gaan met deze conflicten. Ontwerpopleidingen en professionele ontwikkelingstrajecten kunnen ondersteuning bieden door waardenconflicten te introduceren en het leren ervan te faciliteren. Deze studie zoekt antwoord op de vraag: hoe kunnen junior ontwerpers effectiever omgaan met waardenconflicten in *collaborative design practice* (i.e. co-design)?

In de literatuur zijn waarden gedefinieerd als gecommuniceerde meningen over waarde (bv. in geld), voorkeuren, ethiek en motiverende drijfveren. In de ontwerppraktijk gebruiken junior ontwerpers waarden in ontwerpevaluaties, onderhandelingen met klanten, plannen van mogelijke acties en ontwerpbeslissingen. In de literatuur stelt men dat waardenverschillen in samenwerking ontstaan wanneer twee waarden botsen. Dit kan waardenconflicten veroorzaken, zoals meningsverschillen, verstoringen en/of negatieve emoties. Waardenverschillen en conflicten kunnen ontstaan in verscheidende situaties, bijvoorbeeld tijdens samenwerking, besluitvorming of overstappen van de ene carrièrestap naar de andere. Junior ontwerpers kunnen gefrustreerd en ontevreden raken of zelfs opgebrand als hun waarden niet aansluiten of aan te passen zijn aan de nieuwe situatie. Een typisch waardenverschil die junior ontwerpers kunnen ervaren is die tussen aan de universiteit gevormde idealistische ontwerpwaarden en de geprioriteerde waarden van de commerciële praktijk. De literatuur biedt geen empirisch bewijs welke waardenverschillen en conflicten junior ontwerpers kunnen ervaren in de ontwerppraktijk. Daarom is de eerste onderzoeksvraag als volgt:

OZ1. Welke conflicten ervaren junior ontwerpprofessionals veroorzaakt door waardenverschillen in co-design?

In de co-design praktijk moeten conflicten niet vermeden worden omdat het innovatie bevorderd en de ontwikkeling stimuleert van junior ontwerpers naar doorgewinterde professionals. Senior ontwerpers kunnen vaardig omgaan met waardenspanningen die voor junior ontwerpers problemen kunnen veroorzaken als ze niet weten hoe ze effectief om moeten gaan met deze spanningen. Ontwerpstudenten leren samenwerken en omgaan met conflicten, maar de complexiteit van de co-design praktijk is moeilijk te simuleren in school. In de overgang naar de beroepspraktijk, ervaren junior ontwerpers vele waardenverschillen die conflicten kunnen veroorzaken. De co-design praktijk is een bron van conflicten en de ontwerpliteratuur biedt weinig inzicht in hoe junior ontwerpers omgaan met waardenconflicten. Daarom luidt de tweede onderzoeksvraag als volgt:

OZ2. Welke wijzen van coping gebruiken junior ontwerpprofessionals?

Verscheidende methoden zijn beschikbaar om de waarden van stakeholders expliciet te maken in het co-designproces. Deze waarde methoden bieden inzicht door middel van een overzicht van waarden, een techniek om waarden in kaart te brengen of een set kaarten om discussies te faciliteren tijdens bijeenkomsten met het team of de stakeholders. Echter ontbreken junior ontwerpers als expliciete stakeholders in deze methoden. Daarnaast bieden ze te weinig ondersteuning om met waardenconflicten om te gaan. De literatuur biedt drie manieren aan om effectieve coping te realiseren: het trainen van een reflectieve werkwijze, het ontwikkelen van een professionele ontwerpidentiteit gebaseerd op persoonlijke waarden en het bewustwording genereren van waarden in de co-design praktijk. Dit kan meegenomen in het ontwerpen van ondersteuning voor junior ontwerpers om effectief met waardenconflicten om te gaan. Hieruit volgt de derde onderzoeksvraag:

OZ3. Hoe kunnen junior ontwerpers ondersteund worden om effectiever om te gaan met waardenconflicten?

Het onderzoeksproject is verdeeld in twee studies. De eerste studie (Study One) streeft naar het begrijpen van waardenconflicten (Hoofdstuk 4) en hoe junior ontwerpers hiermee omgaan (Hoofdstuk 5) om antwoord te geven op OZ 1 en OZ2. Een retrospectieve open-interviewstudie met 22 ontwerp professionals bood inzicht in de gedachten, waarden en ervaringen van de deelnemers en resulteerde in 32 casussen van waardenconflicten. Door middel van een *grounded theory* aanpak is de data geanalyseerd om een theoretisch raamwerk over waardenconflicten te bouwen die het gat in de literatuur kan overbruggen. De tweede studie (Study Two) streeft naar ondersteuning te ontwikkelen voor junior ontwerpers om effectiever om te kunnen gaan met waardenconflicten ten einde antwoord te geven op OZ3. Deze studie gebruikte een ontwerp gestuurd actieonderzoek volgens drie cycli van opzetten, actie en reflectie. De eerste cyclus had als doel het begrijpen van de context (Hoofdstuk 6). De tweede cyclus richtte zich op onderwijzen en leren (Hoofdstuk 7). De derde cyclus materialiseerde en integreerde inzichten in co-creatie (Hoofdstuk 8).

Hoofdbevindingen en theoretische implicaties

Studie Eén leverde een veelomvattend overzicht van 24 waardenverschillen, 10 kritische momenten en vijf conflict categorieën ervaren door junior ontwerpers. De studie heeft vijf conflict categorieën geïdentificeerd: worstelingen van de perfectionistische ontwerper, professionele dilemma's, relationele uitdagingen, verwijdende perspectieven en creatieve frustraties. Waardenconflicten worden getriggerd door de situatie, startend met een kritisch moment waarin een waardenverschil onhoudbaar wordt. Waardenconflicten worden veroorzaakt door twee type kritische momenten gerelateerd aan samenwerking (i.e. interpersoonlijke vaardigheden) en identiteitsontwikkeling (i.e. intrapersoonlijke vaardigheden). Daarom zou het verbeteren van coping met waardenconflicten gericht moeten zijn op het verbeteren van sociale vaardigheden, vergroten van zelfkennis en ontwikkelen van een professionele identiteit.

Aanvullend, de eerste studie stelde 11 verscheidende manieren van coping met waardenconflicten vast, zoals volharden voor verandering, veranderen van perspectief en streven naar perfectie. Junior ontwerpers gebruiken typerende coping mechanismen voor verschillende fasen van professionele ontwikkeling. Het iteratieve coping proces bevat componenten zoals waardenverschillen, collaboratieve acties, kritische momenten, reflectie op waarden, proactieve coping in nieuwe contexten en inzichten voor professionele ontwikkeling. De studie onthulde dat senior ontwerpers minder gefrustreerd zijn door waardenconflicten en dat junior ontwerpers ervan leren. Coping wordt productiever wanneer junior ontwerpers nieuwe acties uitvoeren om de huidige waarden te bereiken, reflecteren op de samenwerking en waarden, professionele inzichten ontwikkelen en proactief zijn in nieuwe contexten. Na reflectie op de samenwerking en/of waarden, kunnen junior ontwerpers leren om hun plan van aanpak te veranderen, hun repertoire aan acties vergroten en hun professionele competenties verbeteren. Dus de training *reflective practice* moet ook bestaan uit praktische reflectie op de samenwerking om met waardenconflicten om te gaan en diepere reflectie op waarden om inzichten te vergaren voor professionele ontwikkeling.

De tweede studie ontwikkelde ondersteuning om reflectie op waardenconflicten ervaren door junior ontwerpers te faciliteren. Op basis van de uit eerste cyclus afkomstige ontwerpcriteria, co-creëerde en evalueerde we in cyclus twee een onderwijsaanpak om reflectie op waardenconflicten te faciliteren. De onderwijsaanpak was ontwikkeld samen met docenten, coaches en de promotoren en getest in meerdere contexten. De derde cyclus resulteerde in een *toolkit* met een kaartspel, een trainingsprogramma, een e-boek en richtlijnen voor coaching. De tools zijn in co-creatie ontworpen met junior ontwerpers, getest in meerdere contexten en geïntegreerd in de onderwijsaanpak. Het actieonderzoek liet zien dat junior ontwerpers getraind kunnen worden om te reflecteren op waardenconflicten en alternatieve coping strategieën kunnen ontwikkelen. Junior ontwerpers kunnen de tools inzetten voor zelfhulp en zelfstudie. Het is echter aan te bevelen om ondersteuning van een mentor of coach te zoeken. Diegene kan een ander perspectief bieden op het waardenconflict en ondersteunen bij het formuleren van effectieve manieren van coping en het evalueren van de uitkomsten.

Dit proefschrift presenteert een model, het zogenaamde "Professionaliseringswiel", die inzichten uit de literatuur en beide studies samenbrengt om junior ontwerpers te helpen te leren van waardenconflicten en het ontwikkelen van professionele manier van coping (Hoofdstuk 9). Het kerndoel van het wiel is professionele coping die voorkomt uit twee leerprocessen: verbeteren van coping en professionele ontwikkeling. Het wiel heeft vier kwadranten die elk een professionaliseringsdoel vertegenwoordigen: vergroten van zelfkennis, ontwikkelen van professionele ontwerpersidentiteit, onderhouden van gedeelde verantwoordelijkheid en ontplooien van empathie in samenwerking. Junior ontwerpers kunnen hun leerproces opdelen en werken aan de professionaliseringsdoelen door te werken aan twee supportdoelstellingen per professionaliseringsdoel of door iteratief de ringen te volgen. Voor elk supportdoelstelling zijn richtlijnen en contexten benoemd waar ondersteuning in gegeven kan worden. Het Professionaliseringswiel kan professionele ontwikkeling monitoren, dienen als discussietool of ingezet worden om ondersteuning te ontwikkelen in onderwijs en professionele ontwikkelingsinstellingen.

Aanbevelingen voor de praktijk:

- Het overzicht van waardenconflicten kan gebruikt worden door junior ontwerpers, ontwerpdocenten en ontwerpmanagers om waardenverschillen en conflicten te duiden in de co-design praktijk.
- Implementeren van de onderwijsaanpak en het trainings-programma in ontwerpopleidingen en professionele ontwikkeling om reflecteren op waardenconflicten te faciliteren.
- Zet coaches in die junior ontwerpers begeleiden om waardenconflicten te herkennen, frustratie te reduceren en effectievere coping strategieën te ontwikkelen voor huidige en toekomstige situaties door reflectie op samenwerking en waarden.
- Managers, teamleiders en HR-afdelingen moeten een supportsysteem aanbieden en professionele ontwikkeling stimuleren om reflectie op waardenconflicten te faciliteren, er beter mee om te gaan en te leren van de ervaring.
- Ondanks dat fysieke tools de voorkeur verlenen van junior ontwerpers, kan kwalitatief hoogstaand online support wereldwijd meer junior ontwerpers bereiken.

- De support toolkit kan worden verbeterd door het Professionaliseringswiel toe te voegen die kan dienen als coaching tool, reflectie tool in ontwerpteams en ontwikkelgesprekken met managers en als zelfhulp tool om het leerproces te monitoren.
- Dit onderzoek pleit dat docenten, coaches en academici de support toolkit gaan inzetten en testen in de praktijk. Met nieuwe inzichten kunnen de tools verbeterd worden en nieuwe tools ontwikkeld worden om de toolkit uit te breiden.
- Ondersteun junior ontwerpers in het nastreven van betekenisvolle innovatie om ze gemotiveerd te houden in de weerbarstige commerciële praktijk en de samenleving die weerstand kunnen bieden tegen de consequenties.

Suggesties voor toekomstig onderzoek:

- Evalueer het Professionaliseringswiel met de doelgroepen na toepassing in de praktijk.
- Het overzicht van waardenconflicten kan gebruikt worden om bijvoorbeeld casussen te identificeren bij observaties in de praktijk of te onderzoeken welke conflicten het meeste voorkomen.
- Soms kunnen meerdere waardenverschillen onder een conflict liggen en ervaren of reageren mensen anders op hetzelfde conflict. Toekomstig onderzoek kan dit verkennen door rijke casussen te verzamelen met behulp van observaties, directe interviews met meerdere informaten om de interacties in een conflict beter te begrijpen.
- Onderzoek de notie dat twee intrinsieke waarden mogelijk niet tot een waardenconflict zullen leiden.
- Bestudeer waarom junior ontwerpers zich minder gewaardeerd of niet erkend voelen. Bedenk ondersteuning voor junior ontwerpers om meer zelfvertrouwen te ontwikkelen over hun bijdragen.
- Onderzoek of het Professionaliseringswiel toegepast kan worden door andere beroepen, zoals ingenieurs of zorgmedewerkers.

SUMMARY

Junior designers may experience struggles with collaborative partners (e.g clients, managers, and stakeholders) who may prioritise values differently and which may yield frustration, conflict, and stress. Particularly, junior designers may find coping with value-based conflicts challenging as support is lacking. Senior designers can develop effective ways of coping to promptly reduce frustration. Design schools and professional development courses could offer support to address and facilitate learning from value-based conflicts. This study aims to answer the following question: how can junior designers cope more effectively with value-based conflicts in collaborative design practice?

In the literature, values have been defined as communicated opinions of worth, preferences, ethics, and motivational drivers. In collaborative design practice, junior designers employ values in design evaluations, negotiations with clients, planning of possible actions, and design decisions. The literature suggests that value differences emerge in collaborative practice when two values clash inducing value-based conflicts, such as disagreements, interferences and/or negative emotions. Value differences and value-based conflicts may emerge in numerous situations, such as collaboration, design decision-making, or transitioning from one career step to another. Junior designers may feel frustrated and dissatisfied or even begin to feel burned out if they cannot match or adapt their values. A typical value difference a junior design may experience is one between their idealistic design values acquired in university and values prioritised in commercial practice. Unfortunately, there is no empirical evidence on what value differences and value-based conflicts junior designers may experience. Therefore, the first research question is as follows:

RQ 1. What conflicts induced by value differences in collaborative practice do junior design professionals experience?

In codesign practice, conflicts should not be avoided as they could benefit innovation and sharpen junior designers into seasoned professionals. Senior designers can skilfully handle value tensions, but is problematic for junior designers who do not know how to effectively cope with such tensions. Design students often learn

to collaborate and handle conflicts; however, the complexity of design practice is difficult to simulate in school. Transitioning to practice, junior designers face many value differences which may induce value-based conflicts. Collaborative design practice is a source of conflict and the design literature lacks insight on how junior designers cope with value-based conflicts. Therefore, the second research question aims to understand how junior design professionals cope with value-based conflicts:

RQ 2. What ways of coping do junior design professionals employ?

Different methods are available to make the values of stakeholders explicit in the co-design process. Value methods can increase awareness by providing an overview of values, using tools to map values, or employ card sets to facilitate discussions in meetings or workshops with the team or stakeholders. These methods lack designers as explicit stakeholders in the design process. Furthermore, they provide not enough support for junior designers to cope with value-based conflicts. The literature revealed three potential ways to attain effective coping: developing a reflective practice on values, building a professional design identity based on personal values, and raising awareness of values in design practice. They can be used to design support to prepare junior designers to cope effectively with value-based conflicts. Hence, the third research question follows:

RQ 3. How can junior designers be supported to cope more effectively with value-based conflicts?

The research project is divided into two studies. The first study (Study One) aims to understand value-based conflicts (Chapter 4) and how junior designers cope with these conflicts (Chapter 5), addressing RQ 1 and 2. In a retrospective interview study with 22 design professionals, the open-interview procedure engaged with participants' thoughts, values, and experiences and collected 32 cases of value-based conflicts. The grounded theory approach helped analyse the data to build a theoretical framework on value-based conflicts to bridge the gap in the literature. The second study (Study Two) aims to develop support for junior designers, enabling them to cope more effectively, thereby answering RQ 3. Study Two employed a design-led action research following three cycles.

Cycle One aimed to understand the context (Chapter 6), Cycle Two focussed on teaching and learning (Chapter 7), and Cycle Three materialised and integrated insights through co-creation (Chapter 8).

Key findings and theoretical implications

Study One provided a comprehensive overview of 24 value differences, 10 critical moments, and five conflict categories experienced by junior designers. The study identified five conflict categories: perfectionist designer struggles, professional dilemmas, relationship challenges, differing perceptions, and creative frustrations. Value-based conflicts are situationally triggered, starting with a critical moment when a value difference becomes intolerable. They comprise two types of critical moments related to collaboration (i.e. interpersonal skills) and identity development (i.e. intrapersonal skills). Hence, improving coping with value-based conflict should focus on collaborative development, increasing self-awareness, and building a professional identity.

Additionally, Study One identified 11 different ways of coping with value-based conflicts, such as persevering before change, switching perspectives, and pursuing perfection. Junior designers employ distinct coping mechanisms at different stages of their professional development. The iterative coping process includes components such as value differences, collaborative actions, critical moments, reflecting on values, proactive coping in new contexts, and insights on professional development. Study One revealed that senior designers were less frustrated by value-based conflicts, and junior designers learn from value-based conflicts. Coping becomes more productive when junior designers apply new actions to achieve existing leading values, reflect on collaboration and values, develop professionalisation insights, and take proactive steps for new contexts. After reflection on collaboration and/or values, they learn to adapt their course of action, broaden their action repertoire, and improve their professional capabilities. Thus, the training of reflective practice should include practical reflection on collaboration to cope with value-based conflicts and deeper reflection on values to acquire insights for professional development.

Study Two developed support to facilitate reflection on value-based conflicts experienced by junior design professionals. Based on design requirements formulated in Cycle One, Cycle Two co-created and evaluated an educational approach to facilitate reflection on value-based conflicts. This approach was co-created with teachers, coaches, and the supervisory team and tested in multiple contexts. Cycle Three resulted in a toolkit with a card game, a training programme, an e-book, and coaching guidelines. The tools were co-created with junior designers, tested in multiple contexts, and integrated into an approach to facilitate reflection. The action research showed that junior designers can be trained to reflect on value-based conflicts and generate alternative coping strategies. Junior designers can use the tools for self-help or self-study. However, it is important to seek the help of a supportive mentor or coach who can provide another perspective on the value-based conflict and support junior designers to formulate effective coping strategies and evaluate the outcomes.

This thesis presents a model—the so-called "Professionalisation Wheel"—that brings together the insights of literature and Studies One and Two to help junior designers learn from value-based conflicts and develop a professional coping mechanism (Chapter 9). The central goal of the Wheel is professional coping, which results from two learning processes: improving coping and professional development. The wheel has four quadrants each representing a professionalisation target: increasing self-awareness, building a professional designer identity, cultivating a shared responsibility, and growing empathy in collaboration. Junior designers can break down their learning process and achieve the professionalisation targets by working on the two support objectives per target or following the two rings iteratively. For each support objective, there are support guidelines and contexts in which support can be provided. The Professionalisation Wheel can help monitor professional development, serve as discussion guide, and can structure a support system in design education and continuing professional development (CPD).

Recommendations for practice:

- The overview of value-based conflicts can be used by junior designers, design educators, and design managers to identify value differences and value-based conflicts in collaborative design practice.
- Implement the educational approach and training programme in design schools and CPD to facilitate reflection on value-based conflicts.
- Employ coaches who support junior designers to identify value-based conflicts, to reduce frustration, and for developing more effective coping in current and future contexts through reflection on collaboration and values.
- Managers, team leaders, and HR departments should offer a support system and to encourage professional development to facilitate reflection on, to improve coping with, and stimulate learning from value-based conflicts.
- Although physical tools are still preferred by junior designers, through high-quality online support more junior designers can be reached worldwide.
- The support toolkit can be improved by adding the Professionalisation Wheel as a coaching guide, reflection tool in design teams and performance reviews, and self-help tool to track learning progress.
- This thesis advocates for educators, coaches, and academics to use and verify the support toolkit in their practice. With new insights, the tools can be improved and supplementary tools can be developed to expand the toolkit.
- Support junior designers in pursing meaningful innovation to keep them motivated in the challenging commercial practice and society that may resist the consequences. Supporting them will not only improve the designer's wellbeing, but also can benefit societal challenges.

Suggestions for future research:

- Evaluate the professionalisation Wheel after application in practice by the target groups.
- The overview of value-based conflicts may be used for identifying cases while observing practice or surveying most frequently experienced conflicts.
- Sometimes multiple value differences underly a value-based conflict and people perceive and respond to the same conflict differently. Future research can investigate this by collecting more in-depth cases of value-based conflicts through observations, direct interviews, and multiple-informant interviews to understand interactions between actors in a conflict situation.
- Investigate the notion that two intrinsic values may not induce value-based conflicts.
- Explore why junior designers may feel undervalued or unacknowledged and find ways to help junior designers feel more confident of their contributions.
- Researchers can investigate whether the Professionalisation Wheel applies to other professions, such as engineers or care workers.

Chapter 01

INTRODUCTION

At the start of my career, my design practice did not accord with my ambitions as a design professional. Shortly after graduation, I worked as a freelance design consultant. My goal was to consult on sustainable design projects. Despite the popularity growth of sustainable design in 2008, most sustainable innovation projects were not commercially viable, with little investment interest from clients. I pursued sustainable innovation by working on unpaid projects. I accepted projects having little to do with sustainability to earn money. It felt like a trade-off between two different values—a stable income and meaningful design. On one occasion especially, I felt disheartened after unsuccessfully persuading a client to include environmental factors in a project. I could not ascertain how to handle the situation satisfactorily without giving up one of my values. In my design practice, I coped with the conflict—guerrilla-style—by embedding sustainability chapters in reports on non-sustainable projects—a rather ineffective approach. Moreover, I reached out to more experienced design professionals for mentoring, coaching, and support to become more business-minded. After a few years, my frustration became intolerable as sustainable innovation projects continued to evade me. Thus, I shifted my career course toward academia, which brought the opportunity to pursue my values through teaching responsible and sustainable product design, thereby reducing my frustration and helping me achieve better results. As a design educator, I realised the importance of pursuing personal values as a design professional and developing skills to handle situations when values are unaligned. As a researcher, I could transfer my frustration into addressing research questions that have induced explorative studies and, ultimately, writing this thesis that reveals the same anxiety in other designers. Hence, this thesis offers support to junior professionals in coping with value-based conflicts, which emerge when several values clash in collaborative design practice.

VALUE-BASED CONFLICTS IN COLLABORATIVE PRACTICE

Junior designers experience struggles in collaborating with external parties who may prioritise values differently. Two pilot studies show the struggles of junior designers with value-based conflicts.

In the first pilot study, most design students struggled to find collaborating partners in self-initiated projects (van Onselen and Valkenburg, 2013). The course required them to find collaborative partners at the beginning of the project. They set up a design project based on their "itch"—a problem they wanted to explore (Valkenburg and Sluijs, 2012). It was challenging for some students to align values with others, which yielded value-based conflicts. Such students coped in different ways. For instance, a few students changed their project topic to match the opportunities they found, deviating from their values. Other students ran their projects independently without partners, allowing them to stay true to their values. Over the years, few could organise and run a project with collaborative partners while staying true to their values. They often had work experience or were more serious about their professional development than other students were. The self-initiated projects yielded positive results in that the design students learned to cope with value-based conflicts. When I spoke to alumni, they revealed that they had learned how to handle complex issues in their self-initiated projects. The students later applied their insights in their graduation projects and careers.

Tutors sought to support the design students in their struggles practically. For example, students received practical tips from personal experiences. However, tutors and students also recognised that support could be improved to assist junior designers more effectively through a more fundamental understanding of value-based conflicts. Thus, there was a need to support design students and junior design professionals to address value-based conflicts. Assumedly, design schools and professional development courses could help junior designers cope with the complex challenges of collaborative practice (Meyers and Norman, 2020). Conflicts are not only negative experiences but also learning experiences (McDonnell, 2012) which increase professional competence and build resilience.

The second pilot study—an explorative interview study—showed that value differences are a reoccurring issue in collaborative practice (van Onselen and Valkenburg, 2015). Five designers and an expert on value modelling shared their experiences on differing values in collaborative design practice that induced value-based conflicts. Accordingly, value differences that emerged in collaborative practice include user values conflicting with organisational values or project values with personal priorities. Moreover, there is a difference between idealistic and commercial values because a sustainable material is often more expensive than a non-sustainable alternative. Participants coped with value-based conflicts in different ways. One participant improved the design, and three others made a compromise. Similar to my experience, four participants experienced an unresolved conflict that induced frustration, dissatisfaction, and project abandonment. Further, senior design professionals with more than 10 years of experience were better at using personal values purposefully in innovation projects. Particularly, junior designers may find coping with value differences challenging when they work with clients in multidisciplinary teams and weigh and integrate values successfully in their designs.

Potential conflicts may emerge from value differences, for example, between utility and social significance values when a product is aesthetically pleasing but impractical to use (Botzepe, 2007). Designers are expected to pursue design values or company goals and integrate values from different stakeholders into the design (Friedman, 2002). In collaborative practice, designers often involve stakeholders in the project at vantage points by, for instance, inviting them to design workshops and requesting them to answer surveys or participate in product testing. Aligning the values of different stakeholders in design projects adds a level of complexity that increases the possibility of value differences and conflicts.

Particularly, designers may create meaningful innovations to improve people's lives, add value for companies, and solve societal issues (den Ouden, 2012; Meyer and Norman, 2020). Meaningful design means addressing various values (den Ouden, 2012). Thus, designers must have a sound grasp of their values (Baha *et al.*, 2018) and those of others (den Ouden, 2012; Friedman *et al.*, 2013; Kheirandish *et al.*, 2020) to create meaningful innovations. They

must explore the different values emerging in complex innovation projects without forfeiting their values. Therefore, junior designers most likely encounter value differences and related conflicts in the codesign process daily.

Problem statement

Junior design professionals[1] often encounter differences between their values and those of companies, managers, clients, partners, and other stakeholders, which can yield frustration, conflict, and stress. In collaborative design practice, value differences may be challenging to address and yield value-based conflicts. Junior designers may have trouble recognising their frustrations as value-based conflicts. Furthermore, they are unfamiliar with effective ways of coping with such conflicts. If junior designers struggle to align their values with (potential) project stakeholders, value-based conflicts reoccur in collaborative design practice. Moreover, when junior designers can cope more effectively with value-based conflicts they can learn from them and become seasoned professionals. Accordingly, with educational or professional development support, junior designers can develop effective ways of coping to promptly reduce frustration. Knowing the potential value differences and conflicts in collaborative practice may support design educators in helping junior designers to cope with them. Thus, this study investigates value-based conflicts and how to help junior design professionals cope with them. Hence, this study aims to answer the following question: how can junior designers cope more effectively with value-based conflicts in collaborative practice?

1 This thesis focuses on junior designers with 7.5 years of experience or less (Ahmed, Wallace, and Blessing 2003; Ball, Ormerod, and Morley 2004; Casakin and Goldschmidt 1999).

STRUCTURE OF THE THESIS

The structure of the thesis combines practical and theoretical insights to address the problem statement (Figure 1).

Chapter 2 reviews the literature on design, engineering, and social science to explore the reasons why coping with value-based conflicts may be challenging for junior designers and find support for coping with value differences more effectively.

Chapter 3 presents the research approach. It explains how the thesis is based on two larger studies and discusses the choice of a grounded theory approach for **Study One** and action research for **Study Two**. This chapter also explains how the results from both studies influenced each other iteratively.

Study One explores the value-based conflicts junior design professionals experience and how they cope with them and highlights different suggestions for conflicts that designers may experience in the literature, though lacking empirical support. Thus, **Chapter 4** explores value-based conflicts junior designers may experience in an empirical overview. Further, **Chapter 5** investigates how junior designers cope with value-based conflicts. Assumedly, designers cope differently with value-based conflicts with other professionals. Accordingly, the study presents 11 ways of coping that show overlap and differences with other professions and shows that junior designers learn from experiencing value-based conflicts by reflecting on values and the collaboration.

Study Two develops support to facilitate reflection on value-based conflicts experienced by junior design professionals. Hence, **Chapter 6** describes the first cycle of the action research to explore the requirements to facilitate reflection in junior designers. **Chapter 7** then explains the second cycle of the action research to develop an approach to facilitate reflection on value-based conflicts. This approach was co-created with teachers, coaches, and the supervisory team and tested in multiple contexts. **Chapter 8** finally presents the third action cycle that develops a supportive toolkit to facilitate reflection. The tools were co-created with junior designers, tested in multiple contexts, and integrated into an approach to facilitate reflection.

Chapter 9 presents a model—the so-called "professionalisation wheel"—that brings together the insights of Studies One and Two to help junior designers learn from value-based conflicts and develop a professional coping mechanism.

Finally, **Chapter 10** summarises and discusses the main research findings. The thesis concludes with a discussion on how the insights into value-based conflicts influence the professionalisation of designers and how the different forms of support may facilitate a readily available support system tailored to the needs of junior designers.

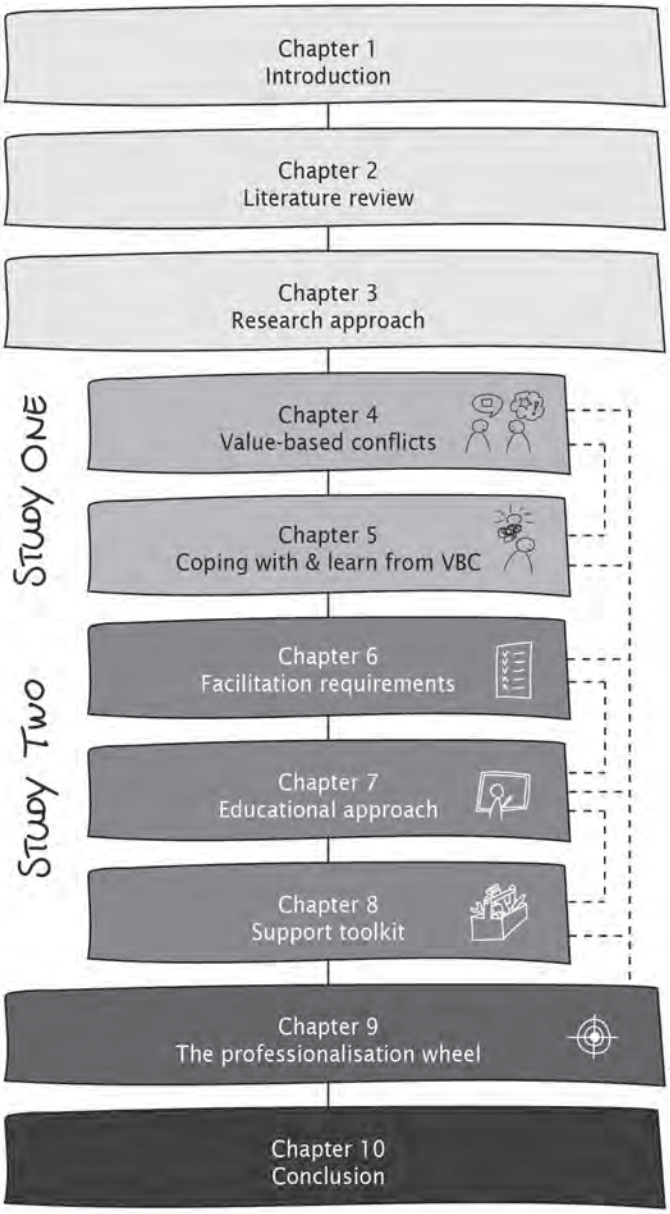


Figure 1. The structure of this thesis

Chapter 02

COPING WITH VALUE-BASED CONFLICTS IN BECOMING A DESIGN PROFESSIONAL

The previous chapter highlighted the problem that junior designers experience conflicts from differing values in collaborative practice. Design values may refer to what is important for a designer or people collaborating on a design project and what guides them in the design project. This chapter describes the literature review methodology and explores reasons for value differences and value-based conflicts in becoming a design professional, followed by an evaluation of potential support available for junior designers.

LITERATURE REVIEW METHODOLOGY

This Chapter reviews English and Dutch publications between 2014 and 2021 after a systematic search. First, I searched three databases: Google Scholar, World Cat, and Scopus. While focusing on collaborative practice, the review explored various topics: values in design, value differences and value-based conflicts in codesign and becoming a design professionals, and ways to improve coping. I used the following search keywords: values, design, collaboration, value conflict, design team, professional, expert, and early career. Second, I searched three design journals using the following keywords for relevant articles: Design Studies, Design Issues, and CoDesign. Third, I reviewed monographs, omnibus volumes, reports, and dissertations on design practice and values in design suggested by experts and peers. Fourth, in found literature I searched citations (forward chaining) and references (backward chaining) to find relevant literature. Furthermore, I checked the biographies of authors with relevant articles on Google Scholar, ResearchGate, and other databases. Finally, the study explored social, vocational, and organisational sciences studies to broaden its scope on collaboration, values, and professionalisation.

I then selected literature relevant to the research problem by skimming through titles and abstracts, resulting in more than 200 publications on values (or similar concepts), design, collaboration, professionalisation, and conflicts. This chapter first describes values in design, value differences and value-based conflicts in collaborative design practice, education, and early career, and explores how to improve coping with value-based conflicts. It reviews potential support for junior designers to cope with value-based conflicts and identifies different forms of support: developing reflective practice, building a professional design identity, and construing an understanding of values in collaborative design. Finally, the chapter develops three research questions for this thesis.

VALUES IN DESIGN

Values regard what guides people's behaviour and to what is important in their lives (JafariNaimi, Nathan, and Hargraves, 2015; LeDantec and Do, 2009; Kheirandish *et al.*, 2020; Schwartz, 2017). Thus, design values may refer to what guides people in design projects and is important for people collaborating on a design project. Even though values are widely discussed in the design literature, they remain ill-defined (JafariNaimi, Nathan, and Hargraves, 2015; Manders-Huits, 2011), as various definitions proposed by scholars are often heavily critiqued. Design scholars have tried to create their own value theories relevant to designers (e.g., Boradkar, 2010; Triningham, 2008; van Boeijen, 2015). Table 1 shows an overview of the different value categories, value perspectives, and specific examples.

This study regards design values as communicated or expressed meanings of what is important to designers and stakeholders to make sense of the variety of value theories in design (Chiaradia, Sieh, and Plimmer, 2017). Values can be expressed locally where values emerge in dialogues or discussions between different stakeholders in a design project (Iversen, Halskov, and Leong, 2012). Values in design are dynamic and may develop and vary over time (Halloran et al., 2009; JafariNaimi, Nathan, and Hargraves, 2015). From the design literature emerge four meanings of values: worth, preferences, ethics, and motivational drivers. The first meaning regards what something is worth (Boradkar, 2010; den Ouden, 2012). This definition has often been used to express the added value, cost price, or potential profit of a design. Moreover, design scholars note that designers see beyond the economic worth of things and are motivated by creating societal, user, and aesthetic value (Boradkar, 2010; Chiaradia, Sieh, and Plimmer, 2017; den Ouden, 2012). For example, an aesthetically pleasing design of a car increases its worth.

The second meaning regards core concepts of what is prioritised or preferred (den Ouden, 2012). Priorities between values differ for every person, organization, group, and culture (den Ouden, 2012; Schwartz *et al.*, 2012; van Boeijen, 2015). Values can be general or specific to a particular situation, though not as specific as concrete

Table 1. Values relevant to design

Value category	Value perspectives	Specific values (examples)
Human values in design (Kheirandish et al., 2020; Friedman, 2013)	Personal	Meaningfulness, self-respect, and personal development
	Society	Carefulness, justice, pleasure, respect, status, time (long-term implications), and pervasiveness (widespread adoption)
	Nature	
Product design value (Boradkar, 2010; Nelson and Stolterman, 2012; Trimingham, 2008; Wandahl, 2004)	Design	Aesthetic, brand, environmental, strategic, and functional value (utility and technical)
	Designer	Personal value priorities, process value
	Society	Political, cultural, and social
	Stakeholders	Factual information (market and economic)
	Business	Use, exchange, consumer, market, and shareholder value
	Philosophy	Axiology, moral values
	Other	Spiritual, sign value
Meaningful business values (Allee, 2008; Bocken et al., 2013; den Ouden, 2012)	Ecology	Environmental value
	Society	Societal value
	Customers	Use value
	Stakeholders	Transaction value
Professional (design) values (Bos-Vos, 2018; van Boeijen, 2015)	Society	Addressing societal problems
	Cultural	Value tensions: bad-good, dirty-clean, dangerous-safe, forbidden-permitted, indecent-decent, immoral-moral, ugly- beautiful, unnatural-natural, abnormal- normal, paradoxical-logical, irrational-rational
	Client	Advancing project and client perspective
	Customer	Solutions for customer needs
	Design agency	Product and process quality
Use(r) value (Botzepte, 2007; Cockton, 2006)	User	Convenience, quality, performance, economy
	Social	Social prestige, identity
	Emotional	Pleasure, sentimentality
	Spiritual	Good luck

norms (Maierhofer, Rafferty, and Kabanoff, 2003). Fitzpatrick (2007) concludes that social science scholars employ the definition that values are "preferences and priorities that reflect what is important to us." In design, it may regard what is preferred by collaborating parties. For example, a designer may want to design a high-quality product, but clients opt for a lower-cost product.

The third meaning regards morals or ethics. Van de Poel (2009) argues that values are not only important to individuals but also the design should have value to others. Ethical value regards what things ought to be (van de Poel, 2009). Ethics in design may regard three things: (1) ethics guide people to change the world and influence behaviour, (2) ethics stimulate people to contemplate consequences, and (3) ethics help evaluate good or bad results (Lloyd, 2009; van de Poel, 2009). For example, ethics help gauge the situation of a grille improving car safety when used in rural areas, though increasing the chances of pedestrian injuries in an accident.

Designers often consider their products to be neutral or a means to pursue specific values; however, designs can embody the values of designers or other stakeholders (Manders-Huits, 2011; van de Poel, 2009). Designs can be racist and patriarchal or even inclusive and feministic. For example, a simple pocket on women's clothes would make purses redundant, but most women's clothing lacks usable pockets. Beyond the question of whether women prefer pockets, the ethical consequences of this simple omission on women's clothing mean that women must spend extra money on purses, which comes with a higher risk of being robbed.

The fourth meaning regards goals and motivational drivers (Jafari-Naimi, Nathan, and Hargraves, 2015). Values in this definition transcend specific situations and guide the selection or evaluation of behaviour and events (van de Poel, 2009). They may serve as design hypotheses based on ideals or needs the designer believes is important to pursue in design practice (JafariNaimi, Nathan, and Hargraves, 2015). For instance, a designer may work toward user-friendly product collections or design expertise in biomimicry.

A leading theory in social science studies is the values theory of Schwartz (2017), where values are the beliefs or abstract ideals regarding a desirable end state or behaviour (Rokeach, 1968; Schwartz *et al.,* 2012). Schwartz proposed 19 universal values widely adopted by other scholars, including self-direction, stimulation, and power. These values are universal, linked to biological needs and social interaction, and necessary for well-being (Schwartz *et al*., 2012). Values influence all human activities regarding work, religion, culture, sports, politics, and life in general (Maierhofer,

Kabanoff and Griffin, 2002; Schwartz *et al.*, 2012). Schwartz states that values can be congruent or oppose each other.

Two types of values can be distinguished: intrinsic and extrinsic (Kasser and Ahuvia, 2002; Schwartz *et al.*, 2012). The intrinsic values of a person are growth-oriented and satisfy psychological needs (Kasser and Ahuvia, 2002; Schwartz *et al.*, 2012). The extrinsic values regard rewards or praise for self-protection and to avoid anxiety (Kasser and Ahuvia, 2002; Schwartz *et al.*, 2012), which could be of commercial value for the client or social recognition for the designer.

Against the above, this thesis defines *values* as communicated meanings in the design of what is important to designers and stakeholders. The value differences junior designers perceive most likely emerge from the expressed meanings of what they or others find important. For the junior designer, it is irrelevant if values regard worth, preferences, ethics, or motivational drivers once they yield value-based conflicts. Thus, this thesis describes *values* as what is important for design professionals in daily collaborative practice. Irrespective of the specific type (meaning) of value, it assumes that each type may induce value differences in design practice.

VALUE DIFFERENCES AND VALUE-BASED CONFLICTS IN COLLABORATIVE DESIGN PRACTICE

Value differences occur in social settings such as collaborative design practice when two or more values do not match or complement each other (Schwartz *et al.*, 2012; van de Poel, 2009). Value differences in collaboration emerge when people hold different values (Fitzpatrick, 2007). When (some) parties cannot accept the values of others, this may lead to value-based conflicts during or after the co-design process. Value-based conflicts refer to disagreements,

interferences, and/or negative emotions (Barki and Hartwick, 2004) induced by value differences in collaborative practice.[1]

This section explores the situations in which value differences and value-based conflicts may emerge in collaborative design practice. Table 2 shows three situations and multiple design actions that emerged from the design literature that may yield value differences.

Table 2. Situations and activities in design in which value differences emerge

Design situation	Design action	Sources for value differences
The design context	Environmental analysis	Examining the context
	Collaboration	Negotiations with clients, stakeholders, and in multidisciplinary teams
The design process	Planning	Establishing the possible course of actions
	Evaluation	Evaluating ideas
	Designing	Making design decisions
The design approach	Co-design	Applying co-design methods to collaborate with stakeholders
	Empathic understanding	Empathy with stakeholders to achieve meaningful innovation
	Integration	Multidisciplinary field
		Integrating perspectives of stakeholders

1 This thesis uses value differences and value-based conflicts to avoid confusion with value conflicts which often refers to conflicting values that are incompatible, such as dominance obstructs freedom. Value difference includes two or more unsimilar values that can be incompatible but do not have to be. For example, income and meaningful design can lead to financial stress for some people, while others effectively cope by living cheaply. The findings in Chapter 4 subscribe this distinction between value differences (unsimilar values) and value-based conflicts (conflicts emerging from value differences).

The first category is the design context, which can induce value differences (JafariNaimi, Nathan, and Hargraves, 2015). For example, constraints may emerge from the environment and stakeholder rejection (Sagiv and Schwartz, 2000). Designers often co-operate in multidisciplinary teams with specialists from diverse backgrounds to stimulate innovation (Dorst, 2019; Feast, 2012). Value differences may emerge in negotiations with clients and stakeholders (Le Dantec and Do, 2009). Collaboration can help integrate various perspectives of specialists and stakeholders into the design (Feast, 2012), but diversity in design teams and co-creation with stakeholders from different backgrounds may induce conflicts (Pei, Campbell, and Evans, 2010). Although conflicts may be thought-provoking for the creative process (De Dreu, 2006; Farh, Lee and Farh, 2010), the pressure from differing values can bar innovation in multidisciplinary teams (Rothkegel, 2012). Opposing values in design teams become problematic when one party is unwilling to make a compromise, and no decisions are made (McCuen and Gilroy, 2011).

Furthermore, compromises may induce value paralysis when all values are considered (Nelson and Stolterman, 2012). Such value differences emerge in direct contact with others. The second category is the design process, where value differences may emerge when discussing opposing opinions and agendas (Bergema *et al.,* 2011), planning actions (JafariNaimi, Nathan, and Hargraves, 2015), evaluating ideas (Nelson and Stolterman, 2012; Le Dantec and Do, 2009; Trimingham, 2008), and making design decisions throughout the process (Trimingham, 2008; Nelson and Stolterman, 2012). Value differences emerge when discussing ideas, prototypes, and tests (Halloran *et al., 2*009). Designers must evaluate their work with a wide and open range of values and cannot only use prescribed values as formulas (JafariNaimi, Nathan, and Hargraves, 2015; Snelders 2015), as values can be spontaneously expressed, change over the course of the design project, and mediate relationships between users and designers (Halloran *et al.,* 2009). Values can be unpredictable in the design process. Designers must base decisions and actions on the specific problem situation (real), what ought to be (ideal), and general knowledge (true) to create desired problem solutions (Nelson and Stolterman, 2012).

Even when designers work alone, they may perceive value differences. Designers must weigh their values against others or contextual values (Goldschmidt, 1995; Trimingham, 2008). For instance, a designer who has agreed with his team to make a cheap gadget may feel that it is at odds with his value of being environmentally friendly. Though some designers may express their feelings, others may not perceive it as a value difference. In other cases, the designer may experience an internal conflict between previously and newly acquired values (Sagiv and Schwartz, 2000). For example, the internalised values from design education could oppose the values of a highly competitive commercial practice. This is further addressed in the next section.

The third category is the design approach, comprising three activities, in which value differences emerge. In the first activity, designers often co-design with many stakeholders (Dorst, 2019). Differing values may emerge in the design process when designing with stakeholders (Halloran *et al. 2*009; van der Velden and Mörtberg 2015). When designers involve users in challenging aspects of the design process (e.g., being creative or in technical areas), focussing on values may engage users better (Halloran *et al. 2*009). Sennett (2008) argues that it results in different criteria of quality between correctness and practical experience. Such a difference can occur when a junior designer wants to design a high-quality and correctly engineered product and must meet the conflicting practical demands of marketeers, salespeople, and manufacturers. The second activity aims to reach an empathic understanding. Designers are trained to empathise with users, clients, and other stakeholders to achieve meaningful innovation (den Ouden, 2012). They must consider the values of different stakeholders (EU Commission, 2013), putting designers in the role of bridging the gap between opposing views, which may be challenging for junior designers not trained to cope with value-based conflicts. The third activity is integrative thinking via a multidisciplinary approach, where designers borrow knowledge from and collaborate with fields such as engineering, business, or the arts (Cross, 2001; Dorst 2019; Snelders, 2015). Further, designers work on new concepts with no universal truths and generalised solutions (Nelson and Stolterman, 2012); thus, they must consider differing values and integrate values in their designs (Nelson and

Stolterman, 2012; Zelenko and Felton, 2013). Hence, designers consider multiple human values and integrate different stakeholder perspectives, which may be challenging, and including all values may induce value paralysis.

VALUE DIFFERENCES AND VALUE-BASED CONFLICTS EXPERIENCED BY JUNIOR DESIGNERS IN EDUCATION AND EARLY CAREERS

Beyond collaborative practice, value differences emerge in education and early career. Junior designers learn the values of the design profession during the professionalisation process, which is a social process where a person becomes competent and acquires the values of "the professional" field, their colleagues, the design context (e.g., consumer products and fastmoving consuming goods), and their workplace (Broadbent, 1984; Cross, 1995; Trede, Macklin and Bridges, 2012). Value differences may emerge when newly prioritised values differ from old values (Sagiv and Schwartz, 2000). Particularly, regarding important career steps junior designers align or acquire new values due to context changes, and value differences may emerge frequently inducing conflicts. Literature revealed five periods in the career of junior designers that yield value differences (Figure 2).

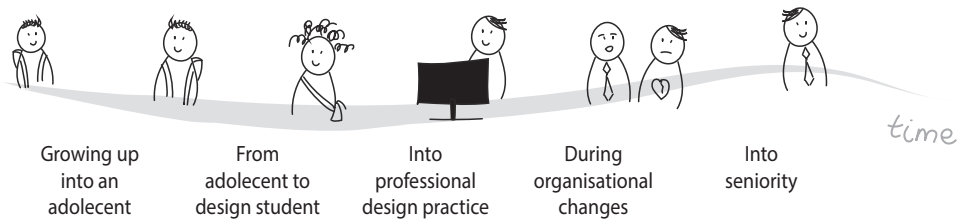


Figure 2. Five transition periods in the career of junior designers

Period 1: Growing up into an adolescent

A person inherits values and may be influenced by the prioritised values of their national culture (van Boeijen, 2015). Within social groups, the consensus has been measured regarding the relative importance of values or their hierarchical order (Schwartz *et al.*, 2012). The cultural values of a country have an influence on the design criteria on, for example, website styles (Snelders, Morel, and Havermans, 2011) or bicycle design (van Boeijen, 2015).

A person likely prioritises values, creating a value system (Fitzpatrick, 2007; Schwartz *et al.*, 2012; Rokeach, 1973). The prioritised values are the most likely applied in uncertain situations (Maierhofer, Kabanoff, and Griffin, 2002) such as in fierce discussions or making a difficult decision. Additionally, an internally perceived value-based conflict may occur when there is a mismatch between the ideal and actual self (Dick and Dalmau, 2000; Clark, 1997), such as when a person is not acting per their *intrinsic* values (Kasser and Ahuvia, 2002; Schwartz *et al.*, 2012).

Period 2: Transition from adolescent to design student

Value differences may occur when people start their education as designers. Their value system changes during their education, through which they acquire the values of the profession (Maierhofer, Kabanoff, and Griffin, 2002). Design schools educate students about their vision for the future design profession and criteria differ per design school (Broadbent, 1984; Meyers and Norman, 2020). For example, in arts-based programme may prioritise skill development and science-based programme may focus more on research and theory development (Meyers and Norman, 2020).

Thus, through education, students acquire prioritised values they strive for in their work (Maierhofer, Kabanoff & Griffin, 2002). During their education, junior designers adopt uniform, professional thinking shaped by the shared values of a professional group (Trede, Macklin and Bridges, 2012). Such shared professional values may influence how a designer makes design decisions, appreciates aesthetics, or approaches a design problem (van Boeijen, 2015). Shared values exist when most professionals agree with the relative importance of a set of value priorities (Maierhofer, Kabanoff and Griffin, 2002). S*hared* may refer to different things (Kleinsmann, 2006), such as overlapping (similar), complementary (paired values of each team member), or distributed (spread among the team members) values.

Three factors influence the value priorities of the junior designers: choosing to study design (through similar values), learning about the design culture (acquiring complementary values), and the type of educational programme (specialising in values). Regarding the first factor, adolescents who choose an educational programme,

may base this on the values they have at that time (Arieli, Sagiv and Roccas, 2020). For example, a young person who values creativity is more likely to opt for a design school than one who values high income. Moreover, many young people who opt for a design school likely feel a sense of calling. People with a calling aim to help others or make the world a better place (Duffy and Dik, 2013). Research indicates that value-based conflicts may less likely occur when professionals pursue intrinsic values, such as eco-friendliness, spiritual life, and equality (Fleischmann, Wallace, and Grimes, 2011). Thus, a junior designer who pursues intrinsic values should experience fewer value-based conflicts, though contrary to prior findings.

The second factor is that designers acquire the values of the profession in education (Broadbent, 1984). Designers are a distinct group of professionals because, in shaping the world, they pursue values other professions do not pursue, such as ingenuity and creativity (Banks, Gill and Taylor, 2013; Cross, 2001). For example, design students may acquire values such as "ingenuity" through developing skills to solve problems and "beauty" by studying the design culture. Design schools often impart a strong design ideology based on similar values (Broadbent, 1984), such as practicality, ingenuity, and empathy (Cross, 1982). Via design education, junior designers acquire the shared values of the design profession (Broadbent, 1984). Thus, beyond an initial sense of calling, the calling of junior designers is most likely reinforced during education with how education represents a professional ideology (Duffy and Dik, 2013).

The third factor that shapes value priorities is that design schools may specialise in a certain type of design, such as industrial design engineering or graphic design. Further, opinions on what is important for design professionals constantly change, inducing value differences within the profession (Schön, 1983). Consequently, designers from different universities or specialisations may adopt different values based on their educational environment. Moreover, designers work in various fields, ranging from product design and service design to digital design (Benton, Miller, and Reid, 2018). Each design field may focus on different core values important to that field. For example, in product design, a priori-

tised value may be ingenuity and in service design there may be a stronger focus on friendliness (i.e. compassion). Furthermore, the design professional may be educated with values taken from the applied sciences, such as truth and objectivity, or values taken from art, such as self-expression (Nelson and Stolterman, 2012). Thus, in transitioning from an adolescent to a design student, a person may strengthen existing or similar value priorities, prioritise new (i.e., complementary) values of the design profession, and specialise in a type of design (e.g., product or service design) through education.

Becoming a design professional and adopting professional values induces a professional identity. Professional identity development means that one acquires the characteristics of the profession and becomes distinguished from other professions (Trede, Macklin, and Bridges, 2012). In some cases, acquiring the values of a profession may not always go well. Sometimes the professional identity differs a lot from the social and personal identity (Trede, Macklin and Bridges, 2012). Regarding a design student, though they want to focus on meaningful products, the profession may require them to focus on the commercial aspects of a product. This effect is even more apparent in the next transition period.

Period 3: Transition from design student to professional design practice

Value differences may emerge during the socialisation period when junior designers start their internship or first job. Most junior professionals adopt the work values of their company during a socialisation period (Maierhofer, Rafferty, and Kabanoff, 2003), in which the value priorities of junior professionals align with the value priorities of colleagues and supervisors in the company (Knight-Turvey and Maierhofer, 2005). These shared values regard knowledge sharing, teamwork, contribution, and recognition. Sharing work values positively influences the social integration, commitment, work engagement and job satisfaction of junior professionals (Knight-Turvey and Maierhofer, 2005; Maierhofer, Rafferty, and Kabanoff, 2003; Sortheix *et al*., 2013). However, this socialisation process may not always go smoothly for junior designers. Two major sources for value differences emerge: joining commercial companies and collaborating with other disciplines.

First, junior professionals formulate their value priorities during education based on a professional ideology (Maierhofer, Kabanoff, and Griffin, 2002); for instance, industrial design engineers focus on solving human-centered problems in product development. Additionally, design students increasingly focus on solving societal issues in their final projects (Hekkert, 2020). Fortunately, it reinforces the sense of calling for junior designers, increasing their motivation to perform well. A calling positively affects work engagement, as it increases job satisfaction and provides a meaning to life (Duffy and Dik, 2013). Unfortunately, the focus of young designers on meaningful design may clash with commercial practice. For example, it is a challenge to pursue human-centered design in commercial projects in small and medium-sized companies (De Lille, 2014). Such commercial projects generate profit, which clashes with the designer's professional values to strive for elegance, safety, desirability, and social well-being (Schön, 1983; Boradkar, 2010). Balancing meaning and economic gain in commercial projects is difficult and requires strong visions, argumentation, persuasion, and the ability to develop new business models (Tromp and Hekkert, 2019). Junior designers must often develop such abilities on the job, as they are often not taught in the safe environment of schools and universities. Thus, when designers start their first jobs, they may experience frustration, as their commercial projects are less focussed on the meaningful design they may have been used to during their education. Such frustration, when not acted upon, may induce value-based conflicts.

Second, value differences may emerge from lacking experience in multidisciplinary teams. In collaborative practice, junior designers must work with professionals from other fields, such as marketeers and mechanical engineers who may prioritise different values. This design practice creates a complex co-design context where different cultures and values clash (Manzini, 2016). Design students are educated with a multidisciplinary skillset (Dorst, 2019; Snelders, 2015). Although design students are encouraged to collaborate in teams and co-design with stakeholders, students are trained in traditional studio's to practice design skills in teams with like-minded design students and are evaluated by like-minded design teachers (Meyers and Norman, 2020; Broadbent, 1984).

However, in design practice, junior designers often collaborate in more diverse teams focussed on performance with distributed values and work on projects with commercially higher stakes (Dorst, 2019; Feast, 2012). Even if a junior designer works for a company whose values are congruent with their own, clients, users, and other stakeholders participating in the project may prefer different values (Bocken *et al.,* 2013; Bos-de Vos, 2018). Furthermore, designers may find employment in a field unfamiliar with design values, such as aviation or health services (Snelders, 2015). Thus, junior designers must transition from an all-designer environment in education to a more diverse collaborative practice, which may induce the emergence of a wide range of potential value differences and value-based conflicts.

Period 4: Transition during organisational changes

When the values in an organisation change, value differences may emerge that induce conflict. Ideally, the shared work values are maintained (Maierhofer, Kabanoff and Griffin, 2003), resulting in stronger value congruence of the shared work values (Posner, 2010). However, an organisational change may become problematic when the board changes the core values of a company. Thus, existing shared values change and may differ from prior value priorities of workers (Maierhofer, Kabanoff and Griffin, 2003). Personal-organisational value incongruence may negatively influence the well-being of junior professionals (Sagiv and Schwartz, 2000) and their sense of connection with the organisation (Björklund, Keipi, Maula, 2020). Hence, transitioning during organizational changes may induce a value-based conflicts for junior designers.

Value differences may emerge when a person changes his professional identity to align with new values, inducing frustration (Dick and Dalmau, 2000) and thus a value-based conflict. A professional-personal identity gap is intensified when an organisation hinges on jobs instead of people (Dick and Dalmau, 2000). If a person does not understand the changed organizational values or does not receive adequate information, they cannot engage in the change (Dick and Dalmau, 2000). Personal-organisational value incongruency may negatively influence the well-being of junior professionals (Sagiv and Schwartz, 2000) and their sense of connection with the organisation (Björklund, Keipi, and Maula, 2020). It may

also increase their stress levels (Bouckenooghe *et al.*, 2004), which may occur when junior professionals aim for conservative (e.g., tradition) or self-transcendence (e.g., equality) values (Bouckenooghe *et al.,* 2004) and must expend energy on transforming negative experiences into stories of personal growth and development (Björklund, Keipi, and Maula, 2020). Thus, unaligned values may be stressful and frustrating in the long run.

Period 5: Transition into seniority

Finally, the transition from a junior to a senior designer may result in value-based conflicts. Confrontation with value differences in practice may force designers to choose between a career as a signature designer who follows idealistic values (McDonnell, 2015), a commercial designer who follows the demands of the clients or manufacturers (Verbrugge, 2012; Nelson and Stolterman, 2012), or a design technician who aims to be neutral (Neslon and Stolterman, 2012). Choosing one of such career paths may induce new types of value differences. A signature designer may experience challenges in meeting the wishes of clients (Verbrugge, 2012; Nelson and Stolterman, 2012). Conversely, a commercial or technical designer could suppress their values to keep up with client demands (Verbrugge, 2012; Nelson and Stolterman, 2012). Specialisation and moving up the hierarchy may induce competing values and a clash of goals with those of colleagues and already established seniors (Dick and Dalmau, 2000). For example, when a supervisor turns down your ideas or team members compete to get their ideas on the table, existing professional values may no longer work. Thus, any type of design career can induce value-based conflicts. Junior designers who are aware of their values may have greater confidence in choosing a job; some tend to choose jobs that do not conform to but complement their values (Jonkmans *et al.*, 2016). Perhaps, given a sense of purpose or a calling, such junior designers may seek challenges or opportunities for change in organizations that do not share their values.

In summary, junior designers learn the design profession values and prioritise their values during five periods in their early careers, where junior designers acquire professional values via inheritance, education, socialisation at their first job, organisational value changes, and aims for seniority. This thesis focuses on the transition from a design student to a professional designer.

IMPROVING COPING WITH VALUE-BASED CONFLICTS

The literature shows that designers prioritise values that influence their decision-making and what they advocate for in projects. A value-based conflict may arise when values are prioritised differently by a junior designer and colleagues, clients, users, and other stakeholders. Discussions and conflicts can and must not be avoided when designing (De Dreu, 2006), as it may be better to provide support to cope with conflicts (Jehn, 1997). The experiences of junior designers with conflicts stand in sharp contrast to how seasoned design professionals can skilfully handle disagreements (McDonnell, 2012) and value tensions (Lloyd and Oak, 2018; Schön, 1983). In design practice, designers learn skills to overcome potential conflicts and adapt to such situations (Nelson and Stolterman, 2012). Coping with conflicts is an adaptive process (Skinner and Zimmer-Gembeck, 2016) where the designer acts to address emotions in a given context. Though the design literature addresses conflicts in collaborative design practice, it lacks studies on developing effective coping skills for designers with value-based conflicts.

Knowing how to reach a common understanding of differences and integrate values is essential for successful innovation (Bergema *et al.*, 2011; Le Dantec and Do, 2009). Collaboration is ineffective when the values of team members remain undisclosed, leading to unnecessary misunderstandings and conflicts (Nelson and Stolterman, 2012). Thus, increased awareness of values, value differences, and conflict situations can improve coping with value-based conflicts. Junior designers who are aware of their values may recognise a fit with a particular company. They may be more confident in choosing a job (Jonkmans *et al.*, 2016) and may be hired for suitable jobs (McCarthy and Goffin, 2004; Schmit and Ryan, 1992), which is important for social integration in the organisation, leading to more commitment (Duffy and Dik, 2013) and better performance by design teams (Stumpf, Tymon, and van Dam, 2013). Proactive behaviour on the part of the junior professional and the full support of supervisors are essential (Cooper-Thomas *et al.*, 2014; Dall'Alba and Sanberg, 2006). However, not all employers are equipped to support junior design professionals with their specific needs. The following sections explore ways to improve coping.

Developing the reflective practice on values

In reflective practice, designers analyse and criticise their situational actions (Schön, 1983). Junior designers can repeat actions that do not satisfactorily resolve the value difference and may induce frustrations and value-based conflicts. Senior designers habitually reflect on the actions, collaborations, and conditions in their reflective practice (McDonnell, Lloyd, and Valkenburg, 2004; Tracey and Hutchinson, 2018). Additionally, reflecting on values may help junior designers overcome value differences or conflict with more skill and competence. Thus, the reflective practice of a design professional may be key to overcoming value-based conflicts.

Reflection may be described as the generation of knowledge arising from (re)considering experiences purposefully and dynamically (Tracey and Hutchinson, 2016); it can initiate learning from experiences (Kolb, 1984; Moon, 1999). A designer begins to reflect on and reframe an action when the action induces a surprise in the design work (Valkenburg, 2000). A surprise could be a positive and "pleasant" or a negative and "unwanted" situation (Schön, 1983). In situations where actions induce a negative surprise like a conflict, reflection can help the junior designer think of alternative actions, values, or ways to collaborate.

In reflection, designers first name the factors in the design situation and articulate the problem. They then explain and frame the situation, try different actions to find solutions, and reflect on these moves (Valkenburg, 2000). Reflection helps make sense of situations and induces learning from experience (Moon, 1999; Schön, 1983), which is the processing of information (Moon, 1999) but is often considered a complex process of experiencing something, reflecting on it, formulating abstract concepts, and testing concepts in new situations (Kolb, 1984). Reflective practice is a continuous and lifelong learning process (Valkenburg, 2000) and drives the professional development of designers (Dorst and Overveld, 2009; Tracey and Hutchinson, 2018).

Consequently, this study proposes that junior designers should be trained in effective reflective practice to cope with value-based conflicts throughout their careers. Design schools train junior

designers to reflect on the design process and results during and after design projects (Schön, 1983). Furthermore, reflection on experiences is often used in education to provide support in critical situations. For example, at the end of a design project, design students reflect on questions asked by their teachers. Moreover, design educators can give exercises to promote reflection on personal values and value-based conflicts.

Unfortunately, students struggle with writing critical reflections where they can unpack value-based conflicts. Even with regular prompts, design students likely write non-reflective descriptions or give an unclear analysis of the situation (Tracey and Hutchinson, 2018). They typically reflect on the rules of designing; more competent designers reflect on when to use methods or knowledge and how to apply them (Dorst and Overveld, 2009). Different levels of reflection are as follows: (1) non-reflective action, (2) thoughtful action or reflection-in action, (3) reflection through review of incidents, (4) critical reflection and interpretation of events, and (5) critical reflection on assumptions, conditions, and values that shape experience (Tracey and Hutchinson, 2018; McDonnell, Lloyd and Valkenburg, 2004). Design educators should stimulate designers to reflect critically (level 5) and include questions on values and conflicts in reflection exercises.

Accordingly, first, giving design students visual reflection exercises can help them overcome the struggle they may have in writing critical reflections (Kosonen, 2018; Moon, 1999; Tracey and Hutchinson, 2016), as designers must be skilled visual thinkers (Casakin and Goldschmidt, 1999). Visual reflection is activated by creating drawings, paintings, photographs (Kosonen, 2012), 3D objects (Kosonen, 2018), or videos (McDonnell, Lloyd and Valkenburg, 2004). The visual results of the reflection may be combined with written reflection or explanations (Kosonen, 2018). Visual reflection can even induce a deeper level of reflection and enable reflection with others (Schoffelen *et al.*, 2015). The emergent visuals and objects can help discuss critical situations with a coach or team (Akkerman and Bakker, 2011; Schoffelen *et al.*, 2015). Therefore, designers may critically reflect on their experiences and value-based conflicts using their strong visualisation skills through visual reflection.

Second, coaching can help junior designers critically reflect on value-based conflicts. Coaching in design education is holistic, supportive, and based on coach-coachee dialogue (Diggelen, 2021). Coaching solves a problem or bridges a gap between the current and desired situation (Diggelen, 2021). It can facilitate the reflection of junior designers in articulating their thinking on current and past performance toward productive actions (Adams *et al*., 2016).

Building a professional design identity

Identity is the unique construct of who a person is and what this person values (Gregg, Sedikides and Gebauer, 2011). Moreover, it may be the construct of who small groups and larger social categories are and what they value (Vignoles, Schwartz, and Luyckx, 2011). Thus, junior designers develop their professional identity when they become design professionals similar to others in the profession (Trede, Macklin, and Bridges, 2012) and have a unique set of value priorities.

The concept of identity is paradoxical, as it regards being different from and identical to others (Ricoeur, 1994). Thus, while designers can be in a distinct professional group with similar characteristics and values (Banks, Gill and Taylor, 2013; Cross, 2001; Trede, Macklin and Bridges, 2012), within the overall design profession, designers develop a unique professional identity (Kosonen, 2018). For example, designers can identify themselves as crafters, explorers, innovators, co-creators (Björklund, Keipi and Maula, 2020), artists, specialists, or technicians (Nelson and Stolterman, 2012). Personal values are vital to constructing such design identities (Nelson and Stolterman, 2012). The design identity narrative is constructed around the personal values of a designer (Björklund, Keipi and Maula, 2020; Tracy and Hutchinson, 2018; Vignoles, Schwartz, and Luyckx, 2011).

Design identity development risks being neglected when one assumes the designer is a neutral facilitator (Baha *et al*, 2018; Manzini, 2016), which is true in some situations, as they focus on integrating the values of stakeholders (Manzini, 2016; Nelson and Stolterman, 2012). However, being aware of personal values is

important in other roles designers take in collaborative practice. With a strong professional design identity, designers are aware of their values and can use them meaningfully (Baha *et al.*, 2018; Nelson and Stolterman, 2012).

Beyond reflecting on values and value-based conflicts, designers must reflect on who they are as individuals and professionals (Nelson and Stolterman 2012, Kosonen, 2018; Tracy and Hutchinson 2018). Organisations employing junior designers should support and encourage their critical reflection to enable their professional development (Dall'Alba and Sanberg, 2006; McDonnell, 2015). Furthermore, training and coaching junior designers to build a professional identity is essential for their job satisfaction and well-being.

Raising awareness of values in design

The previous sections identified value differences that may occur in collaborative design practice. Additionally, junior designers and their employers may benefit from designers who understand values in design and are aware of their value priorities. Thus, increased awareness of personal values may help designers prevent disruptive conflicts. Hence, increasing the awareness of the perspectives and values of clients and other stakeholders may help junior designers get a grip on value differences in collaborative practice. Accordingly, this study explores approaches that can raise awareness of values for junior designers.

The literature review revealed 17 frameworks and approaches that can help designers understand values in design. Table 3. provides an overview with short descriptions of these approaches, their unique features, and their purpose. Kheirandish *et al.* (2020) notes a lack of comprehensive and validated value frameworks in the literature, which is confirmed by the analysis of the 17 approaches. Most approaches lack a comprehensive and validated framework integrating the different value perspectives. Unlike most frameworks and methods, Kheirandish *et al.* (2020) verified the HuValue value framework and HuValue Wheel through an explorative study in different empirical settings with design students. Only the Value Framework (den Ouden, 2012) and the Value Circumplex (Schwartz, 2017) were validated by others in published articles.

Table 3. Value approaches in design

Name	Description	Unique feature	Purpose
Value Sensitive Design (Friedman *et al*., 2013)	Design approach to integrate human values ethically and comprehensively	Methodology and card set for discussing different perspectives	To broaden the scope of values considered and to influence the design with values in the design process
Soft Value Management (Liu and Leung, 2002)	A model to explicitly specify client and participant values and goals	Analysis of the value difference between what is desired and what is offered by existing contexts	Decision-making
Visual Value Clarification Method (Wandahl, 2004)	Identify clients' and project partners' product values in the briefing process; take pictures of five topics during a field trip with the team	Understanding each other's values through photography	To increase awareness of stakeholder values
Worth-Centered Design (Cockton, 2005, 2006)	Adding worth-centered activities and artifacts to existing development methods, like opportunity identification, scenarios, and value impact analysis	Combining existing methods with worth-centered activities throughout the design process	To add a worth-centered focus to the development process
User-Value (Botzepe, 2007)	A conceptual framework is proposed to assist designers in international companies to (1) evaluate existing products in new local contexts, (2) plan local research, and (3) decide on product localization and standardisation.	Shows the link between value, cultural factors (systems, behaviour and meanings), and product	To support a user-centered approach
Value Network Analysis (Allee, 2008)	Map and analyse the value exchange and conversion in a business network that creates added value beyond the value for the business	Thorough analysis of the value network and exchange between stakeholders	To provide an overview of the relationships between stakeholders and the exchange of financial and non-financial value
Value Taxonomy (Triningham, 2008)	The values taxonomy distinguishes different types of values influencing the decision-making process in design projects	Explains differences between actual and perceived values	Evaluating ideas
Multi-perspectives (Nelson and Stolterman, 2012)	Describes a multi-perspectives approach to design	Zooms in (parts) and zooms out (the whole)	Evaluating ideas
Design Value Circumplex (Boradkar, 2010)	The design value circumplex overviews different perspectives needed for meaningful design; it shows the different values of each perspective	Design values are separated from business values, such as consumer and market value	To provide an overview of values in design

Name	Description	Unique feature	Purpose
The Value Framework and Value Flow Model (den Ouden, 2012)	The value framework includes the different perspectives of the stakeholders involved in the project; the Value Flow Model is a tool for visualising the value exchange between parties	Practical tools that can be used to discuss values and create an overview of values exchanged between stakeholders	To map and visualise values between different stakeholders
Values-led Participatory Design (Iversen, Halskov, and Leong, 2012)	A dialogical process in design that stimulates the emergence, development, and grounding of values in the design process	Values emerge in collaboration with stakeholders and are not predefined	Values lead the design process
Value Pursuit (Rygh, 2013)	A board game that stimulates a discussion on values and maps the values of all participants	A game to facilitate dialogue and discussion	To increase awareness of different stakeholder values
Value Mapping Tool (Bocken *et al*., 2013)	A tool to assist value mapping for sustainable business model innovation to understand the values of a network and identify value differences and opportunities for business model redesign	Four value representations (priorities) to identify different forms of value: value opportunities, value lacking, value destroyed, and value captured	To increase awareness of different stakeholder values
Cultural Value Framework and Crossing Cultural Chasm Cards (van Boeijen, 2015)	A framework with cultural values with a card set to stimulate designers to think about different cultural aspects when designing for people	Shows connection with value expressions, such as rituals, heroes, and symbols	To identify and discuss cultural values
Value Circumplex of 19 Human Values (Schwartz, 2017)	A model that shows human values and (potential) value differences	Clearly shows potential value differences and potential conflicts between different values	To provide an overview of human values
FutureA (Bos-Vos, 2018)	Identifies and manages key value capture challenges in a project	Values emerge from the different roles an (architectural) firm can assume, such as initiator, specialist, product developer, and integrator	To capture value in projects
HuValue Framework and HuValue Wheel (Kheirandish *et al*., 2020)	A framework with values and a tool for enriching design concepts with human values	Values are mapped and prioritised.	To consider human values in design projects

Additionally, three insights emerge from the analysis. First, the approaches have different definitions of value or values, as 13 approaches define "values" as worth, priorities, ethics, or motivational drivers. Others define value as utility (Allee, 2008; Boztepe, 2007), which is rather limited for this study and is ignored accordingly. Second, the frameworks focussed on different categories of values, such as product (Wandahl, 2004), design values (Boradkar, 2010; Nelson and Stolterman, 2012; Triningham, 2008), professional values for product designers (van Boeijen, 2015) or architects (Bos-Vos, 2018). Other value types were human (Friedman *et al*., 2013; Kheirandish *et al*., 2020; Schwartz, 201;), use(r) (Boztepe, 2007; Cockton, 2005), business (Allee, 2008; Bocken *et al*., 2013), innovation (den Ouden, 2012), and stakeholder (Rygh, 2013) values. Third, most value frameworks and approaches were not verified ins peer review. Only three approaches from den Ouden (2012), Friedman *et al.* (2013), and Schwartz (2017) were reviewed by other scholars.

Approaches to raise awareness of design values

This study evaluated whether the approaches may raise awareness of values and found 15 methods that can help the designer to become more aware of values. For example, the Values Circumplex of 19 human values can help raise awareness of the universal values of human society (Schwartz, 2017) and be used in presentations or workshops to study different values and their attributes. Social science scholars develop value scales or measures to discover the values a person considers most important (Rokeach, 1973; Schwartz *et al*., 2012). A thoroughly developed and commonly used measure is the Portrait Value Questionnaire (PVQ), based on Schwartz's (2017) values theory. It can identify the value priorities of designers. However, it was developed to measure group values and not explicitly designed for designers to become aware of their values and overcome value-based conflicts.

Furthermore, most approaches can help raise awareness of design and stakeholder values. For example, the Value Circumplex of Boradkar (2010) and Value Framework (den Ouden, 2012) can be used in education or workshops to raise awareness of specific design values. Unfortunately, they have vague instructions on how values emerge in collaborative design and require the guidance of an experienced facilitator. For junior designers, a more detailed

systematic approach is more beneficial. The HuValue Wheel is a more practical mapping tool with a clear systematic process designed for junior designers (Kheirandish *et al.*, 2020) to increase the awareness of human values. Additionally, Friedman *et al.*, 2013) developed the envisioning card set to help raise the awareness of values and discuss the different perspectives.

Approaches for raising the awareness of designers' values

This study focuses on approaches that may raise awareness of a designer's values. Although Neslon and Stolterman (2012) highlight the importance of a designer's perspective in design projects, they do not specify how to consider personal values. The HuValue Framework of Kheirandish *et al.*(2020) furnishes a more detailed description of personal values. Even so, a designer's values are not emphasised in the HuValue Wheel and can be interpreted as stakeholder values. Boradkar (2010), den Ouden (2012), van Boeijen (2015), and Bocken *et al.* (2013) include various values a designer may prioritise but do not mark a specific section for the designer's values. Thus, most approaches include the perspective of stakeholders but lack explicit consideration of designer's values.

Approaches for mapping the value priorities of stakeholders

The challenge in design is that stakeholder values are not always explicit. Stakeholders may be unspecific and broad when they express their values or focus on minor aspects of the design (Halloran *et al.*, 2009). Of the 17 approaches, 15 may help junior designers become aware of or map the values of clients and other stakeholders. Two approaches focus on clients as stakeholders: the Visual Value Clarification Method (Wandahl, 2004) and the Soft Value Management approach (Liu and Leung, 2002). Two other approaches pay attention to users: Worth-Centered Design (Cockton, 2005) and User-Value approach (Botzepe, 2007). By mapping the value priorities of stakeholders other than clients, users can help junior designers get a grip on value differences emerging in their collaborative design practice.

The 11 other approaches include similar direct and indirect stakeholders, such as society, clients, project partners, and the environment. However, none identify designers as relevant stakeholders. Additionally, some include unique predefined stakeholders, such as the design firm, time, pervasiveness, semiotics,

and philosophy. Values-led Participatory Design (Iversen, Halskov, and Leong, 2012) and the Value Pursuit (Rygh, 2013) do not specify stakeholders but are pivotal. Rygh (2013) develop a board game that visualises the potential different stakeholders. Four approaches have an accompanying tool to map values in a project: the Value Framework (den Ouden, 2012), the Value Pursuit (Rygh, 2013), the Value Mapping tool (Bocken *et al*., 2013), and FutureA (Bos-Vos, 2018). The tools that map various stakeholder values can benefit this study.

Approaches that may help junior designers to cope with value-based conflict

This study evaluated whether the approaches could help junior designers. Though Value Circumplex (Schwartz, 2017) and Cultural Value Framework (van Boeijen, 2015) define which values can clash, they provide little help in addressing value-based conflicts. Nonetheless, two scholars provide modest support in addressing value-based conflicts beyond their approaches. First, den Ouden (2012) suggests organising a workshop to discuss values, formulate agreements, and describe preferred ways of communication and a code of conduct in case of conflict. Moreover, she advised finding solutions that solve both parties' issues in times of conflict. Second, the value-led participatory design approach relies on the designer's expertise in appreciating stakeholders' values (Iversen, Halskov, and Leong, 2012). Iversen, Halskov, and Leong (2012) presume that the designer should know methods of working through dilemmas. Unfortunately, both approaches lack a clear description of how junior designers can cope with value-based conflicts. Thus, the 17 approaches are insufficient to help junior designers cope with value-based conflicts.

In summary, different methods can help the designer make the values of stakeholders explicit in the co-design process. Value methods can raise awareness by providing an overview of values, using a tool to map values or a card set to facilitate discussions in meetings or workshops with the team or stakeholders. Though these frameworks and methods are good starting points for raising awareness of values in design, they lack designers as explicit stakeholders in the design process. Furthermore, they lack support for junior designers to cope more effectively with value-based

conflicts. Therefore, a new approach is needed where designers can identify their values, align their values with other stakeholders in the design project, and explore ways to cope with emerging conflicts based on value differences.

CONCLUSION

In design practice, values can guide evaluations, negotiations with clients, possible courses of action, and design decisions. The relevance of values in design is widely acknowledged; however, values are often imprecisely defined, and there is no consensus among design scholars on a specific definition. Values have been defined as communicated opinions of worth, preferences, ethics, or motivational drivers. The literature suggests that value differences emerge in collaborative practice when two values clash inducing value-based conflicts, such as disagreements, interferences and/or negative emotions.

In design practice, value differences and value-based conflicts may emerge in numerous situations, such as collaboration, design decision-making, or transitioning from one career step to another. Furthermore, conflicts junior designers experience can stem from value differences induced by the design culture and idealistic values of junior designers. Value differences and related conflicts can be perceived externally in contact with others or internally without others perceiving the same value difference. Like other professionals, junior designers encounter value differences during the professionalisation process, where their value priorities do not match the values of others or the constraints of a project. Junior designers may feel frustrated and dissatisfied or even begin to feel burned out if they cannot match or adapt their values to the required professional values. Further, in educating junior designers, design schools employ a set of meaningful values from the design profession, such as human-centered and sustainable design. Designers may experience a typical clash between their idealistic design values and commercial practice, as design students increasingly focus on meaningful projects. Unfortunately, there is no empirical evidence on what value differences and value-based conflicts junior designers may experience.

Thus, from the problem statement, this study addresses how junior designers cope more effectively with value-based conflicts in collaborative practice. As the literature is silent on this problem, the study highlights potential sources of conflict in collaborative design practice. Therefore, the first research question is as follows:

RQ 1. What conflicts induced by value differences in collaborative practice do junior design professionals experience?

This chapter highlights that the codesign practice and professionalisation induce value-based conflicts for junior designers. However, such conflicts should not be avoided as they could benefit innovation and sharpen junior designers into seasoned professionals. Senior designers can skilfully handle value tensions, which is problematic for junior designers who do not know how to effectively cope with tensions. Design students often learn to collaborate and handle conflicts; however, the complexity of design practice is difficult to simulate in school. Transitioning to practice, junior designers face many value differences which may induce value-based conflicts. Collaborative design practice, thus, becomes a source of conflict, particularly when junior designers are unaware of their values, cannot identify those of others, and have little skill to cope with value-based conflicts. Furthermore, value-based conflicts emerge as they develop professionally and comprise professional development. Such conflicts may become frustrating given a mismatch in work values or when the values of organisations change.

Chapter 1 noted that the design literature lacks insight on how junior designers cope with value-based conflicts. Therefore, the second research question aims to understand how junior design professionals cope with value-based conflicts:

RQ 2. What ways of coping do junior design professionals employ?

Value-based conflicts may frustrate and demotivate junior designers given a lack of support. The literature revealed three potential ways to attain effective coping: developing a reflective practice on values, building a professional design identity based on personal values, and raising awareness of values in design

practice. They can be used to design support tools to prepare junior designers to cope effectively with value-based conflicts. Hence, the third research question follows:

RQ 3. How can junior designers be supported to cope more effectively with value-based conflicts?

The following chapter explores the approach to address the three research questions, leading to an empirical study and action research. The study ascertains what value-based conflicts junior designers experience and how they cope with and learn from them, followed by action research to develop support tools for junior designers to cope more effectively with such conflicts.

Chapter 03

RESEARCH APPROACH

The previous chapter reviewed literature on how value differences and value-based conflicts emerge in collaborative practice. Junior designers may experience many value-based conflicts in their professionalisation process. Two gaps emerged. First, the literature lacks empirical studies on what value-based conflicts junior designers experience. Second, the literature provided little help for junior designers in coping with value differences and emergent conflicts. Thus, this chapter explains the rationale and approach for this study to bridge the research gaps.

This chapter first describes the research aim. It then explains the research approach and methodology. The research project comprises two studies: an interview study and an action research study. Study One employed open interviews to explore the value-based conflicts junior designers experience and how they cope with and learn from such conflicts. Study Two employed action research to explore the support designers need to cope with value-based conflicts. Finally, this chapter reflects on the different roles of the researcher in each research activity.

RESEARCH AIM

This research aims to understand the value-based conflicts junior designers experience, how they cope with and learn from such conflicts, and what support they need to cope more professionally.

This study aims to address the problem statement on *how junior designers can cope professionally with value-based conflicts they experience in collaborative practice.*

From the noted gaps in Chapter 2, I formulated in consultation with my supervisors three research questions:

1. *What conflicts induced by value differences in collaborative practice do junior design professionals experience?*
2. *What ways of coping do junior design professionals employ?*
3. *How can junior designers be supported to cope more effectively with value-based conflicts?*

RQ 1 and 2 seek to understand two closely linked phenomena: value-based conflicts experienced by junior designers in collaborative practice and how they cope with them. RQ 3 demands a solution to the problem. Thus, the three research questions aim to understand the problem empirically and develop a solution for this problem constructively. Consequently, the research project is divided into two studies. Study One aims to understand value-based conflicts and how junior designers cope with these conflicts, addressing RQ 1 and 2. Study Two aims to develop support for junior designers, enabling them to cope more effectively, thereby answering RQ 3.

RESEARCH APPROACH

This section explains the research approach applied in the two studies. The literature is silent on what value-based conflicts junior designers experience and how they cope with such conflicts. My research approaches allowed me to observe and understand the practice, engage with junior designers and others, and act as a designer to facilitate change in practice.

Study One employed inductive thinking to understand the phenomena. Inductive thinking is speculative and explores how things work (Crouch and Pearce, 2012). Furthermore, my supervisors and I employed constructivist thinking to understand different meanings based on the participants' expressions (Creswell, 2003) and value-based conflicts. The constructive paradigm helped formulate insights using open-ended questions through a qualitative methodology.

Study Two aimed to develop support for junior designers via inductive thinking, as it adequately focuses on interpretation. The participants and I employed abductive thinking to develop support for junior designers to clarify insights, combine ideas, and envision a solution (Crouch and Pearce, 2012). Additionally, I employed a participatory paradigm, which empowered participants and helped them create knowledge (Creswell, 2003). Junior designers engaged and participated in the research. The participatory paradigm helped in listening to participants' views on changing how they address value-based conflicts and develop self-help competencies. I combined the participatory approach with a pragmatic approach aiming for real-world practical solutions and applications (Creswell, 2003). The pragmatic approach fitted the problem-centered and practice-oriented approach of Study Two regarding finding a solution for junior designers in collaborative practice. Moreover, this project employed design methods reflected in the critical research which recognises the subjectivity of the researcher and uses this advantageously in seeking opportunities for changing and improving design practices (Crouch and Pearce, 2012).

My professional starting point for both studies is the practice-oriented environment of the university of applied sciences. The chosen research approaches (constructivism, participatory, and pragmatism) and ways of thinking (inductive and abductive) fitted my designer background. I was driven to understand my target group and create solutions relevant to society, practitioners, and universities. The following section explains the methodology used in both studies in-depth.

RESEARCH METHODOLOGY

Study One employed grounded theory to explore the two phenomena that were closely linked: value-based conflicts that junior designers experience in collaborative practice (Chapter 4), and how junior designers coped with and learned from value-based conflicts (Chapter 5). Study Two employed action research, borrowing from participatory action research and design research approaches, to investigate how to facilitate reflection on value-based conflicts (Chapter 6 to 8).

This thesis used insights from literature to crosscheck findings from Study One and Two. Additionally, the literature influenced the interview guide of Study One which then served as a coaching tool for junior design professionals in Study Two. Furthermore, study Two observed four value-based conflicts in practice triangulating findings from Study One. Moreover, the results of Study One (e.g. value-based conflicts overview and conflict case diagrams) were shared with participants of Study Two. Via observations and quick interventions, the theory in Study One was fine-tuned during Study Two. Participants understood it was new theory and that their feedback helped further develop the results of Study One. Finally, the results of the literature review and the two studies were integrated into a model called the Professionalisation Wheel. Figure 3 shows the results of the two studies and how they influenced each other.

Alongside the two studies, my teaching practice provided multiple opportunities to share knowledge and test different forms of support with design students. Such teaching opportunities were not a specific part of the two studies but the insights influenced the development of reflective exercises and other learning materials.

Study One: Grounded theory and open interviews

Study One employed an open-interview study with design professionals using a grounded theory approach (Glaser and Holton, 2004; Moratovski, 2016) to answer RQ 1 and 2. All the interviews were conducted between 2015 and 2016. The open-interview

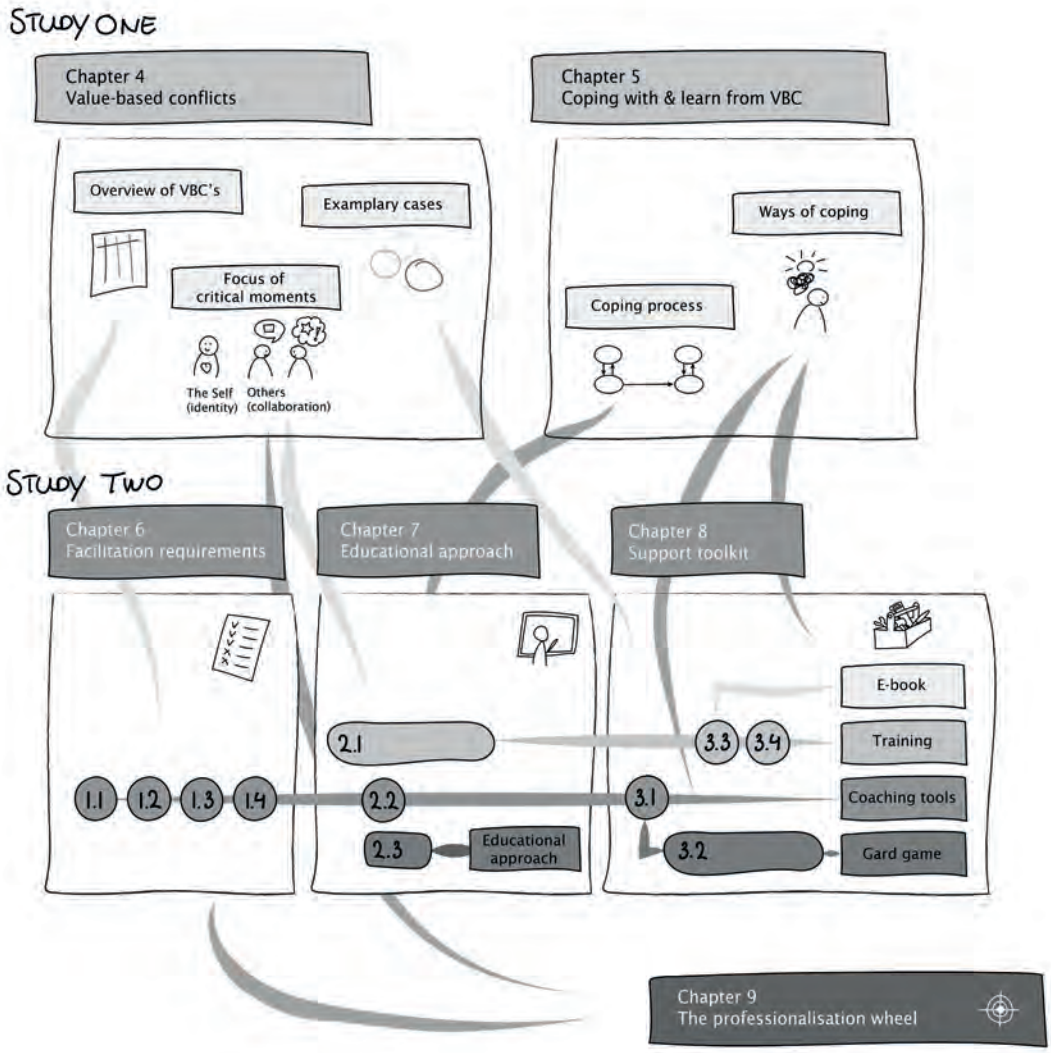


Figure 3. The results of the two studies and their influence on each other

procedure engaged with participants' thoughts, values, and experiences (Glaser and Holton, 2004) and allowed for collecting multiple cases of value-based conflicts. The grounded theory approach helped analyse the data to build a theoretical framework from the data on value-based conflicts to bridge the gap in the literature (Muratovski, 2016).

At the onset, we explored three research methods: (1) an in-depth case study at a large firm using observation and interviews as the primary methods (Stoimenova, van Onselen, and Valkenburg, 2015), (2) two open-interview studies (Kaland, Vernooij, and van Onselen, 2016; van Onselen and Valkenburg, 2015), and (3) a survey among senior design students (Jonkmans *et al.*, 2016). The case study approach provided a detailed example of a value-based conflict; however, it did not yield multiple in-depth examples of value-based conflicts that designers experienced. The case study was too time-consuming to create an overview of value-based conflicts. Conversely, the open interviews were effective in collecting rich insights and generating an overview of different conflicts. Two other pilot studies highlighted the benefits of open interviews (Kaland, Vernooij, and van Onselen, 2016; van Onselen and Valkenburg, 2015).

Accordingly, I employed retrospective open interviews to collect various cases and build an understanding of value-based conflicts and how junior designers cope with and learn from such conflicts. It finds a wide range of cases by inviting participants from diverse backgrounds to build a comprehensive overview (Glaser and Holton, 2004; Myers and Newman, 2007). Using grounded theory allowed for discovering participants' main concerns (Glaser and Holton, 2004). Each concern was shared without prior evaluation of whether their experience regarded a value-based conflict (or not). Whenever the participants wondered if their case was a good example of a value-based conflict, they were encouraged to share their experiences nonetheless.

My supervisors and I used a theoretical sampling strategy to select participants for the interview per the grounded theory approach (Coyne, 1997; Glaser and Holton, 2004). Participants were invited based on emerging insights, newly surfaced questions, and requirements. I triangulated interview data using different data sources to verify information on work experiences and cases described (Table 4). For example, structured desktop research verified background information, personal values, and, in some cases, extra information on the conflict, identifying 15 workplaces during company visits and insights into the company culture.

Table 4. Triangulation of interview data with additional data sources

Interview topics	Interview data	Additional methods	Data
Personal values	Design and basic human values	Survey through e-mail	Survey answers
		Desktop research	Online documents, web-based profiles
		Summaries sent for approval	Approved summaries, comments, e-mails
Value differences (senior/junior)	Actors Values Exchange between actors	Summaries sent for approval	Approved summaries, comments, e-mails
	Relationships with colleagues, clients, collaborative partners, and stakeholders	Survey through e-mail	Survey answers
		Desktop research	Online reports, patents, news items, company websites, and web-based profiles
	Learning effect Career development	Interviews with career coaches	Audio files, transcription notes, and approved summaries
Background information	Education Experience Professional roles	Desktop research	Online documents, company websites, and web-based profiles
	Company culture	Observations	Company visit, company websites

Multiple researchers were involved in the analysis to reduce researcher effects and triangulate insights (Muratovski, 2016). Moreover, I triangulated the empirical data on a generic level. First, it conducted two additional open interviews with two career coaches who counselled and guided many designers in the Netherlands and contrasted the results with insights from the interviews. Second, it ascertained when the junior participants recognised value differences and related conflicts from the other participants in their practice.

The grounded theory approach suggests using the literature as another data source to contrast and compare with the self-collected data (Glaser and Holton, 2004). First, my supervisors and I selected subtopics for the interview guide from the literature. Second, it linked the literature to the data while pre-coding. Third, it employed theories from the literature to probe the data, such as finding value differences in selected cases and making sense of conflict categories. Furthermore, this confrontation helped interpret and discuss the results and develop the main conclusions.

Study Two: Action research

Study Two employed action research to develop a support framework to help junior designers cope more professionally with value-based conflicts. Susman and Evered (1978) defines action research as "the practical concerns of people in an immediate problematic situation to develop the self-help competencies of people facing problems and the goals of social science by joint collaboration within a mutually acceptable ethical framework." After conducting actions, the participants, my supervisors, and I reflected on such actions to generate insights, which helped develop a solution to the practical problems of junior designers who must learn to cope more professionally with value-based conflicts. Furthermore, the study showed similarities with participatory action research (Glassman and Erdem, 2014): it was bottom-up as I experienced value-based conflict as a junior designer, I was part of the design community as a design educator, the study resided in the design community, and the study was collaborative as results were co-created with participants from the design community.

Action research helps co-create support for junior designers in practice, as it relates most to the natural way of working for a designer (Crouch and Pearce, 2012). Consequently, this study borrowed elements from the design process and design-oriented research approaches. First, my supervisors and I applied "designerly" approaches to the analysis by reframing the problem, and iteratively developing prototypes (Stappers and Giaccardi, 2017). It incorporated design methods (e.g., formulating design requirements) and followed the design process phases to develop a solution to help junior designers cope more professionally with value-based conflicts. Second, we aimed to find a concrete solution for a specific problem (Joore, 2018). Despite the similarity of the action research approach to the design process, this study's approach differed, as it aims to generate knowledge and build theory (Price, Wrigley, and Matthews, 2021; Stappers and Giaccardi, 2017). Therefore, the study developed knowledge via an educational approach (Chapter 7) and support toolkit (Chapter 8) to facilitate reflection on value-based conflicts for junior design professionals.

As a primary guide for the action research, I employed the design-led action research approach described by Price, Wrigley, and Matthews (2021), which the following paragraphs address. It structured activities in three research cycles, each ending with reflection (Bradbury Huang, 2015), and collected data in the three cycles (Table 5). Each cycle had a different respective focus: (1) understanding the context, (2) teaching and learning, and (3) materialising and integration (Price, Wrigley, and Matthews, 2021).

Table 5. Details of the three action research cycles

	Cycle One	**Cycle Two**	**Cycle Three**
Focus	Understanding context	Teaching and learning	Materialising and integration
Objective	Formulating design requirements	Co-creating an approach	Co-creating a toolkit
Actions	Four actions	Four actions	Four actions
My roles	Researcher and coach	Researcher, lecturer, coach, education developer, and tutor	Researcher, lecturer, trainer, education developer, and product owner
Period	October 2017 to December 2017	February 2018 to September 2018	January 2019 to January 2020
Insights	Ideas for support; 15 requirements to facilitate reflection; ideas for tools	An educational approach; Recommendations for improvement	Idea selection for supportive tools; Evaluation of toolkit; Recommendations

Cycle One focuses on understanding and building trust with the context (Price, Wrigley, and Matthews, 2021). Junior designers were coached in a project as a design team and on a personal level, which provided the opportunity to build trust and involve them as participants in the action research. Thus, I attempted interventions and learning activities, yielding requirements for tools, training, and coaching (see Chapter 6).

Cycle Two focuses on teaching and learning (Price, Wrigley, and Matthews, 2021) to co-create an approach to facilitate reflection. Following the participatory approach, I collaborated with different participants and organised workshops and training sessions for different groups of junior designers. Additionally, I employed feedback from my supervisory team, educational experts, and

other stakeholders to improve and prepare for the next workshop, which yielded an approach to educate and facilitate reflection on value-based conflicts (see Chapter 7).

Cycle Three focussed on materialisation and integration (Price, Wrigley, and Matthews, 2021) to co-create tools, test tools in different settings, and formalise a toolkit. The provisional tools from Study One and emergent tools from Cycle Two were used as starting point. The participants and I co-created material (e.g., workshop materials and a card set), digital (e.g. an e-book and online training materials), and intangible (e.g., role-playing, and drawing exercises) prototypes, which were applied and tested in different contexts, such as coaching, training, events, and workshops. The result was a toolkit to facilitate reflection on value-based conflicts (see Chapter 8).

REFLEXIVITY ON RESEARCH ROLES AND VALUES

My background as a designer influenced the research subject and approach. During my Ph.D. research, I assumed different roles: researcher, educator, entrepreneur, and designer (Figure 4). Roles can be assumed separately or simultaneously (Stappers and Sleeswijk-Visser, 2014). In this section, I reflect on my roles and their impact on my research. I was aware of my position relative to participants and my ability to change the situation. I realise the impact of my roles and values and how they changed during this project. For example, as a designer I value sustainability and creativity; however, as a researcher, I distanced myself from these values. Thus, I needed to listen to what junior designers consider important without focussing on sustainability as a core value.

My primary role was that of a design researcher generating new knowledge based on an interview study and action research. I applied two attitudes as a researcher: explorative while collecting data and analytical while analysing the data. Moreover, I was driven by my own experiences, which enabled me to thoroughly understand the phenomena. Although my experiences made it challenging to stay objective, I could overcome my subjective stance by involving others in the research and triangulating informants, data, and researchers.

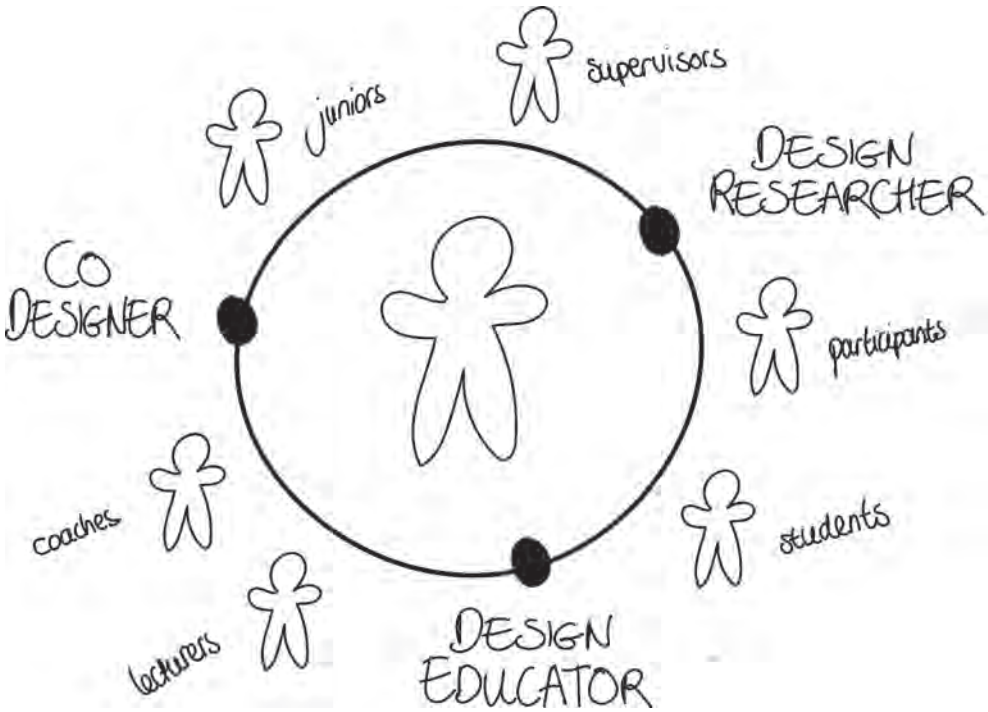


Figure 4. The different roles during the research.

In Study One, as an interviewer, I aimed to be inter-subjective by constant comparison while I explored the value differences junior designers experience in collaborative practices. My background as a designer and design educator was beneficial, as I could empathise with participants' conflicts and probe further into their stories. Of course, this background predisposed me to identify cases, and I was never entirely objective toward the stories shared by the participants. Thus, I allowed participants to share cases without immediate judgment on whether the case was a value-based conflict. This helped us to find examples of value-based conflicts absent in the literature.

Study Two required all roles for the design-led action research. In the first role, I was a researcher attempting to understand the context. I carefully documented my observations, conversations, and other research activities. Thus, I collected a wide body of data that was used to develop the educational approach and toolkit. Further, I was a design educator and education developer

focussing on learning and creating educational materials based on research insights. Hence, I could pilot ideas at an early stage, test prototypes in different settings, and evaluate designs after implementation. Finally, I was a designer and entrepreneur who wanted to materialise and integrate ideas, which helped me to think of concept ideas and models and make and implement tangible tools in different contexts.

Further, I assumed the role of a methodologist in designing an integrated model to develop a model based on the insights from the two studies. I presented preliminary versions of the model to designers, students, researchers, and practitioners and collected feedback to improve the model to overcome my subjectivity and somewhat satisfy peer-review requirements. The insights were used to develop a practical model for application in other contexts (see Chapter 9). Notably, in design-led action research, others may execute the roles (Stappers and Sleeswijk-Visser, 2014). The support tools were co-created with junior designers, design students, experts, and lecturers (see Chapter 8). For example, the idea of the card set game was pitched by a junior designer in a brainstorming session and designed by a design student.

VALUE OF THE RESEARCH

The research aims to improve collaborative design practice. This research is relevant in that it generates new insights into the value-based conflicts junior designers experience in collaborative practice, how they cope with these conflicts, and how to help them cope more effectively. As I was driven by my own experiences, I was interested in whether others experienced similar struggles, which proved to be the case through conversations with my peers. In my role as an educator, I observed that design students also experienced value differences. Hence, I formulated the problem based on my experience as a junior designer and observations as a design lecturer (see Chapter 1). In pilot studies and literature, I tried to find more such evidence, which highlighted the relevance of this research. The literature lacked empirical data on value-based

conflicts, how designers cope with them, and specific support for junior designers (see Chapter 2). Additionally, the pilot study clarified the need to focus on junior designers, given their struggle with value-based research (van Onselen and Valkenburg, 2015). Thus, it was important to gain further insight into value-based conflicts to develop suitable support for junior designers.

Study One aimed to find new insights into the value-based conflicts that occur in collaborative practice and how junior designers cope with such conflicts (see Chapters 4 and 5). From the literature review (see Chapter 2), the value-based conflicts experienced by junior designers may originate from value differences induced by the design culture, idealistic values, and collaborative practice. The collected exemplary cases and qualitative insights from Study One furnish meaning to junior designers in their learning and professional development process.

Furthermore, given that the approaches available in the literature do not provide practical support for junior designers to cope more professionally with value-based conflicts (see Chapter 2), Study Two aimed to develop an approach to help junior designers. The results are relevant for junior designers who work in collaborative practice. Notably, in the action research, participants learned from insights and knowledge generated by Study One in different ways. The trainees and students involved in Study Two learned from the emergent theory from Study One, became aware of their values, and adopted reflective exercises.

Additionally, in consultation with my supervisors, I abstracted the insights from the different studies and integrated them into a model (Stappers and Giaccardi, 2017), rendering the research to be relevant for design practice, as it generates a knowledge framework to benefit design practitioners, educators, and scholars (see Chapter 9). Moreover, other creative professionals, such as architects, and professionals who apply creative thinking in their practice, like marketeers, can benefit from the generated knowledge through such a model.

Study One

AN INTERVIEW STUDY FOR UNDERSTANDING VALUE-BASED CONFLICTS AND COPING WITH THEM

The following part of this thesis presents Study One of this research. This study explored empirical practice to find answers to RQ 1 and 2. The interview data analysis generated insight into two phenomena: value-based conflicts and the process of coping with them.

Chapter 4 explores value-based conflicts experienced by junior designers. It summarises the literature on how junior designers may struggle and the frustrations they experience in collaborative practice. It also defines value differences and value-based conflicts based on literature. The design literature revealed a lack of empirical studies on the value-based conflicts junior design professionals experience. Furthermore, the chapter describes the research method and data analysis. Chapter 3 employed the grounded theory approach to analyse the conflict cases, yielding an overview with 24 value differences, 10 critical moments, and five conflict categories. The study thus explores the underlying value differences. Chapter 4 concludes that designers should improve their social skills and strengthen their awareness of personal values for successful collaboration.

Chapter 5 explores the process of coping with value-based conflicts. Chapter 1 highlighted a gap in the design literature regarding how junior designers cope and how they learn more effective ways of coping. Thus, Chapter 5 explores studies from other fields on how other professionals cope and addresses why it is challenging for junior designers to cope with value-based conflicts. It then briefly summarise the data collection using the same interview study, as in Chapter 4, and explains in depth the analysis of the data, different from Chapter 4. The result is an overview and description of 11 ways of coping with value-based conflicts. Additionally, the chapter identified the components underlying a coping process with value-based conflicts. Furthermore, it reports the observation of a transition in how coping actions develop: from novice to more skilled coping mechanisms. Chapter 5 concludes that junior designers learn from experiencing value-based conflicts.

Chapter 04

VALUE-BASED CONFLICTS EXPERIENCED BY JUNIOR DESIGN PROFESSIONALS IN COLLABORATIVE PRACTICE [3]

Junior design professionals experience conflicts in collaboration with others, with value differences being one of the issues influencing such conflicts. In a retrospective interview study with 22 design professionals, we collected 32 cases as perceived by junior designers. We used a grounded theory approach to analyse these cases, resulting in five conflict categories that group 24 distinct value differences arising in 10 critical moments, an event that causes the value-based conflict. Thus, value differences are underlying the conflicts perceived by junior design professionals on many different occasions during collaboration with others. Conclusions are drawn on setting up guidelines for addressing values in co-design practices and supporting junior designers in their professional development.

3 This Chapter is based on Lenny van Onselen, Rianne Valkenburg and Dirk Snelders (2020a): Value-based conflicts experienced by junior design professionals in collaborative practice, CoDesign, DOI: 10.1080/15710882.2020.1854314. The article is adapted to clarify one paragraph in the section "Exploring underlying value differences." The article is a standalone publication and, therefore summarises parts of Chapters 2 and 3. Per reviewer request we highlighted that cases describe the designer's perspectives by using perceived value differences and value-based conflicts. However, junior designers do not always perceive their experiences as such. Therefore, I removed perceived from some sentences and added perceived by junior designers to others. Additionally, I made a correction in the research methodology description and referred to Chapter 3 for more details.

EXPERIENCES OF JUNIOR DESIGNERS IN COLLABORATIVE PRACTICE

Designing implies the integration of values from different parties involved in the design process (van den Hoven, Vermaas, and van de Poel, 2015), and also an investigation of identified value differences between parties for finding inspiration and evaluating solutions (Lloyd and Oak, 2018). The quality of collaboration depends on the different stakes and viewpoints of the design project participants (Détienne, Baker, and Burkhardt, 2012). Conflicts in collaboration emerge when people hold different values, and as a result, prefer different solutions (Fitzpatrick, 2007; Le Bail, Baker, and Détienne, 2020). In co-design, the underlying assumption is often that involved parties should resolve value differences (i.e. find some form of acceptable expression) in the final design (Lloyd and Oak, 2018). Our research looks at what happens when such resolution attempts become conflictual, in the sense that (some) parties cannot accept the values of others, leading to disagreement, interferences, and/or negative emotions (Barki and Hartwick, 2004), during or after the co-design process.

In this Chapter[4], we will focus on the experience and perspective of junior design professionals. We do this for several reasons. First, as design educators, we have a direct interest in our design students becoming productive and happy junior design professionals. In this transition, we often see a mismatch between the idealistic values professed by schools versus the commercial values professed by design agencies and client organisations. An additional factor here is the higher degree in which junior designers, compared to students at school, are confronted with values of others in professional collaborative practice. These divergences made us wonder how junior designers deal with values in co-design during this transitional period in their lives.

Second, the literature suggests that junior designers in collaborative practice often partner up with senior designers (Lawson and

4 We focus on conflicts emerging from value differences. We therefore used the term value-based conflicts to avoid confusion with value conflicts which often refers to conflicting or opposing values (van de Poel, 2009; Schwartz *et al.,* 2012). Footnote 2 in Chapter 2 addresses this distinction in detail.

Dorst, 2009), and many conflicts will then be handled skilfully by senior designers (Schön 1983; Lloyd and Oak, 2018). However, the job conditions of junior designers have undergone changes caused by deregulation and fragmentation within design agencies and design departments in larger firms (Julier, 2017). Designers now often work in separate business units, small design consultancies, or as freelancers (Banks, Gill, and Taylor, 2013). As a result, much of the traditional types of master-apprentice systems in larger design agencies and departments have been broken down and replaced by systems that leave junior designers disempowered and unsupervised when collaborating with parties that hold conflicting values.

Third, in both a pilot study (van Onselen and Valkenburg, 2015) and the present study, we interviewed junior and senior designers about value-based conflicts. In both studies, results show that junior and senior participants perceive value-based conflicts as most pressing and involving when they experienced these conflicts as junior designers. The senior participants were more confident about handling value-based conflicts experienced as a senior. For example, three participants from the pilot study shared experiences as junior designers who decided to quit a project due to a mismatch with their values. In projects later in their career, two senior participants shared less destructive coping strategies after the conflict occurred. One participant improved the design and the other found a compromise. Therefore, combining our observations in design education, the demanding and unsupervised design practice, and the urgent nature of these conflicts for junior designers, we decided to focus on the experiences and perceptions of junior designers in value-based conflicts.

Feast (2012) noted that personal goals and values are strong motivational drivers for designers, especially in collaborative design projects. Raising awareness of one's perspective and those of others are critical factors for good collaboration (Détienne, Baker, and Burkhardt, 2012). As a junior designer, being aware of one's values is the first step in understanding value differences and potential conflict in collaborative practice. Some design schools invite students to acknowledge their values, also in practices of collaborative design.

Nevertheless, most approaches and methods developed for designers focus on conflicting values of collaborating stakeholders (e.g. Friedman *et al.,* 2013) but leave out the values or value-based conflicts of the designers. Furthermore, when working as a junior design professional after graduation, there may be less room for an expression of personal values. This situation may result in experiences of value-based conflict by junior designers that lead to struggles and frustrations, and that are hard to bring up in conversations with others. A better way to identify value-based conflicts, and an improved understanding of what these conflicts are about may help out junior designers – these are the aims for this chapter.

VALUES, VALUE DIFFERENCES, AND VALUE-BASED CONFLICTS

Values may refer to social and personal principles of designers that guide their actions. In the design literature, the term "values" may refer to worth (Boradkar, 2010; den Ouden, 2012), priorities (Fitzpatrick, 2007), ethics (Le Bail, Baker, and Détienne, 2020; Manders-Huits, 2011; Lloyd, 2009; Friedman, Kahn, and Borning, 2002), or motivational drivers (JafarNami, Nathan, and Hargraves, 2015; Le Dantec and Do, 2009; Schwartz and Sortheix, 2018). Values are seen as communicated meanings and personal goals (Chiaradia, Sieh, and Plimmer, 2017), which may emerge when designing with others (Halloran *et al., 2*009; van der Velden and Mörtberg, 2015).

Designers embed a wide range of values in their work (Bonsiepe, 1999; Lloyd, 2009) and can strive for qualities as beauty, novelty, purity, and justice (Brouillette, 2013). They can also ponder on the user, business, and societal values, such as comfort, viability and sustainability (Boradkar, 2010; JafariNaimi, Nathan, and Hargraves, 2015). Designers transfer and transform user, business, and societal values into design values (Le Dantec and Do, 2009). Designers embody such values in objects through the design process (van de Poel, 2009). Designers may use the presence of opposing values in their conversations without an immediate need to resolve them, but they use value tensions for evaluating their design proposals (Lloyd and Oak, 2018). Designers continuously consider ways to integrate differing values or to find satisfying compromises (Jafari-Naimi, Nathan, and Hargraves, 2015; Le Dantec and Do, 2009; Lloyd,

2009; Oak ,2012). Thus, integrating user, business, societal and design values should be considered a central part of the design process.

In the design literature, some authors distinguish moral values from economic value as a way of evaluating design choices in other terms than costs and benefit (Boradkar, 2010; Friedman *et al.*, 2012). Other authors, however, have defined economic values as an integrated part of designing (Chiaradia, Sieh, and Plimmer, 2017; den Ouden, 2012; Julier, 2017), often the main reason for developing products (van de Poel, 2009). We acknowledge this, and therefore we shall use values as social principles (including, but not limiting ourselves to economic values) that designers can evaluate as meaningful (or not) for their design work in collaborative practice. In this Chapter, we include all values in collaborative design that may guide the behaviour of the designer (JafarNami, Nathan, and Hargraves, 2015; Le Dantec and Do, 2009).

The above distinction between moral and economic value points to a potential value tension or value difference, based on the motivational values of a designer, or values related to an overarching cause of an organisation or society at large. In this light, value differences might occur when values are not complementing but opposing another. A typical example of a value difference could be between sustainability and profit (Schwartz *et al.*, 2012; van de Poel, 2009). Kasser and Ahuvia (2002) posited another opposition between values that can lead to conflict, between (1) intrinsic values sprouting from psychological needs focussed on personal growth, and (2) extrinsic values focusing on rewards and praise which can be anxiety-based. They further hypothesised that value differences could occur when intrinsic values oppose extrinsic values. Such a notion of two types of values could help us define value differences in design between the parties involved in design projects.

Value differences may result in value-based conflicts, which we define as disagreement, interference and/or negative emotion caused by value differences. Disagreement occurs when two parties perceive value differences and a need arises to resolve it (Barki and Hartwick, 2004; Manders-Huits 2011; McCuen and Gilroy, 2011).

Conflict may also occur when another party interferes with or opposes the realisation of one's values (Barki and Hartwick, 2004). Negative emotions may result from conflict (Barki and Hartwick, 2004), for example, fear and anxiety, which we see reflected in extrinsic values such as safety and dominance. Moreover, value-based conflicts arise when designers have to make trade-offs to solve value differences (Manders-Huits, 2011; McCuen and Gilroy, 2011). McCuen and Gilroy (2011) specified trade-off conflicts into: (a) values are weighted differently, (b) any decision requires the other party to give up their values, and (c) one or more parties resist a compromise.

To sum up, there are potential value differences that junior designers might experience in collaborative practice that develop into value-based conflicts. As of yet, literature is lacking that explores the value-based conflicts from the perspective of the junior design professional. The question remains: which conflicts based on value differences in collaborative practice do junior designers experience?

RESEARCH METHODOLOGY

Our initial aim of this study was to explore how value-based conflicts in collaborative practice were recognised, perceived, and construed by professional designers. In different preliminary studies, we explored various methods (see Chapter 3). Some methods were limited to deliver a comprehensive theory of value-based conflicts perceived by designers. Therefore, we choose a grounded theory approach to explore and thematise the concerns of participants (Glaser and Holton, 2004). As primary method, I conducted open interviews with 22 design professionals of all ages (Table 6). As a trained interviewer and design lecturer I could understand and empathise with the participants' experiences. The open interviews used the life story approach aiming for detailed descriptions, patterns, and processes in a social context (Bertaux and Kohli, 1984; Crouch and Pearce, 2012). The open interviews provided insights on current and past value-based conflicts experienced by participants. Interviews are limited in reconstructing past events. Therefore, we collected additional data to complement the

verbal accounts in reconstructing the value-based conflicts (Bleek, 1987). Within the study, we learned that value-based conflicts experienced as junior designer was the central theme, next to the ways of coping with value-based conflicts, which we will describe in Chapter 5.

Table 6. Participants overview

Participant	Design field	Professional role	Work experience (years)
1	City planning	Entrepreneur	10
2	Product design	Former designer (switched to academia)	18
3	Product innovation	Entrepreneur	23
4	Product design	Department manager	13
5	Product design	Team leader	15
6	Lighting design	Entrepreneur	11
7	Landscape design	Freelance designer	18
8	Product design	Manager	15
9	Office systems	Designer	8
10	Consumer products	Researcher	9
11	Consumer products	Manager	12
12	Graphic design	Freelance designer	6
13	Office systems	Manager (former designer)	22
14	Digital products (former energy)	Designer (former project leader)	8
15	Software design	Team leader	16
16	Consumer products	Design engineer	6
17	Interaction design	Entrepreneur	15
18	Health care products	Designer	7
19	Brand and product design	Freelance designer	3
20	Packaging design	Project leader	2
21	Consumer products	Engineer	<1
22	Consultancy	Designer	<1

Data collection

The participants were professionals in creative industries with an industrial design engineering degree or an arts-based design education in the Netherlands, and seven had an international education or experience. From the total of 22 participants, the first eight were designers with over ten years of experience, because we expected their experience of value-based conflicts would be

most elaborate and informative. However, in an initial analysis of the interviews, we noticed that they were most passionate about their experiences as junior, and they stressed their importance for their professional development. At the same time, these senior designers struggled to recollect details of conflicts experienced as junior designers. With these emerging insights and newly surfacing questions, we adapted our sampling strategy (Glaser and Holton, 2004; Muratovski ,2016). We gradually interviewed designers with fewer years of experience until we arrived at interviewing seven junior designers. We stopped interviewing as we reached saturation in our data (Bertaux and Kohli, 1984; Glaser and Holton, 2004). Additional open interviews were held with two career coaches who have consulted and guided many designers in the Netherlands

Participants were surveyed before the interview via email, on co-design experience and personal values. During the interview, participants explained in their own words their view on the topics from our interview guide (Table 7). Subtopics in the guide helped the interviewer to probe for more details if needed. The interview guide slightly evolved over the first four interviews and was frozen for subsequent interviews. For the last four interviews with junior designers, we revised the guide. We noted before that junior designers had problems identifying value differences and value-based conflicts. The topic guide for juniors started with current work experience (as an icebreaker), then continued with personal values, value differences recently experienced and finished with sharing examples of previous interviews. We sensitised the junior design professionals before the interview and used stimuli during the interview to probe for more examples of conflicts they experienced.

All recordings were fully transcribed, paying attention to details such as loud speech, pauses, and laughter. In our analysis, it was necessary to include not only the things said, but also its metacommunication on *how* it is said, to be able to interpret the participant's intention and emotion in the conflict descriptions (Briggs, 1984).

Table 7. The leading interview guide with topics and subtopics

Topic	Subtopic
Personal values	Important in innovation projects Values of participants Expression of values in projects Meaningful innovation
Value differences	In collaboration (company, brand, team, client, user, etc.) Project/context description Conflict situation -> value difference Cause -> influence of role Action/solution -> confrontation/compromise Frequency -> regularly/often/few times
Value differences as junior designer	Experience of value difference as junior Values as junior designer Difference in coping with conflicts as junior Tips for junior designers
Background	Company, field, role, and education

Directly after each interview, the interviewer made a detailed summary of the interview. First, coding suggestions were added to "pre-code" the data (Saldana 2009, 16-17). Within a month after each interview, a structured summary was written using the interview guide as a structure (Miles and Huberman, 1992). All participants reviewed and approved the summaries through email, with six of them making corrections or additions to the document.

Additional methods to triangulate data on the topic personal values were a sensitising survey, desktop research, and the feedback from summaries. For the topic value differences, we used summaries, the survey, desktop research, and the two interviews with career coaches as additional methods. We triangulated biographical, workplace, and relational data of the participants with a small sensitising survey to participants sent before the interviews, observations of 15 workplaces (often including a company tour), and additional background data collected through company websites, publicly available documents online, and LinkedIn.

Data analysis

We refrained from presumptions of the results we could find using the grounded theory approach (Glaser and Holton 2004). From all the data, we selected data related to value-based conflict situations as perceived by the participant as a junior design professional. We selected for our analysis cases of value-based conflicts experienced by the participant as an intern up to junior design professional with up to 7,5 years after graduation (Ahmed 2003; Ball, Ormerod, and Morley, 2004; Casakin and Goldsmidt, 1999). This selection resulted in 32 individual case descriptions of value-based conflicts (from here onwards referred to as case) from 20 participants combining data describing the situation, context, actions, conflict, values, learnings, and reflections.

Following the grounded theory approach, I took five steps in the analysis: conduct open coding, perform axial coding, revise the data, synthesise the findings, and develop a theory (Muratovski, 2016). I and two supervisors coded the first four cases individually and manually on small paper notes. I continued coding manually for the other 28 cases, which was later checked by my supervisors. We coded while reflecting on contextual information from the interviews and the collected background information. The coding process resulted in 10 to 31 codes per case. The manual codes were grouped into thirteen conceptual categories, called axial codes (Table 8) to reduce the number of codes and to find similarities across cases (Saldana, 2009). For example, in case 1, the codes DISTRUST and FRICTION and in case 2 NOT UNDERSTOOD and CONFLICT were grouped into one axial code and named NEGATIVE/CONFLICT[5]. We used the NEGATIVE/CONFLICT code to identify the conflict relating the codes to conflict characteristics: disagreement, interference, and/or negative emotion (Barki and Hartwick, 2004).

5 The codes are shown in SMALL CAPS throughout the thesis.

Table 8. Description of axial codes

Axial codes	Manual codes	Description
Negative/ conflict	Distrust, resistance, not included, conflict, etc. (Total: 177)	Applied to comments describing the conflict or negative emotions of the case.
Actor	Junior designer, stakeholders, consumers, client, etc. (Total: 106)	Identified actors or parties involved in the case. The central actor was the junior designer.
Action	Sending, involve stakeholders, design action, reflection, etc. (Total: 49)	Describes actions taken by the actors in the case. An action includes a verb and sometimes a narration that sprout from internal motives.
Positive/ solution	Fantastic solution, enthusiasm, empathy, funny, etc. (Total: 93)	In most cases designers described a positive emotions or solution to the conflict.
View/ perspective	Show perspective, association, perception of moment, important, etc. (Total: 26)	Linked to comments describing perspectives, change of perspectives or seeking understanding of someone else's perspective.
Commercial	Commerce, sharp price, budget, quote, etc. (Total: 33)	Used to identify statements related to commercial, business, or economic values in some of the cases.
Design/ assignment	Proposal, design, idea, final design, etc. (Total: 28)	Related to objects or elements of the project or the assignment
Values	Company culture, immoral, prestige, ambition, etc. (Total: 15)	Used to identify non-commercial values related to ethics, culture, professional, or personal descriptions.
Time indication	Consequence, not back then, time invested, year delay, etc. (Total: 22)	Applied to comments related to time.
Role	Co-owner, subcontractor, intern, different role, etc. (Total: 8)	Describes the role of the junior designer in the case.
Professionalism	Professional involvement, learn to convince, no change during, entrepreneurship, etc. (Total: 42)	Identifies a statement on professional competence or describe learning moment to become a skilled professional
Relation	Intensive work relation, personal relation, connected together, etc. (Total: 6)	Appearing in later cases (>C21) a description of the relationship between different actors
Process	Fuzzy, high pace, messy, chaos, etc. (Total: 11)	Related to reports on an unstructured process.

Six axial codes (NEGATIVE/CONFLICT, VIEW/PERSPECTIVE, COMMERCIAL, VALUES, RELATION, and PROCESS) helped us to recognise the value differences experienced in cases. To illustrate, in case 5, we found the axial codes COMMERCIAL (manual code: COSTS) and NEGATIVE/CONFLICT (manual code: LOWER QUALITY). Additionally, we could confirm the value difference while cross-checking with the original data.

In total, 24 value differences based on at least two values were grouped through a constant comparison procedure (Figure 5). We relied on creative induction and creativity of the researcher. Additionally, we compared these merging categories with preceding insights from our data and research reported in the literature (Glaser and Holton, 2004). We grouped comparable value differences and noticed similar events caused them. These events were moments of high uncertainty in the value-based conflict and therefore labelled as 'critical moments'. We found ten critical moments that helped to place the 24 value differences into five conflict categories.

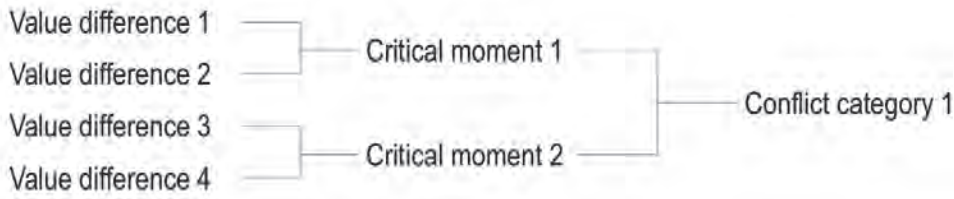


Figure 5. The grouping process: from value differences to critical moments and conflict categories.

VALUE-BASED CONFLICTS EXPERIENCED AS A JUNIOR PROFESSIONAL

In this study, we have collected 32 cases of value-based conflicts from the perspective of a junior design professional working as an intern up to 7,5 years in collaborative practice. We identified five conflict categories: perfectionistic designer struggles, professional dilemmas, relationship challenges, differing perceptions, and creative frustrations (Table 9). In 17 out of 32 cases we identified a value difference between the designer and one other party. In one case, the designer perceived a value difference with a group of stakeholders. In one other case, we identified a value difference between the designer and two other parties (client and consumer) who pursued different values. Finally, in 13 cases, we identified an internal value difference that occurred because the designer struggled with the values by themselves.

Table 9. Value-based conflicts experienced by junior design professionals

Value differences	Critical moment	Conflict category
1. Time constraints – perfectionism 2. Costs – quality	A. Product development discussion	Perfectionistic designer struggles
3. Income – quality 4. Income – meaningful design	B. Trade-off in the design assignment	
5. Politeness – self-respect 6. Problem – solution-oriented	C. Disappointing professional behaviour in design teams	Professional dilemmas
7. Ambition – enjoyment 8. Security – ambition 9. Structure – freedom 10. Security – capability	D. Ambition choice: expert designer or management role	
11. Dominance – helpfulness, social justice and honesty 12. Dominance – understanding 13. Authority – social recognition	E. Dominant communication style of seniors or managers	Relationship challenges
14. Personal gain – collaboration 15. Status – respect and friendship	F. Prestige overshadowing collaboration	
16. Security – creativity 17. Power and tradition – creativity	G. Unexpected perspective of non-designers	Differing perceptions
18. Authority – meaningful 19. Achievement – social recognition	H. Lacking acknowledgement designers' professionalism	
20. Achievement – self-direction 21. Influence – conformity 22. Achievement – detachment and self-discipline	I. Missing information from collaborating parties	Creative frustrations
23. Achievement – self-direction 24. Stimulation – good will	J. Unsupportive mentors or managers	

Perfectionistic designer struggles

In 11 cases, conflicts were based on a value difference between business-economic values and idealistic design values. These 'perfectionistic designer struggles' occurred in two critical moments: product development discussions or trade-offs in the design assignment.

Time constraints versus perfectionism (C14 and C26) and costs versus quality (C5, C23 and C28) were typical value differences found for product development discussions. For example, in case 14, the designer wanted to deliver high-quality work, but felt pressed by time: '[…] it is exactly what troubled me a lot sometimes when I was younger. All these people telling me, it's ok, it's good enough, just stop. No man, it does not look good. Or it is still wrong or totally user-unfriendly. The project leader had to say: well enough.'

During product development, designers also aimed for ingenious or aesthetical solutions with higher cost prices. The pursuit of commercial gains often clashes with the designers' creative ambitions (Julier 2017). On the one hand, time pressure may lead to a lesser quality and non-ideal solutions (Badke-Schaub and Frankenberger 1999). On the other hand, a designer just has to learn to deal with cost price decisions, deadlines, and fast-paced practice.

INCOME versus QUALITY (C4 and C21), and INCOME versus MEANINGFUL DESIGN (C3, C8, C9 and C17) were typical for trade-offs in the design assignment. Some freelance designers experienced a value difference between income and quality. Once the designer earned enough income, he or she could decide to reject the clients' terms. For instance, in case 4 the designer described: 'If I needed the money I might have accepted it. […] As a junior, you are working on another level. You care about just working on delivering high-quality work.' This value difference led to an end in collaboration, in both cases 4 and 21. A variation of the value difference was between income and meaningful design. In case 17, the designer was working unpaid overtime for a meaningful job. Pursuing meaning is motivates us as human beings in general (Pink, 2008) and meaningful innovation as designers specifically (Feast, 2012; den Ouden, 2012). Career coach 1 also mentioned that social motivations and idealism drive designers: 'In the sense of, I would like to mean something in this world. I want to try to contribute to a better world. I am not just here to make money, and money is only a bare requirement. […] This comes to the surface, mostly when designers have a client with mismatching values.' This category shows similarity to moral dilemmas (van der Poel, 2009) or value tension (Lloyd and Oak, 2018) between economic value and ethical judgements (Le Bail, Baker, and Détienne, 2020).

Professional dilemmas

Six cases contrasted professionalism with other values such as SELF-RESPECT or ENJOYMENT. These professional dilemmas resulted in two critical moments: disappointing professional behaviour in design teams and ambition choices.

Two value differences related to professional behaviour in design teams: POLITENESS versus SELF-RESPECT (C30) and PROBLEM versus SOLUTION-ORIENTED (C32). A possible dilemma for junior designers arose when small incidents shattered their ideal picture of how to design professionals work. In case 30, the designer balanced politeness with self-respect. He was asked to make notes. The project manager had overlooked notes and assumed the designer had not made them, spreading false accusations. The designer felt unappreciated and felt the urge to stand up for himself. The designer became frustrated with his colleagues' behaviour.

Four value differences related to the ambition of the designer: ambition (MANAGEMENT) versus creative work (ENJOYMENT) (C15), SECURITY versus AMBITION (C18), STRUCTURE versus FREEDOM (C20), and SECURITY versus CAPABILITY (C31-1). Two respondents performed management tasks, but also explained they rather do creative, hands-on work instead (C15 and C31-1). In case 15, the designer explains: 'I wanted to work at the design agency side… yes, that is also a value conflict.' The designer managed projects and her company 'outsourced conducting interviews and developing concepts to an agency, and I thought, now it becomes enjoyable.' In contrast to these cases, two respondents had a lot of ambition or talent for project management, but management was preventing them from taking the next step (C18), or even pushing them back (C20). Career coach 1 had observed designers could take on extra tasks such as consultancy or management, often choosing for the practical side of their work. Career changes could happen eventually. For example, the designer of case 15 switched jobs after another conflict rose to such heights that she quit her job for health reasons.

Relationship challenges

Differing values regarding achievement versus collaboration were found in six cases. Relationship challenges were divided up into two critical moments: a dominant communication style of seniors or managers and prestige overshadowing collaboration.

The designers experienced dominant communication styles of senior colleagues or managers when there was a value difference between: DOMINANCE versus HELPFULNESS, SOCIAL JUSTICE, and HONESTY (C6), DOMINANCE versus UNDERSTANDING (C11), and AUTHORITY versus SOCIAL

RECOGNITION (C29). In case 29, the designer experienced an overpowering situation as an intern. He was once in a meeting with his mentor and the company director. The mentor dominated the conversation and talked about him as if he was not there. 'It is a strange feeling when someone talks about you in the third person while you standing next to him.' Designers might face challenges in relationships threatening successful collaboration. Communication is a key factor of good collaboration in design (Feast, 2012; Maier and Kleinsmann 2013). The participants preferred an open and respectful way of communication, even if the other person had more experience or other views on the matter at hand. This insight is supported by Feast (2012), who found that, if designers feel intimidated by others, this leads to frustration, and the collaboration becomes one-sided.

The second critical moment happened when prestige overshadowed other values: STATUS versus RESPECT and FRIENDSHIP (C22), and PERSONAL GAIN versus COLLABORATION (C13 and C16). The designer in case 21 longed for appreciation, and felt his contribution was undervalued: '[…] why do I get so little? I put all my effort into it, I am an excellent designer, that I dare to say I am a good designer. But why do I get so little and the middle man earns much more money?' The designer supposed other people value status: 'Well, I stand differently towards money than they do. They value that differently, the status, the earnings and the profits.' This situation frustrated him: 'it annoys me if one becomes boastful about it, at my expense…'. Teamwork and collaborative values are often taught in design programme and can be found in the professional code of designers (Julier, 2017). In collaboration, designers might encounter people who value prestige or economic growth more than themselves, which may lead to frustration, negative emotions, and even an end to the collaboration.

Differing perceptions

In five cases, designers faced different perceptions of their work while working with various stakeholders in projects. In the first critical moment, the designer dealt with different perspectives on creative ideas and designs by non-designers. The value difference was between CREATIVITY and values like SECURITY (C1) or POWER and TRADITION (C2). Two respondents noticed that their clients held

different perspectives. In case 1, personal values were not necessarily different for each party, but values were not adequately shared. The designer did not connect with other stakeholders, but came up with a design and presented a design with potentially a large impact. The value of the designer was 'self-direction', being creative and coming up with new ideas. 'In the beginning, I talked with some people and then I disappeared from the radar. A half-year later, I came back with a plan. I presented the plan in full expectation of their immediate enthusiasm […].' The designer ignored the community in the process, and as a result, they rejected the idea. A widely recognised approach is the co-design approach (Sanders and Stappers 2012). Yet, dealing with diverging values (and their consequences) is still difficult for junior designers. This was also observed by both career coaches who reported that junior design professionals experience difficulties integrating the perspectives of others.

The second critical moment was focussed on their professional acknowledgement as a designer. It is related to the MEANINGFULNESS of their contributions (C7 and C12) and the recognition of their CAPABILITIES (C31-2). Being undervalued as a professional was frustrating for some designers. For example, in case 12, a graphic designer working in fashion was frustrated about decisions made by her employer: 'something you worked on for three weeks was wiped off the table, and you had to make a whole new collection in one week.' She felt her work was not appreciated. Being recognised for what you contribute supports job satisfaction (Judge et al., 2001). Especially when supervisors undervalue the contribution of a professional, it has negative effects on their wellbeing (Monnot and Beehr, 2014).

Creative frustrations

Creativity was conflicting with achievement values in another five cases. The creative potential of junior designers was hindered in two critical moments: missing information and unsupportive mentors or managers.

Missing information from collaborating parties made ambitious junior designers frustrated. ACHIEVEMENT values were conflicting with CREATIVE values (C10) or CONSERVATIVE values (C24 and C27).

In case 10, the designer accepted tasks somewhat outside his core skill set and as a result, lacked vital information. "In some cases, I was maybe placed in projects where I was not enabled to deliver something, almost like, 'here you go, this is the project, good luck', but you do not get the context, the right information, so you really deliver shit." In case 27, new team members did not share information sufficiently, causing delays in the project. "There were more misunderstandings. Because we still are not so connected, we do not know how everyone works." Low group organisation may lead to missing information harming the design outcomes (Badke-Schaub and Frankenberger, 1999). Additionally, lacking a shared understanding between the designers and the or team members can obstruct collaboration and innovation (Maier and Kleinsmann 2013; Détienne Baker, and Burkhardt, 2012).

Unsupportive mentors or managers created a struggle between CREATIVE values and ACHIEVEMENT (C19) or GOODWILL (C25). Two designers suffered from self-doubt, self-pity, and the feeling of mismanaging conflicts. It appeared the negativity was caused to a large extent by lacking support of a mentor or manager. In case 19, the designer worked on proving himself worthwhile and on earning self-respect. "When I just started to work here, I became insecure, because this agency has many seniors, and uhh, a very performance-driven atmosphere, so people work hard." He reassured himself: "you have to assume, they hired me, so they will have some trust in me." Our cases illustrated that collaboration might be disturbed when the contribution of junior designers is unacknowledged by expert designers.

EXPLORING UNDERLYING VALUE DIFFERENCES

We spotted a stark contrast, running through our cases between intrinsic (growth-oriented) values and extrinsic (anxiety based) values (Kasser and Ahuvia, 2002; Schwartz *et al.,* 2012). In 18 value differences, we noticed a seesaw effect when an extrinsic value was opposing an intrinsic value (Table 10). For example, being intrinsically motivated to find meaningful solutions, while at the same time requiring income as a freelance designer. Additionally, we found a competing effect in six value differences between two

extrinsic values, such as authority and social recognition. This effect is unexpected since it could be assumed that proximal values are more compatible with one another, and therefore not conflictual (Schwartz *et al.,* 2012). Furthermore, we found no value differences between two intrinsic values. This finding may suggest that intrinsic values are inherently complementary, which is in line with Schwartz *et al.* (2012) and Kasser and Ahuvia (2002). Overall, these findings suggest that value-based conflicts always involve one or two extrinsic values, and therefore touching on the anxieties of at least one of the parties involved.

Table 10. Seesaw and competing effects in value differences

Type of value difference	Value difference examples from the data
Seesaw effect: an extrinsic (e) value is opposing an intrinsic (i) value	Time (e) – perfectionism (i) Costs (e) – quality (i) Income (e) – quality (i) Income (e) – meaningful design (i) Politeness (e) – self-respect (i) Problem (e) – solution-oriented (i) Ambition (e) – enjoyment (i) Security (e) – ambition (i) Structure (e) – freedom (i) Dominance (e) – helpfulness (i), social justice (i) and honesty (i) Dominance (e) – understanding (i) Personal gain (e) – collaboration (i) Status (e) – respect (i) and friendship (i) Security (e) – creativity (i) Power (e) and tradition (e) – creativity (i) Authority (e) – meaningful (i) Achievement (e) – social recognition (i) Achievement (e) – self-direction (i)
Competing effect: two anxiety-based values contest one another	Security (e) – capability (e) Authority (e) – social recognition (e) Achievement (e) – social recognition (e) Influence (e) – conformity (e) Detachment (e) - achievement (e) and self-discipline (e) Stimulation (e) – good will (e)

DISCUSSION AND CONCLUSIONS

We analysed value-based conflicts that are experienced by junior design professionals with value differences that are underlying these conflicts surfacing at critical moments. In total, we identified 24 value differences that could be placed in 10 critical moments, leading to five conflict categories: perfectionistic designer struggles, professional dilemmas, relationship challenges, differing perceptions, and creative frustration.

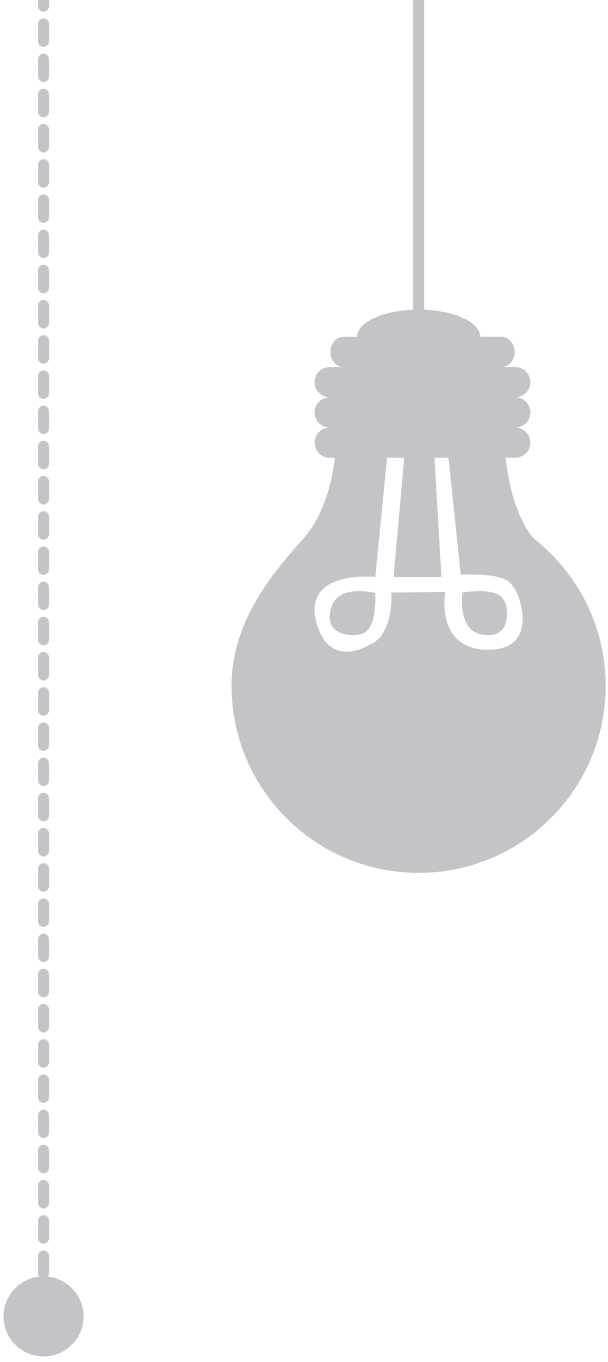
The categorisation of conflicts, the identification of value differences and critical moments can serve as a means for designers to investigate and address value-based conflicts. The different cases we collected can show junior designers a wide variety of value-based conflicts. Designers experience value-based conflicts not only related to factual information (Le Bail, Baker, and Détienne, 2020; Barki and Hartwick, 2004) or ethical concerns (Le Bail, Baker, and Détienne, 2020; van de Poel, 2009), but also related to career, relationships, and collaboration issues (Baker, 2016; Feast, 2012; Lawson and Dorst, 2009). Emotions and negotiation strategies could be essential elements of value-based conflicts (Baker, 2016). Further studies could explore the different components of value-based conflicts to improve our understanding.[6]

Additionally, our findings indicate that junior designers perceive a broad spectrum of value differences, for example, economic worth (e.g. INCOME) versus design ethics (e.g. CREATING MEANINGFUL DESIGNS) and work ethics (e.g. STRUCTURE) versus intrinsic motivational drivers (e.g. FREEDOM). Future research could survey what are the most common values at stake for junior designers. Essentially, junior designers can use these findings to identify value-based conflicts they are experiencing, or have experienced in the past, to address and reflect on such conflicts in collaboration. Research-wise, our classification scheme can be extended and be accommodating in future observation or experimental studies to search for or simulate critical moments that have a higher likelihood to observe value-based conflicts taking place.

6 The conclusion of Study One explains how the remainder of the thesis explores some of the questions and suggestions for further research proposed in this conclusion.

In line with our expectations is the seesaw effect of conflicts between intrinsic and extrinsic values. Two new effects we found are that conflicts can involve two competing extrinsic values but most likely not two intrinsic values. Further exploration of all these effects may be interesting. For example, Lekes et al., (2012) proposed that reflection on intrinsic values may lead to a shift in value priorities and improved well-being. Nevertheless, in many cases, intrinsic, growth-oriented values of designers were blocked by extrinsic values, either pursued by others or by themselves. A new question arises: could there be a differential effect of intrinsic and extrinsic values on learning and professionalisation?

Finally, our insights may be helpful for the professional development of junior designers working in collaborative practice. In our findings, we see that some critical moments draw the junior designer's attention towards other parties in the collaboration. At other times, the junior designer's attention goes out to self-awareness and building confidence. Other parties may still be involved in these self-oriented critical moments, either by triggering potential conflicts or by providing support as a mentor or mediator. An insight for professional development in co-design practices is that designers should not only learn to improve their social skills, but also strengthen a notion of personal values for successful collaboration.



Chapter 05

EXPLORING HOW JUNIOR DESIGNER PROFESSIONALS COPE WITH, AND LEARN FROM THE VALUE-BASED CONFLICTS[7]

We explored how junior design professionals cope with value-based conflicts. We interviewed 22 design professionals about past and current value-based conflicts and the coping strategies adopted. Applying a grounded theory approach, we identified 11 types of coping strategies employed by junior design professionals. Our findings allowed us to clarify the nature of the coping process and localise value-based conflicts in the process of collaborative practice. During the coping process, professionals learn how to handle value-based conflicts through emotional release, developing a broader action repertoire, and engaging in timely action. We also identified transitions between specific coping strategies as junior designers learned from past conflicts and developed as a professional.

7 This Chapter is previously published as Lenny van Onselen, Rianne Valkenburg and Dirk Snelders (2020b): Exploring how junior design professionals cope with and learn from value-based conflicts, *CoDesign*, DOI: 10.1080/15710882.2020.1834584. This Chapter is a standalone publication part of Study One and repeats sections of Chapter 4. I made a few minor corrections for clarification.

VALUE-BASED CONFLICTS IN COLLABORATIVE DESIGN PRACTICE

Misconceptions caused by different values, codes, and perceptions may be a significant hurdle in collaborative design (Carvalho, Dong, and Maton, 2009). Designers in collaborative practice need to integrate differing values held by project stakeholders (Zelenko and Felton, 2013). However, this process of integrating differing values does not always unfold peacefully between reasonable parties, and conflicts may emerge. Conflicts can be based on disagreements, negative emotions, or interferences in the pursuit of values, needs, and goals (Barki and Hartwick, 2004). We define value-based conflicts as disputes, arguments, and/or frustrations caused by value differences in collaborative design either between the parties involved or as perceived by a junior designer. Value-based conflicts can range from outspoken and fierce conflicts between collaborating partners to internally experienced frustrations about the collaboration process itself. These conflicts emerging from value differences are an inherent part of collaborative practice.

Value differences occur when two or more values do not match. For example, the values underlying people's support for and pursuit of sustainability versus profit reflect value differences (Schwartz and Sortheix, 2018; van de Poel, 2009). In literature, the term 'values' may refer to worth (Boradkar 2010), priorities (Fitzpatrick, 2007), ethics (Manders-Huits, 2011; Friedman, Kahn Jr, and Borning, 2006), or motivational drivers (JafarNami, Nathan, and Hargraves, 2015; Le Dantec and Do, 2009; Schwartz and Sortheix, 2018;). The value-based conflicts may spring from value differences reflecting all of these conceptualisations.

In this Chapter, we focus on all values in collaborative design that may guide, amplify, or exemplify a designer's behaviour (Jafari-Naimi, Nathan, and Hargraves, 2015; Le Dantec and Do, 2009; Shilton, Koepfler, and Fleischmann, 2013; Ricoeur, 1994). The typical design values that a designer might find important include quality, beauty, usefulness, and desirability (Cross and Clayburn Cross ,1996; Le Dantec and Do, 2009). The universal human values a designer may find important could, for example, be respect,

ambition, spirituality, family, religion, and tradition (Le Dantec and Do, 2009; Schwartz and Sortheix, 2018). We refer to values as the concepts and characteristics deemed important by design professionals and considered worth pursuing in daily collaborative practices. Taking such a broad approach to values allows us to explore the nature of value-based conflicts experienced by junior designers. This Chapter aims to uncover how junior designers cope with value-based conflicts as they develop professionally.

COPING WITH VALUE-BASED CONFLICTS IN COLLABORATIVE DESIGN PRACTICE

Previous research (van Onselen and Valkenburg, 2015), observations, and conversations with design practitioners suggest that junior design professionals, in particular, appear to be affected by value-based conflicts. For example, I observed such conflicts while coaching a team of 10 junior designers participating in a traineeship. The team worked on a project involving a client and users in different co-creation moments. After one-and-a-half weeks, a critical moment occurred when four designers presented the intermediate results to the client. The client rejected their innovative ideas and opted for traditional ideas. The team worked full time together on the project, only to hear their decisions were not in line with the perspective held by the client.

The four junior designers employed different ways of coping with this value difference between creativity and achievement. A 'way of coping' describes how people deal with conflicts and what actions they take to resolve conflicts (Skinner and Zimmer-Gembeck, 2016). After the meeting with the client, the first designer expressed that they should stick to their ideas. The second designer accepted the situation and wanted to adjust their ideas to the client's requirements. The third designer shared his frustrations and sought group support. The fourth stood silently outside the group, only to express frustration after his coaches intervened.

These observations of junior designers stand in stark contrast with studies documenting the skilful handling of disagreements (McDonnell, 2012), value tensions (Lloyd and Oak, 2018), and

value-based conflicts (Schön, 1983) by experienced design professionals. The divergent responses of the junior designers suggest that they develop their competencies to cope with such conflicts over time. Different factors, such as emotional coping mechanisms or collaboration skills, may play a role when value-based conflicts occur or are anticipated.

For junior designers, negative emotions may arise when there is a mismatch between values (Clark, 1997; Dick and Dalmau, 2000). Dealing with emotions is a way of coping with value-based conflicts, but coping also aims to develop and realise a broader action repertoire (Skinner and Zimmer-Gembeck, 2016). In general, people take actions to manage their immediate (social) surroundings (Dick and Dalmau, 2000; Skinner and Zimmer-Gembeck, 2016), allowing them remain close to their values (Argyris, 1957). Actions in a social context are often part of an interaction cycle between our actions and actions of others (Dick and Dalmau 2000). Coping, therefore, constitutes a series of actions of adjusting to the presence of a value-based conflict in a given context. For junior designers in particular, coping with conflict is an essential basis for professional growth (Skinner and Zimmer-Gembeck, 2016). This suggests that value-based conflicts may result in meaningful learning experiences for junior designers.

Scholars have also studied how professionals handle conflicts. Argyris (1957) noted workers of industrial firms adapted to conflicts by: (1) leaving the organisation, (2) climbing the organisational ladder, (3) using defensive mechanisms, and (4) becoming apathetic and disinterested. Frydenberg (2017) provides a broad overview of 19 productive coping styles and 14 non-productive coping strategies for professionals in general. A study with public servants (de Graaf, Huberts, and Smulders, 2016) found ways of coping with value-based conflicts through organisational action, such as routinising work or establishing boundaries between departments.

Designers are not necessarily like other professionals, and, therefore, they may employ design-specific coping strategies. Furthermore, conflicts in design teams may be beneficial for innovation (De Dreu, 2006; Farh, Lee, and Farh, 2010); thus, conflict

avoidance may not be a constructive strategy for designers in their role as innovators. Instead, expert designers make use of conflictual requirements (Lloyd and Oak, 2018; McDonnell, 2015) and collaborate with parties who hold different values (Zelenko and Felton, 2013), suggesting a field-specific approach. Designers deal with uncertainty on a daily basis (Tracey and Hutchinson, 2016) and need to cross boundaries and integrate inputs from various sources of expertise (Carlile, 2002).

Examples of coping strategies from other professions that are useful for designers are related to empathy (Clark 1997), communication, and mediation (Zupan, 2012). Different design methods such as Value Sensitive Design (Friedman, Kahn, and Borning, 2006), Values-led Participatory Design (Iversen, Halskov, and Leong, 2012), and HuValue (Kheirandish *et al.*, 2020), encourage designers to empathise with values of stakeholders or make values explicit to improve communication.

Empathic and communicative coping strategies are relevant for designers, however, to pursue meaningful innovation, designers also need to be personally motivated by values and principles (Cross and Clayburn Cross, 1996). These values and principles are tied to their personal engagement with values and personal stances towards various standards in the design profession (Baha *et al.,* 2018; McDonnell, 2016). The aforementioned value design methods may support junior designers in empathising with stakeholders' values and integrating them into designs, yet, they do not provide support to junior designers when they cope with their own experiences of value-based conflicts.

Coping with value-based conflicts may be an essential skill for junior designers in adopting a more professionalised work ethic. With regard to issues of professionalisation, difficulties may arise in staying true to one's personal values while being empathic and communicative to others. This Chapter explores different ways of coping with value-based conflicts and learning experiences for junior designers. The aim is to help junior designers cope more productively, in terms of developing for themselves a personalised, professional mode of working with others.

RESEARCH METHODOLOGY

Interview data were collected from 22 design professionals who held various jobs in 16 different design fields (e.g., product design, digital design, and city planning). Interviewees had different educational backgrounds as well (e.g., industrial design engineering, graphic design, and architecture) (Table 6. Participants overview). Before the interview, participants were surveyed via email on their codesign experience and personal values. Additional methods to triangulate data were desktop research, workplace observations, and the feedback from participants on interview summaries. Furthermore, two interviews were held with acquainted career coaches who have consulted and guided designers in the Netherlands.

The first eight participants were designers with over 10 years of experience recruited via our network and snowball sampling. We expected their ways of coping with value-based conflicts would be most informative. However, an initial analysis of interview data suggested that participants were most expressive about their experiences with value-based conflicts as junior designers and how these played a role in their development as professionals. The eight senior designers described nine cases of value-based conflicts as junior designers in total but struggled to recollect details of these conflicts. We then adapted our sampling strategy to include participants with more recent experiences of conflicts as junior designers (Glaser and Holton, 2004). We first interviewed designers with less than 10 years of experience recruited via our network and social media (e.g. LinkedIn), and then finally we interviewed seven junior designers recruited via our network with 7.5 years of experience or less (Ahmed, Wallace, and Blessing, 2003; Ball, Ormerod, and Morley, 2004; Casakin and Goldschmidt, 1999).

We noticed that participants were reluctant to talk about conflicts when asked directly. Therefore, we inquired about value differences and probed further to find out if these value differences turned into arguments, frustrations, or conflicts. Participants were asked to explain, in their own words, their views on four topics: personal values, value differences, value differences as junior designers, and their backgrounds. Personal values were defined in the interviews as the values the participants him or herself found

important in innovation projects as a design professional. In order to avoid emphasis on dominant design, client, or company values, we asked them to give concrete examples of how their values were or were not implicated in projects. Subtopics in the interview guide and additional stimuli helped us probe for additional details (Table 7. The leading interview guide with topics and subtopics).

A grounded theory approach was applied without hypotheses formed prior to data analysis (Glaser and Holton, 2004). Grounded theory aims to uncover participants' main concerns regarding value-based conflicts rather than reconstruct conflicts through multiple informants. For this reason, we selected 32 reported cases of value-based conflicts as perceived by junior designers for analysis. We selected conflicts experienced by the participants across their careers, ranging from their first internship to seven and a half years after graduation. Collection and analysis took place iteratively, with each new finding and interpretation compared to previous findings and interpretations derived from study data and existing research.

Coding and modelling coping in context

Through a multi-staged coding process, we identified several patterns in the data. First, different types of value-based conflicts were identified and described as cases using the codes. Second, we analysed cases using a constant comparison procedure to identify coping methods. Finally, we modelled contextualised value-based conflicts in diagrams to understand the coping process.

First, we sought to gain a contextual and relational understanding of value-based conflicts and coping actions. To achieve this, manual (open and in vivo) coding was applied holistically on the interview transcriptions by me and two supervisors. We compared the individual manual coding results while analysing the interviews, axial codes emerged from the manual codes. Throughout the chapter, codes are shown in SMALL CAPS. Our coding process resulted in 10 to 31 codes per conflict case depending on the length of the conflict narrative (Table 8. Description of axial codes). For example, the manual codes DISTRUST and CONFLICT were combined and named NEGATIVE EMOTION/CONFLICT. The manual and axial codes were initially in Dutch and translated for publication.

We explored connections between codes within each specific case by sketching a diagram (Miles and Huberman, 1992). The diagram depicted the conflict context and coping process of a given conflict. Five axial codes were used as building blocks for the diagrams: actor, action, design assignment, values, and professionalism (described in Table 8. Description of axial codes). Through several iterations, we created diagrams of all 32 cases of conflict, which allowed for cross-case comparison between cases. Next, coding in Atlas.ti (open and in vivo) allowed for coding on smaller chunks of data and multiple codes per line. The manual and Atlas.ti codes were fitted into the diagram to add (a) positive and negative emotions (to understand what emotions arise while coping); (b) contextual information to understand coping in context; and (c) to uncover coping actions. Finally, the diagrams were visually improved based on feedback from experts and junior designers.

Figure 6 shows a diagram of Case 1 based on manual and Atlas.ti codes. At the centre of the diagram is a junior designer who has experienced a value-based conflict. The codes are depicted in different ways to visualise the coping process of a junior designer with the value-based conflict. After initial actions were performed, we observed a change in conflict situations. Each participant experienced a critical moment in which a value difference became intolerable. The critical moment was followed by a new type of action (e.g. Stakeholder involvement) or a series of new actions applied in another context. Since some participants expressed lessons learned or insights gathered from the conflict experience, the diagrams of these cases concluded with an emergent insight about an alternative professional mindset or value priority.

Analysis of the diagrams resulted in 'action' emerging as the central code for understanding coping with value-based conflicts. Action refers to an aspect of human doing that calls for narration, prospectively, as a guide for future action, and retrospectively, as a reflection on self-identity (Ricoeur 1994). Action springs from internal motives and reflections. For example, in Case 1, the action sending was to share a fantastic solution with the community and sprouted from the enthusiasm that the designer felt with his idea. The actions were ordered chronologically following the

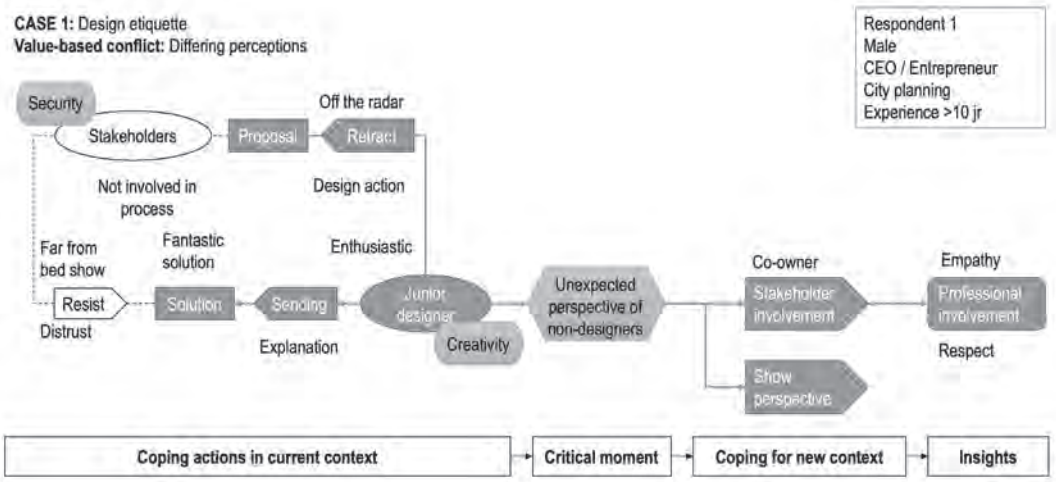


Figure 6. Diagram of Conflict Case 1: visualising the conflict and coping process

Square: the design assignment (i.e. proposal); Arrow block white: an action by stakeholder (e.g. resist) Large oval white: actors (e.g. stakeholders); Arrow block grey: action by designer (e.g. retract); Small oval: values (e.g. security); Hexagon: critical moment; Rounded square: emergent insight (e.g. more business minded).

conflict diagrams (Appendix A). We identified four types of actions: 1) coping actions type 1 were actions employed before the critical moment, 2) coping actions type 2 were actions used directly after the critical moment in the current context, 3) coping actions type 3 were taken as preventative measures, and 4) coping actions type 1nc were a set of actions adopted in a new context (nc).

Identifying ways of coping

Through the constant comparison method, we identified patterns in coping actions. First, the diagrams were grouped together using five conflict categories identified in prior research: 1) perfectionistic designer struggles, 2) professional dilemmas, 3) relationship challenge, 4) differing perceptions, and 5) creative frustration. The actions reflected in each diagram within each category were compared and grouped together when one or more actions or emerged insights showed similarities (e.g. Inquiry – investigation). In addition, the emerging categories of coping were checked for similarities with conflict case narratives. For example, the cases C3, C4, C8, and C21 shared similar narratives of early-career entrepreneurs who learned to choose projects that matched their values. At the end of the constant comparison process, we identified 11 ways of coping with conflicts.

Analysing ways of coping in the early career of junior designers

The conflicts and actions implicated in each case were arranged chronologically, beginning with conflicts during internships and other design work before graduation to conflicts that occurred after 7.5 years of work experience. The chronological organisation of conflict cases served to assess if and how ways of coping changed in the early career of junior designers.

RESULTS: WAYS OF COPING EMPLOYED BY JUNIOR DESIGNERS

Of the 32 cases, we identified 124 codes associated with actions taken by the designers or other parties (e.g., colleagues, supervisors, marketeers, and manufactures), from which 11 different ways of coping with value-based conflicts were recognised (Table 11). Participants adopted a set of actions to cope with collaboration before (coping action type 1) or after a critical moment emerged (coping action type 2). Additionally, participants shared their adjusted actions for new contexts or suggested potentially more effective actions (coping action type 3 and 1^{nc}). Three suggested coping actions type 1^{nc} were identified as too costly or not ideal.

Pursuing perfection

Four participants had worked overtime to meet their own high standards or meet the requirements of all project stakeholders. The participants coped by WORKING OVERTIME. For example, in Case 14, the designer was driven by PERFECTIONISM, spending too much time on a project. He aimed to integrate all of the requirements of different departments into one optimal design. He still experienced difficulties convincing his colleagues. Only after time passed did he realise his strategy was not working. "I had to win this battle, but I didn't. You burn a lot of energy. That is what I mean with I would not do that again."

Finding acceptance

Three participants aimed for understanding the perspective of other side to cope with the value-based conflict. Designers inquired with others about why certain decisions were made in order to make peace with the situation. For example, in Case 5, the junior designer merely did her job and was NOT INVOLVED in the final decision to change the concept in order to REDUCE COSTS.

Interviewer: "How did you cope with it in the end?" Respondent: "By thinking: that is stupid. (Laughs). Thus, [I coped by] actually just accepting it. What a pity."

After time passed, she asked her manager for the reasons for changing the concept. She found she could rationally accept the decision to change, but her frustration remained.

Making value-based choices

Four freelance designers learned to choose projects that were aligned with their values after experiencing value-based conflicts. For example, in Case 3, the designer CHOSE OTHER PROJECTS following a conflict.

"Thus, if you do a project in which you think, 'Hey, I am not acting in line with my own values and norms.' It will change your perception for the next project. And you can make the choice - shall I do it [the project] or not - on a different basis."

The designers rejected a client's proposed project only if the designer recognised the value difference at an early stage of the project. By experiencing past value-based conflicts, the designers became more aware of their values and selected projects that matched their values.

Building confidence

Three junior designers wanted to become self-respecting professionals and worked on building their confidence. In the pursuit of this goal, the participants experienced a value-based conflict. In Case 20, Participant 16 demonstrated a strong AFFINITY WITH PROJECT MANAGEMENT, but in his current role, he was unable to pursue this goal.

"I notice that every time you really want to grow, there are many older colleagues who have very enjoyable work. They have a lot of responsibility. That is something I have never experienced."

Although realising his professional dilemma, he wanted to continue his current job because he saw it as relevant experience and a learning ground for improving his capabilities.

Table 11. Categorising ways of coping based on actions and insights (codes in bold were used to group ways of coping)

Way of coping (category)	Case experienced as junior designer	Coping action type 1: designer's actions towards value differences before critical moment (codes)
1. Pursuing perfection	C14: Pick your battles	Integration; Presentation
	C17: Not just a client	**Work overtime**
	C23: Working overtime	Points out problem
	C26: Working overtime 2	
2. Finding acceptance	C5: Quality versus costs	
	C9: For a cause	Collaboration
	C28: Miscommunication	**Investigation**
3. Making value-based choices	C21: Change of strategy	Hired
	C3: Gadget	Provide service
	C4: Freelance	
	C8: Money vs morality	Hired
4. Building confidence	C20: Chaotic project management	Seek support
	C30: Third person	Made notes
	C31a: Insecure about capabilities 2	Performed tasks
	C32: Only see the problem	Observe; Seek support
5. Persevering before changing	C15: Not doing what you like	Be involved; Collaboration
	C18: Seen as liability	
6. Harmonising	C6: Disrespectful behaviour	**Observe**
	C11: Fundamental misunderstanding	**Avoid confrontation**
	C13: Gut based decision making	**Observe**
	C29: Not taken seriously	**Observe**
7. Confronting passionately	C16: Shift in attitude	Collaboration
	C22: Valued as a designer	Adds value; Collaboration
8. Convincing explanations	C2: Misunderstood	**Explain; Research**
	C12: Work dismissed	**Research; Last minute changes; Collaboration**
	C31b: Insecure about capabilities 2	Avoid confrontation; Unwind
9. Switching perspectives	C1: Design etiquette	Off the radar; Sending
	C7: Politics	Collaboration
10. Developing self-understanding	C10: Unclear assignment	
	C19: Insecure about capabilities	Hired
	C25: Negative feedback	
11. Improving processes	C24: Unaligned design vision	
	C27: Unable to deliver	Urgent meetings; Create

Coping action type 2: designer's actions to handle value-based conflicts after critical moment (codes)	Coping action type 3: designer's preventative actions before new contexts (codes)	Coping action type 1^{nc}: insights and coping actions in new contexts (codes)
Work overtime	Go with the flow	
	Compromise	
Work overtime		Formulate concrete assignment
Work overtime		Learned a lot
Inquiry		**Accepting situation**
Inquiry	Choose other projects	
		Compromise
		Change printer (not ideal)
	Choose other projects; Initiate other projects	
	Choose other projects	Job refusal (not ideal); Don't continue (not ideal)
End collaboration		**Entrepreneurial skills**
	Choose other projects	Job refusal
Explain	Align team	
Retract		**Stand-up for yourself**
		People will tell you if you are wrong
		Self confidence
	Change career	
Maximise experience	**Change job**	Involve others
		Exchange tasks
Open up conversation		Resolved
		Harmony in collaboration
Retract		
Seek support		**More business minded**
End collaboration		**Time out**
		Learn to convince
Refuse freelance job offer	Start-up company	
		Seek support
		Stakeholder involvement; Show perspective; Professional involvement
		Change perception
Work overtime	Improvise	**Understand capabilities**
		Grow into; Self-confidence; Stay yourself
Seek support		**Stand-up for yourself**
Search process		**Regulate front end; Convince; Direct contact decision makers**
		Take early action; Be precise; Improve process; Develop negotiation skills

Persevering before changing

Two participants experienced significant health issues, which forced them to stay home from work for a few months. When they returned to work both of their companies experienced drastic strategic changes. The junior designers came to realise that their companies, once ideal employers, longer matched with their values. In Case 18, Participant 15 RECOVERED and felt STRONGER AFTER HIS ILLNESS. After recovering, he decided to only do things that he enjoyed. The employer thought the illness of the designer was a LIABILITY to the company based on ADVICE of the social service worker. They suggested he only work on MAINTENANCE TASKS, which he found rather boring.

"Thus, I said to myself, 'If you work so hard and this is the result, then you will only do things you like.' […] So, I continued for a few more years, and I soaked up all of the knowledge I could, like a sponge. And when there was nothing left to learn, I reoriented myself and landed my current job."

Thus, in response to value-based conflicts with their employers, the designers learned everything that could be learned before finding new jobs. Ultimately, the designers made major career decisions as a result of a value-based conflict with their employers.

Harmonising

One coping mechanism identified amongst junior designers after observing the boundary-crossing behaviour of others was to improve collaboration between people through open communication. These designers reported their dislike of conflicts, aiming to AVOID CONFLICTS. Their way of coping was to seek compromises or discuss the situation with a superior. For instance, in Case 6, the designer first OBSERVED the situation without taking action. After feeling their values were continuously violated, she POINTED OUT THE SITUATION to her superior.

"I had a few times, fortunately, [where] I was able to do that. I had conversations about it. I could point out: 'I thought you went too far here.'"

Confronting passionately

Standing up for their values as designers and confronting their collaborative partners were additional reactions to boundary-crossing behaviour. In hindsight, the two designers expressed that they could have reacted less impulsively. For example, in Case 16, Participant 14 reacted quite impulsively and emotionally to the conflict:

"I was fairly emotional and then my manager stepped in. He joined a conversation in which he clearly explained what the original agreements were."

The designer noted that becoming MORE BUSINESS-MINDED could have helped her cope with critical moments like this.

Convincing explanations

Three designers tried to persuade the stakeholders that their designs were good. The designers initially coped with this task by explaining their ideas and putting forth arguments. For two cases, Case 2 and Case 12, this strategy proved unsuccessful, and conflict emerged. Participant 2 FELT MISUNDERSTOOD, and reported that this was FRUSTRATING:

"I could have defended the idea. But if you do not defend yourself at such a moment, then [the value of the idea] is gone for the client. […] If you would better understand what the consumer means. […] That is something you will have to explain."

From the conflict, the designer learned HOW TO CONVINCE and noted that a designer should be able to not only defend his or her idea, but also try to understand the perspective of others.

Switching perspectives

After ineffectively trying to convince other parties of the merits of their design, Participants 1 (Case 1) and 6 (Case 7) changed their coping methods. Participant 1, for example, went to work alone on the assignment without involving the community. After a while, he enthusiastically presented his plan out to the community. The community DISTRUSTED the idea. He improved the idea and SENT his idea again, but this did not help. "We learned that we have to involve stakeholders from the beginning." The designers applied

this strategy from that point forward in his projects. He referred to this as PROFESSIONAL INVOLVEMENT of the designer.

Developing self-understanding

Three designers experienced creative frustrations which made them insecure about their capabilities. Assigned tasks were more difficult and complicated than before in university. Their insecurity resulted from high expectations they held for themselves or the fast pace of working of senior colleagues. An initial coping strategy was to WORK OVERTIME to meet certain expectations. In Case 19, Participant 16 was INSECURE but GREW INTO tasks he was passionate about. His SENIOR COLLEAGUES operated at a much HIGHER PACE than Participant 16 was used while in UNIVERSITY.

"When I started, I became very insecure […]. My advice is to think carefully about what you are good at. Somebody had to tell me that it should say 'engineer' on my business card and not 'designer.'"

Going through these creative frustrations increased the designers' awareness of their capabilities. After a while, they were aware of what they are capable of, and this increased their self-confidence.

Improving processes

Two designers adjusted their design process. Initially, they spent time searching or waiting for the right information for the design project they worked on. The designers identified ways to adapt their modes of working for the future. For example, Participant 19 noted he could CONVINCE BETTER, REGULATE THE FRONT END of the design project, and engage in DIRECT CONTACT WITH DECISION-MAKERS.

"In the future, it would be better if I could have more of a grip on the situation at an earlier stage [of the project] instead of during the process."

The designers said these strategies could help them deliver an end product of higher quality without spending too much time searching or waiting for the right information.

DISCUSSION: UNDERSTANDING COPING IN DESIGN PRACTICE

Data collected for this study provided insight into what coping actions are taken and what ways of coping are applied in response to value-based conflicts. These results help shed light on two important aspects of coping with value-based conflicts: the process of coping and the development of coping mechanisms over time.

The process of coping

By comparing the diagrams of each conflict case (e.g. Figure 6), we were able to identify a general process of coping with value-based conflicts (Figure 7). Although the core of coping is action, coping is essentially an adaptive process with elements such as emotions, actions, and cycles that unfold over time (Skinner and Zimmer-Gembeck, 2016). Figure 7 depicts the process of coping with an external value-based conflict in which each party holds a different value identifies four different ways of coping[8].

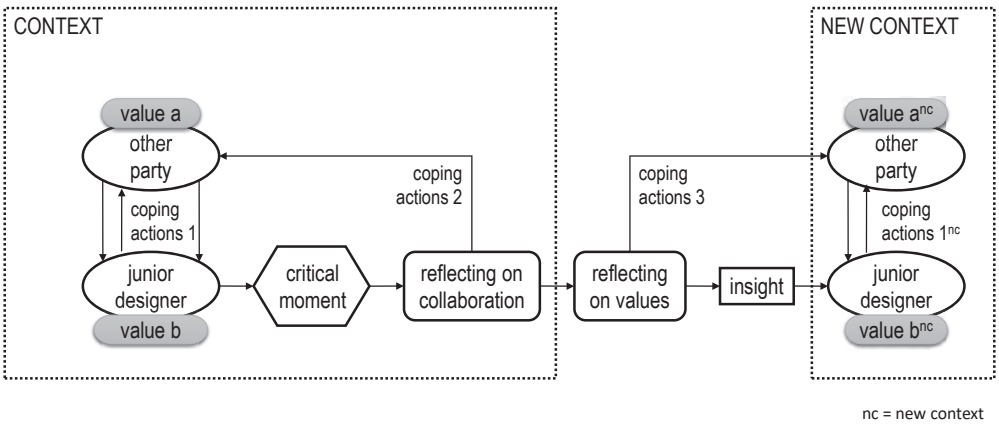


Figure 7. Process of coping with an external value-based conflict

8 The coping process with an internal value difference is similar to the process of an external value difference, except it involves a single junior designer who holds two conflicting values.

Coping actions type 1 occur before the critical moment to cope with collaboration in a context. They are often reactions to other parties' actions, which is a typical process found in relationships (Dick and Dalmau 2000). We found passive (e.g. OBSERVING), defensive (e.g. DEFENDING), and neutral actions (e.g. INVESTIGATING). These initial actions to handle collaboration did not appear to prevent critical moments from happening. At some point, the junior designer can no longer manage the situation. Each conflict case builds to a critical moment in time in which a value difference becomes intolerable. Part of the critical moment may include emotional coping or a quick appraisal of the situation (Skinner and Zimmer-Gembeck, 2016). After the critical moment, the designer reflects on the collaboration. Type 2 coping actions are taken after the critical moment to cope with the value-based conflict occurs in the given context. The participants (implicitly) reflected on collaboration during the value-based conflict through actions like OBSERVING and INVESTIGATING. After reflecting, the designers initiated mitigating actions to cope with the conflict and achieve the original goals and values related to the conflict itself. Type 2 coping actions show similarities with *single-loop learning*. Single-loop learning aims to achieve existing leading values with new actions (Argyris and Schön, 1978).

Sometimes designers realised they could not live up to their values within a conflict context. The data revealed several examples of the different types of values that the participants were concerned about during reported value-based conflicts. We identified values related to economic worth (e.g. COSTS), personal worth (e.g. SOCIAL RECOGNITION), design priorities (e.g. QUALITY), personal priorities (e.g. INCOME), design ethics (e.g. MEANINGFUL), work ethics (e.g. SOCIAL JUSTICE), intrinsic motivational drivers (e.g. CREATIVITY), and extrinsic motivational drivers (e.g. SECURITY). This confirms the assumption implicit in our broad definition of value adopted at the beginning of this study, namely, that junior designers are concerned with a wide range of values that may be implicated in value-based conflicts.

The designers reflected on their values following a *double-loop learning* process of adapting and modifying prioritised values (Argyris and Schön, 1978). Coping actions type 3 and 1nc reflect the pursuit of new values or the reprioritisation of values in new contexts (nc). Coping actions type 3 include pro-active steps to cope with value differences more effectively, such as INVOLVE STAKE-

HOLDERS. Additionally, some designers identified insights lessons learned, which may contribute to improved coping strategies in the future. We anticipate that the emerged insights from the designers are related to different values, such as economic worth (e.g. MORE BUSINESS-MINDED) and personal worth (e.g. SELF-CONFIDENCE). For example, Participant 14 expressed wanting to become MORE BUSINESS-MINDED, adopting the strategy of pursuing commercial values instead of collaborative values. Coping actions type 1nc refer to a new way of handling collaborative practice

based on emergent insights. In case 1 (Figure 6) the emergent insight PROFESSIONAL INVOLVEMENT became a new coping strategy (i.e. coping actions type 1nc) to handle value differences more effectively by involving stakeholders earlier in the design process (i.e. EARLIER INVOLVEMENT).

During the coping process, designers may benefit from support and intervention for more productive coping (Frydenberg, 2017). Seeking or receiving support was a popular (re)action. The participants received support from peers, mentors, departments, or managers. In four cases, participants wished they had received support and expressed they would not have coped well without the support.

Clarifying the coping process also allows researchers to localise value-based conflicts in the process of collaborative practice. All value-based conflicts begin with a critical moment in which the value difference becomes intolerable. The results suggest that additional elements of a value-based conflict may include reflecting on collaboration, coping action type 2, reflecting on values, coping action type 3, and developing insights. After the conflict subsides, collaboration continues within the current context or a new one.

The development of coping over time

The 11 identified ways of coping were placed on a timeline (Figure 8). The three ways of coping that appeared exclusively during in the early stages of a designer's career (i.e. as interns to designers 2.5 years after graduating) were *switching perspectives*, *harmonising*, and *developing self-understanding*. Additionally, we identified five ways of coping that occurred after a designer graduated: *pursuing perfection, convincing explanations, confronting passionately,*

improving processes and *finding acceptance*. Finally, persevering before changing served as a way of coping for more experienced junior designers (i.e. those five to seven and a half years after university). This way of coping seems to mark the transition from being a novice to a more experienced professional. Importantly, two ways of coping did not appear to be linked to a temporal point in one's career: *building confidence* and *making value-based choices.*

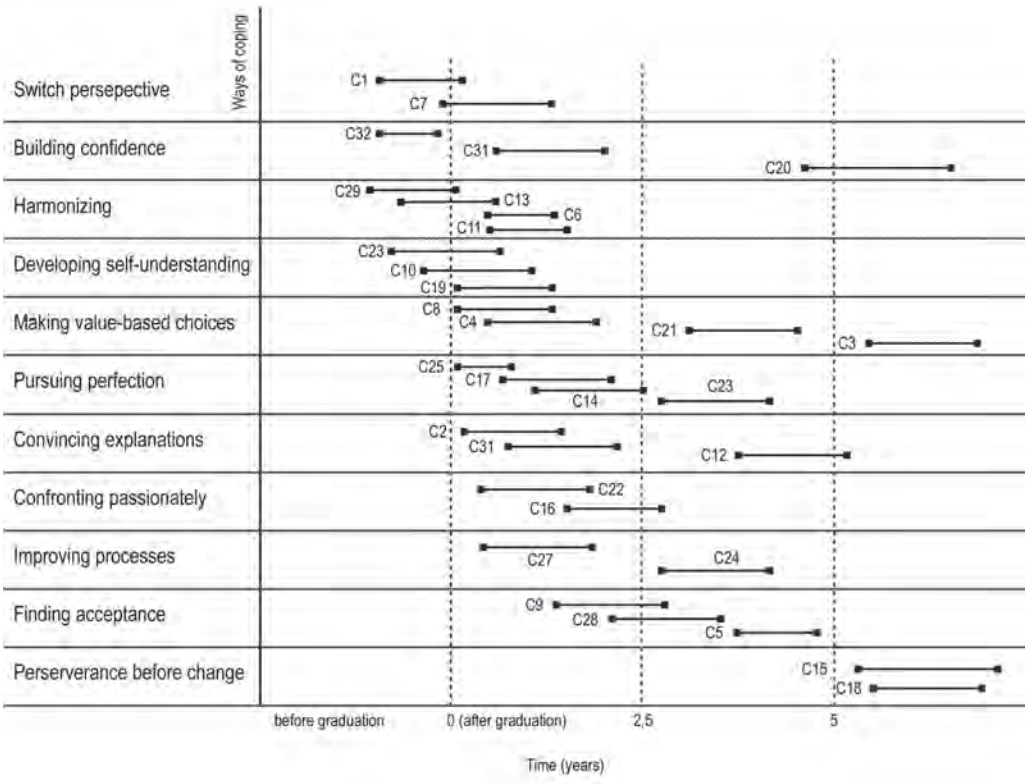


Figure 8. Conflict cases arranged on a timeline

We observed participants transitioning from one way of coping to another. For example, at first, a junior designer employed *pursuing perfection* and later in his career, the same designer resorted to *persevering before changing* as a coping strategy. Interns and junior designers have to adjust to the faster work pace of their more experienced colleagues. Junior designers, in the early stages of their career, need to gain experience, stand up for themselves, and develop self-confidence. Such transitions may lead to learning and professional development. More experienced junior designers

and senior designers, know their capabilities, and they are able to re-evaluate their career path.

Another example of a transition was from a junior designer first employed *developing self-understanding* and later resorted to *building confidence*. This junior designer experienced stability in his career path and no major changes forced him to adjust his career path. Likewise, we noticed more transitions in coping strategies, including designers shifting from *switching perspectives* to *convincing presentations*, and from *developing self-understanding* to *improving processes*.

We observed participants transitioning from one way of coping to another. For example, at first, a junior designer employed P*ursuing perfection* and later in his career, the same designer resorted to *persevering before changing* as a coping strategy. Interns and junior designers have to adjust to the faster work pace of their more experienced colleagues. Junior designers, in the early stages of their career, need to gain experience, stand up for themselves, and develop self-confidence. Such transitions may lead to learning and professional development. More experienced junior designers and senior designers, know their capabilities, and they are able to re-evaluate their career path. Yet, not all transitions of coping strategies lead career changes. Another example of a transition was from a junior designer first employed *developing self-understanding* and later resorted to *building confidence*. This junior designer experienced stability in his career path and no major changes forced him to adjust his career path. Likewise, we noticed more transitions in coping strategies, including designers shifting from *switching perspectives* to *convincing presentations*, and from D*eveloping self-understanding* to *improving processes*.

These results suggest that designers need to first to learn how to adopt alternative perspectives and be empathic before they can learn how to successfully convince collaborators. Furthermore, a designer's type of job appears to be an influencing factor. For example, freelancers adopted *making value-based choices* while those employed at a design agency or department relied on *pursuing perfection*. Ultimately, our results identified ways of coping used at different stages of professional development as well as within-career changes in the coping strategies relied on.

CONCLUSION

Value-based conflicts are an inherent part of collaborative design practices and result from different types of values held by collaborators. Our findings suggest that junior designers experience different types of value differences, such as economic worth (e.g. income) versus design ethics (e.g. creating meaningful designs) and work ethics (e.g. structure) versus intrinsic motivational drivers (e.g. freedom).

Designers apply coping strategies that differ from those used by public servants (de Graaf, Huberts, and Smulders, 2016) while applying several ways of coping also used by workers in industrial firms (e.g. *persevering before change*) and nurses (e.g. *switching perspectives*) (Argyris, 1957; Clark, 1997). Importantly, we did observe methods of coping that may be run-of-the-mill for designers, namely, the strategies of *pursuing perfection*, engaging in *confronting passionately*, and *improving processes*. Notably, these strategies reflect the pursuit of personal and design values, which are an important motivator for designers specifically (Baha *et al.,* 2018; Cross and Clayburn Cross, 1996). Furthermore, a designer's type of job appears to be an influencing factor. For example, freelancers adopted *making value-based choice*s while those employed at a design agency or department relied on *pursuing perfection*.

Our research findings reveal both productive and unproductive ways of coping. Frydenberg (2017) states that the outcomes of the coping process and self-evaluation processes are essential indicators of copings' effectiveness. We believe that the type 1 coping actions we identified can likely be categorised as unproductive coping strategies, while the other types of coping mechanisms are more likely to yield productive outcomes. Additionally, we found that some ways of coping are typically associated with different stages of a career, with our results identifying early and more experienced ways of coping. Further research should investigate how designers may transform unproductive methods of coping to potentially more effective modes[9].

9 In the conclusion of Study One, we explain how this is addressed in this thesis.

To conclude, this chapter identifies numerous ways of coping with value-based conflicts and puts for an understanding of the coping process. Our findings will help junior designers develop more personal and intentional (rather than reactive) coping strategies. Conflicts are beneficial for professional development when designers can internalise productive strategies. Notably, coping strategies not only address the value-based conflict at hand but can also lead to reflection about the collaborative process itself, thereby preparing designers for coping with conflicts in new contexts.

KEY FINDINGS OF STUDY ONE

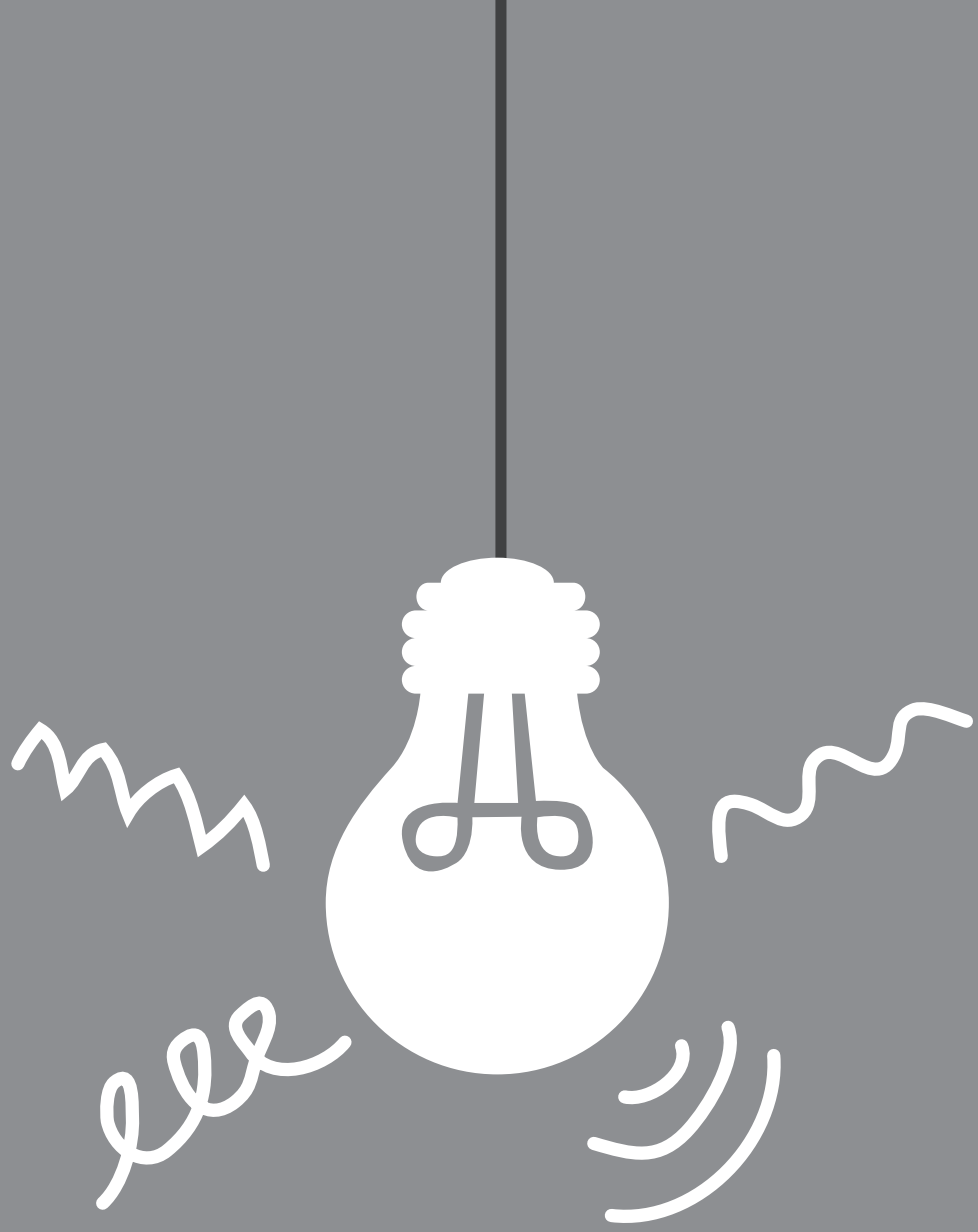
Chapter 4 categorised value-based conflicts that junior designers perceived in collaborative practice. The category of perfectionist designer struggles aligns with what others have suggested: value-based conflicts regard factual information (Barki and Hartwick, 2004; Le Bail, Baker, and Détienne, 2020) and ethical concerns (Le Bail, Baker, and Détienne 2020; van de Poel, 2009). The empirical findings resulted in four categories of value-based conflicts: professional dilemmas, relationship challenges, differing perceptions, and creative frustrations. Furthermore, the findings endorse the idea that value differences underly collaboration issues (Baker 2016; Feast, 2012; Lawson and Dorst, 2009), as observed in all conflict categories. Arguably, value-based conflicts in co-design concern collaboration and may focus on professional development issues.

It is worthwhile to explore whether this classification can help other scholars observe value-based conflicts. Study One highlights that junior designers can use the preliminary version of the classification to identify value-based conflicts in their practice. Therefore, Study Two employs this categorisation to identify value-based conflicts (see Chapter 6).

Additionally, Chapter 4 identifies a broad spectrum of value types in the conflict cases. It provided examples of the value types that induced value differences: economic worth versus design ethics and work ethics versus intrinsic motivational drivers. Chapter 5 furnished more details on the type of values underlying value-based conflicts, including economic worth, personal worth, design priorities, personal priorities, design ethics, work ethics, intrinsic motivational drivers, and extrinsic motivational drivers.

From Chapter 4 emerged various components of value-based conflicts, including actors, value differences, critical moments, emotions, and negotiation strategies. Chapter 5 illustrates a bigger picture of coping with value-based conflicts and incorporates components such as collaborative actions (coping actions type 1), reflecting on collaboration, coping actions types 2 and 3, reflecting on values, and developing insights. Study Two employed these findings to help junior designers to identify value-based conflicts (see Chapters 7 and 8).

Finally, Study One yielded two main insights into professionalisation of designers. First, critical moments focus on improving collaboration and self-awareness (Chapter 4) and these foci were incorporated in the Professionalisation Wheel (Chapter 9). Second, over time, junior designers transformed unproductive coping into more productive coping (see Chapter 5). Study Two aimed to accelerate this transformation by helping junior designers to reflect on their experiences with value-based conflicts. Insights on reflection were integrated in the Professionalisation Wheel (Chapter 9).



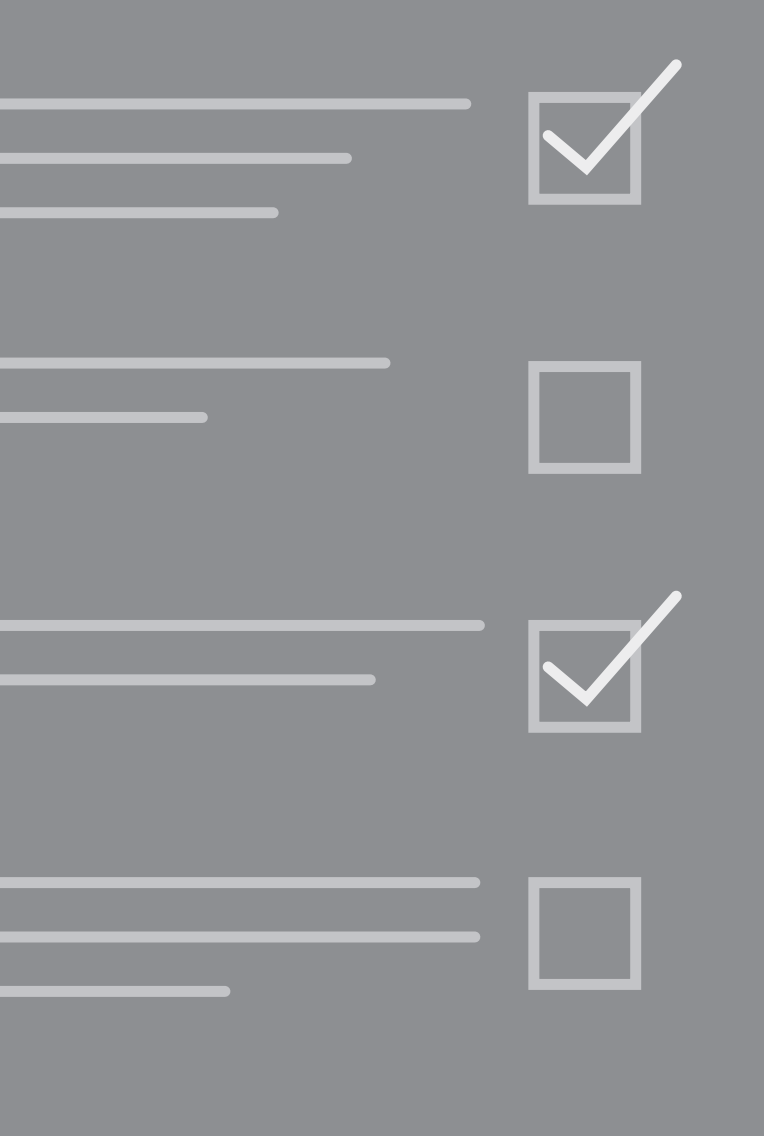
Study Two

DEVELOPING SUPPORT TO FACILITATE REFLECTION ON VALUE-BASED CONFLICTS THROUGH PROFESSIONAL DEVELOPMENT

Study Two develops support to educate junior design professionals and helps them reflect on value-based conflicts via continuing professional development (CPD). This study employs insights from the previous chapters to develop support for coping more effectively with value-based conflicts. Chapter 2 identifies a lack of approaches supporting junior designers and practical guidelines for addressing value-based conflicts. It finds components for developing a new approach to improve coping: developing a reflective practice that includes reflecting on values, building a professional designer identity based on personal values, and raising awareness of stakeholder values.

Study One provided three main insights into value-based conflicts experienced by junior design professionals and effective coping mechanisms. First, designers should reflect on collaboration and values, as reflection enables junior design professionals to learn from experiencing such value-based conflicts. Designers who are aware of their learning and can reflect on the conditions that shaped their experiences grow as designers (McDonell, 2015). Second, experiencing value-based conflicts stimulates professional development; however, without support, junior designers waste unnecessary time and energy. Junior designers became more proactive toward future situations, applying alternative coping strategies with similar value differences. Proactive behaviour helps junior professionals to learn, feel better at work, and engage with their work (Cooper-Thomas *et al.*, 2014). However, an experience alone does not ensure learning (McDonell, 2015), as experiencing a conflict may not induce learning new ways of coping in some cases. Conflict experiences may even devolve professional development when designers doubt their capabilities. Finally, in Study One, some design professionals hesitated to seek support or did not receive it. Support must be readily available and tailored for design professionals to facilitate reflection and learning (McDonnel, 2016), as it is often available in other professions, such as management traineeships or medical residencies (Meyer and Norman, 2020).

Study Two was set up in three cycles. Chapter 6 introduces Cycle One, focussing on the design requirements. It describes the data gathering and analysis. From the insights, it formulates 15 design requirements to facilitate reflection on value-based conflicts at work. Chapter 7 presents Cycle Two, which generated 12 insights to facilitate reflection. These insights led to a co-created approach to facilitate reflection on value-based conflicts and increase awareness of value priorities, train reflection on value-based conflicts, develop coaching support, and develop a support system to facilitate reflection and learning. Chapter 8 describes Cycle Three, which yielded a toolkit with supportive tools to facilitate reflection on value-based conflicts, helping junior designers in reflecting autonomously or with the support of a coach or trainer. The chapter evaluates the toolkit and tools using the design requirements from Cycle One and Three, and formulated recommendations for improving them.



Chapter 06

DESIGN REQUIREMENTS TO FACILITATE REFLECTION ON VALUE-BASED CONFLICTS[10]

Junior designers are often not trained to cope with critical moments and value-based conflicts in collaborative practice. Most design schools do not educate their design students to prepare them for potential conflict. Thus, junior designers often do not have the skills to handle critical situations and conflicts effectively. While some tools and methods can help junior designers make responsible design choices, they often address value differences without considering the designer's perspective. Hence, such approaches do not help junior designers reflect on their intrinsic values. Accordingly, this study investigates a way to help junior designers to reflect effectively on critical situations, thereby improving their conflict-handling skills. It employed action research and collected data via four steps. We collaborated with a professional development programme for junior design professionals. The data analysis yielded 12 insights, distilled into 15 design requirements for an approach to help junior design professionals reflect more effectively on critical situations.

10 This Chapter is based on Lenny van Onselen, Christine De Lille and Dirk Snelders (2019). Design requirements to educate and facilitate junior design professionals to reflect more effectively on critical situations and conflicts at work. Presented at: *International Conference of Design Engineering*, August 2019. The article was presented before the articles of Study One were accepted for publication so it needed to be aligned with Study One. Additionally, additional remarks were inserted to the conclusion section. Furthermore, the chapter was edited for clarification.

SUPPORT FOR COPING EFFECTIVELY WITH VALUE-BASED CONFLICTS

Future designers must be aware of values to act responsibly. In the last decade, scholars have developed tools to integrate the values of users (Friedman and Hendry, 2012) and societal stakeholders (den Ouden, 2012). Designers can employ value-led design tools to make responsible design choices. However, to stay motivated in developing such choices, they must follow intrinsic values (i.e., growth-oriented and anxiety-free values from basic psychological needs) (Kasser and Ahuvia, 2002; Schwartz *et al.*, 2012).

Chapter 2 showed that there is no support in the literature for junior design professionals in coping effectively with value-based conflicts. Only recently have design identity courses and personal branding books for creative professionals provided support for junior designers. Most junior designers are unprepared for value-based conflicts at work, and design schools do not have the resources to prepare students based on empirical evidence.

Seasoned professionals cope with (potential) value-based conflicts with conflict-handling skills (Arnold, 2002; Clark, 1997; Schön, 1983). Study One noted that junior designers with value-based conflict experience develop themselves professionally. However, time and energy can, evidently, be wasted in developing such skills without support. Junior designers frequently experience value-based conflicts with clients, colleagues, and other stakeholders when they bring fresh ideas to the table. Scholars suggest that peer pressure and incongruent values can hinder performance (Jehn *et al.*, 1997), work engagement (Sortheix *et al.*, 2013), well-being (Sheldon and Kasser, 2001), creativity, and innovation (Rothkegel, 2012).

Study One highlighted critical moments or events in collaborative design practice where value differences and value-based conflicts emerge, such as a discussion in a design team on product quality versus cost . Such conflicts are often anxiety-based and may block intrinsically held values, preventing junior design professionals from growing and being motivated for their work. Value-based conflicts comprise disputes, arguments, and/or frustrations caused by value differences in collaborative design. Such conflicts are often destructive, especially for junior designers at the beginning

of a professional career (and sometimes as a student during internships) when inexperience induces poor handling of value differences, critical moments, and resulting conflicts.

If junior designers were more aware of value-based conflicts and knew how to identify and reflect on them, they could avoid unintentional behaviour, negative emotions, and destructive conflicts (Malle, 2004). They could act with purpose in addressing value-based conflicts, thus solving value differences integrative and constructively. This chapter describes Cycle One of the action research, which aims to ascertain the requirements to help junior designers reflect on value-based conflicts at work. The insights from Cycle One led 15 design requirements to facilitate reflection on value-based conflicts.

RESEARCH METHODOLOGY OF CYCLE ONE

Action research is qualitative and aims to produce useful results in developing support for junior design professionals. It furnishes a better understanding of an evolving situation (Blessing and Chakrabarti, 2009; Bradbury Huang, 2010).

Action research context: Designers' Identity programme

This study had a unique opportunity to collaborate with a post-Bachelor's degree programme for CPD in 2017. The Fundamentals Academy offered the Designer's Identity programme, which supported junior designers in a reflection year. It was full-time for three months with workshops, client projects, and larger events. The programme continued part-time while trainees continued on their career paths. Ten junior professionals with less than two years' experience participated as trainees (e.g., Trainee 1). They had a background in design or an interest in what design thinking can contribute to their professional mindset. The trainees signed consent forms to allow for using their data anonymously. Coaches tutored the trainees on personal development or in groups during client projects or training sessions (e.g. Coach 1). A client project is a real-case design assignment brought by an external corporate client, who in this case, was a large retail company represented by two employees (e.g. Client 1).

Data collection

Through action research, the participants and I tested learning activities to increase awareness, support reflection, and develop coping strategies. Meanwhile, it formulated design requirements for a support framework and tools. Four research activities resulted in various data. Table 12 describes the research activity, participants involved, resources employed, and data gathered. The interview guide, value-based conflicts overview, and conflict case diagrams came from Study One.

Table 12. Data collection to find requirements (Cycle One)

Research activity	Participants	Resources	Type of data
1.1. Meeting the trainees: they prepared a presentation of their assignment results (October 2017; 2 hours)	10 trainees 3 coaches 3 visitors	Education development experience	Observation notes, photographs, video material
1.2. Coach interventions: trainees worked on a design project for a large retail client (November 2017; 2 weeks)	10 trainees 4 coaches 1 client	Pedagogical experience	Observation notes, presentation recording
1.3. Insights interviews: gain insight into value-based conflicts experienced (December 2017; 2 weeks)	6 trainees 1 coach	Interview guide, value-based conflicts overview, and conflict case diagrams	Interview recording, transcription, notes
1.4. Exposition observations: trainees worked on an exhibition of their portfolio and designer identity (December 2017; 2 weeks)	10 trainees 4 coaches 1 client	Pedagogical experience	Observation notes, presentation recording

RESULTS OF CYCLE ONE: REQUIREMENTS TO FACILITATE REFLECTION

Drawing from the action research, this section describes four findings leading to the main requirements to facilitate reflection on value differences, critical moments, and value-based conflicts. The literature (Chapter 2) provided four requirements:

- Raise awareness of value differences: Often designers are not aware that frustrations or conflicts may be based on value differences. Such awareness can help them cope sooner and more professionally.
- Illustrate critical moments: Designers are visually minded professionals. Thus, exercises or supportive tools with visuals can help most design professionals to better understand value-based conflicts.

- Formulate rich exemplary narratives: Exemplary cases should retain depth and be visualised.
- Design comprehensible methods: Easy-to-understand tools must be employed.

This section describes interventions by coaches in critical moments during a client project. Furthermore, it explores coaching talks that may be useful to facilitate reflection. Finally, it proposes and discusses an exercise in visual reflection.

Insights on coach interventions at critical moments

This study observes and describes four critical moments, how the trainees addressed them, and how the coaches intervened. The first critical situation occurred on the first day during the clients' kick-off. All trainees were involved, referred to as the group. Three coaches (including myself), Client 1, and the programme coordinator were present. The first instance of the critical situation was observed when Trainee 1 wanted to present an idea. Client 1 said, "I need to play the devil's advocate." Client 1 explained that it was important to have a sound business case, stating his values clearly.

"Immediately after the client's presentation, I observed the first critical situation. It was a product development discussion between the client and the group. A difference in views on commercial relevance and social impact [emerged]." [Note from the research journal]

A discussion started when Client 1 left. The group split into two parties. One half favoured listening literally to the client's wishes. The other half supported a more innovative and impactful design approach following their idealistic values.

"The programme coordinator asked the group [for] their thoughts […]. 'What makes you twerk [dance form] about this assignment and what are your concerns?' [...] The dilemmas faced by the group were: costs (i.e. revenue) versus social impact, and qualitative versus quantitative. The programme coordinator explained that he had primed the client that the result from the group could not be quantitative. 'Articulate what is different? How to get this across? Make it realistic and what has the highest chance of being in the store?'" [Note from the research journal]

The second critical situation was observed a few days after the kick-off, where ongoing discussions barred productive teamwork as the group was working on the project. Eight trainees were involved in the discussion. The programme coordinator and I (in my role as coach) were available to guide the group. The trainees considered dividing up roles to smoothen their design process in the project. Most roles were taken up easily, except for the team leader role. Thus, the critical situation was the ambitious choice in the dilemma of whether to be a manager or an expert designer. Some trainees shared that they had assumed team leader roles in the past. Now, however, they preferred to focus on developing their skills as designers. The discussion as to whom to appoint as a team leader went on for about half an hour. The programme coordinator and I (as Coach 1) followed the discussion and helped them decide. They did not make resolute interventions, as the trainees handled the situation quite well.

The third and fourth critical situation examples occurred simultaneously, becoming value-based conflicts. All trainees were present, three of whom were involved directly in the value-based conflicts. Coach 2, the programme coordinator, and I (as Coach 1) for tutoring. After a week of hard work, Trainees 2, 3, and 4, led Clients 1 and 2 through a carefully prepared presentation. The rest of the group continued working on the project beyond the presentation.

Client 1 responded after the three trainees presented the work, saying, "if this was a real assignment," acting like it was a fake assignment, thus devaluing the efforts of the trainees. Additionally, Client 1 said the trainees were "training to be professionals," treating them like students or non-professionals. Their frustration was glaring.

"After the client went off with the programme coordinator to discuss details, Trainee 2 asked me: 'Was it me or was that strange?' I told Trainee 2 that he was not wrong at all." [Note from the research journal]

Coach 2 joined the conversation between me and Trainees 2, 3, and 4. Like the others in the conversation, Coach 2 shared that he had observed the critical moment from a distance and felt Client 1's comments were inappropriate. The coaches in the programme referred to the trainees as professionals that were further developing themselves, never as students. Not acknowledging their professionalism was a slap in the face for the trainees. However, the new constraints seem to be a creative frustration for Trainee 2. We waited until both clients left the building before sharing the incident with the whole group and reflecting on it.

"I sat with the group all the time and noticed agitation and tension. Some made jokes, which were appeased by others." [Note from the research journal]

Client 2 left, and Client 1 and the programme coordinator came back into the room in which the group was working. The programme coordinator presented all the work to Client 1 one more time. This presentation lasted for more than half an hour, while the group continued with the project.

"The atmosphere was tense and surprised glances were shared among the trainees. Perhaps they felt offended." [Note from the research journal]

When Client 1 eventually left, Trainee 3 shared what had happened with the rest of the group. Trainee 2 stood silently outside the group and seemed frustrated. Trainee 4 had already found a way to cope with the conflict. Trainee 4 turned the client's comments into new opportunities and ideas. Encouraged by the coaches, Trainee 2 explained that the new constraints frustrated him and believed Client 1 should have made this clear at the start of the project. Another trainee from the group, Trainee 5, noted that perhaps it was a mistake not to ask further questions during the kick-off to ascertain the constraint. Trainee 5 suggested finding possibilities and wanted to know how they could change old concepts into new concepts that fit the new constraints.

Requirements for coaching reflection during critical moments

While observing the four critical moments, the coaches could intervene as necessary. The intervention was aimed at building a supportive relationship (Argyris and Schön, 1978). Trainees who experienced value-based conflicts sometimes face challenges in coping with them professionally right away. During the critical moment, they addressed the situation calmly, acting in a way they felt professionals would. However, shortly after the incident, negative, anxiety-based emotions emerged. They felt frustrated, unacknowledged, or insecure. Some trainees coped with the situation by turning the frustration into something useful or productive through a quick reflection-on-action, yielding a change in perspective on the critical situation. Others had their negative emotions for a longer period. Short dialogues with different coaches and a team reflection helped to find a way to cope with the situation.

Reflection on actions in such situations may help designers who are stuck in negative emotions. Helping designers to reflect effectively and transform negative emotions into productive coping strategies would increase productivity and well-being. In summary, the design criteria for reflection that emerged were as follows:

- Quick reflection on collaboration: Stimulate reflection shortly after a critical moment. Use short coaching dialogues to change perspective and find solutions to the problem.
- Prepare to reflect skilfully: Improve a junior designer's competence to reflect on critical moments and value-based conflicts.

Insights for coaching talks

In the coach role, I conducted five coaching talks. The coaching talks gave the trainees a deeper understanding of their identity via an exploration of experienced value-based conflicts. In Study One, the interviews facilitated reflection on professional development. They supported learning, and insights emerged on how to cope (better) with value-based conflicts. Therefore, I converted the interview guide into coaching guidelines to reflect on past events. The guide provided a basic structure, but the talk chartered its course as necessary. Additionally, I adapted the coaching guide after reflecting on how the coaching talk proceeded. Coaching talks 1 and 2 addressed the following topics: work experience and

collaboration, personal values and motivation, reflection on value differences, and reviewing case examples. New guidelines were added for the following coaching talks: place the value differences in their professional development timelines and open space for new topics. Such topics included their values (3), conflict experiences of the coach (3 and 5), and feedback on designer identity (4).

Study One showed that sensitising exercises can stimulate reflection on experiences. Results of Study One, the value-based conflicts overview and conflict diagrams (e.g. Figure 7), served as stimuli so the trainees could remember their experiences with value-based conflicts. Another stimuli used was a card set with motivational drivers. In consultation with my supervisors, I employed trial and error to explore how to use the stimuli most effectively as support tools in the coaching talks. First, in coaching talk 1, the overview of value-based conflicts was used to discuss the topic of personal values; however, it was time-consuming. In coaching talk 2, the overview was introduced for reviewing case examples, though some words were not self-explanatory and required improvement in clarity.

Second, the conflict diagrams did not work well during the first three coaching talks. Therefore, they were not used in coaching talks 4 and 5. They required a better introduction on how to read them. In coaching talks 6, the diagrams were used again but specifically for giving advice on how to cope with a situation. They still required further development and information to be a self-explanatory support tool. In the coaching talks, the overview of value-based conflicts was used to compare a trainee's experience with others to learn from the comparison.

Third, participants were sensitised before the coaching talk to appreciate the goals and topics of the talks and connect them to their own experiences (Sanders and Stappers, 2012), allowing them to prepare and share their critical situations during the coaching talks. Before the talks, they were primed with a preparation survey. The survey contained three exercises with questions based on the topic guide: work experience and collaboration, personal values and motivation, and reflecting on value-based conflicts. The questions were adapted from the Intragroup Conflict Scale (Jehn, 1995), which measures relationship conflicts. Additionally,

participants were required to visualise their value-based conflicts on paper without constraints, as it could help them clarify their conflicts more easily. Trainees in coaching talks 2 and 5 were enthusiastic about the preparation exercise and suggested giving more exercises upfront, such as an exercise to uncover their values. The trainee in coaching talk 6 voluntarily incorporated more material. He shared insights from his exploration of his professional development process and coaching talks, which he believed to be relevant to the meeting. He sorted the insights into four categories: positive points, things that need work, helpful, and hindrances. He also incorporated a mind map about how he wanted to position himself as a designer.

Requirements for coaching talks

The coaching guide and sensitising exercises can already be used to reflect on value-based conflicts and designer identity. However, the guide and exercises require further development. Assumedly, the trainees would share their recent experiences during the coaching talks, such as those observed in the preceding weeks. However, most value-based conflicts shared occurred before the Designer's Identity programme . Additionally, some participants shared cases of value-based conflicts happened during that programme but not the four that I had observed and coaches had intervened on. Perhaps, the value-based conflicts shared were more important for their professional identity, or the small interventions from coaches were helpful enough to address the value-based conflicts. In summary, the design criteria are as follows:

- Develop coaching guides and stimuli: Furnish deeper insights into designers' identities based on the value-based conflicts they experienced. Discuss topics such as work experience, collaboration, personal values, and motivation; reflect on value differences and conflicts; and review case examples. Use stimuli to increase awareness and facilitate reflection.
- Facilitate professionalisation, reflection, and insight: The overview of value-based conflicts, critical moments, and conflict categories generates all sorts of associations with personal experiences. It induces a broad understanding and awareness of how value-based conflicts influenced their professionalisation.
- Share comparable cases: Similar cases and coping strategies can offer coaches a tool to give advice on coping with value-based conflicts.

- Define an intervention motive: A coaching talk can help address a current critical moment or conflict junior designers face via adequate intervention. Otherwise, designers risk mainly reflecting on conflicts from the past.
- Reflect in context: Give reflection activities or sensitising assignments from the designer's perspective, allowing them to refer to and embody the experience.
- Provide sensitising activities: Send sensitising exercises before coaching meetings or interventions. Stimulate participants to add information of their choosing that is related to professional development.
- Build a sensitising toolkit: Give four or five sensitising assignments (e.g., to uncover values), from which a facilitator can select the most appropriate one.

Insights on visual reflection

Designers are well-trained visual thinkers and familiar with solving problems through analogy (Casakin and Goldschmidt, 1999). They may tap from deep reflections while visualising value-based conflicts on paper. The sketches from such reflection could serve as boundary objects for sharing the critical situation with the coach or team (Akkerman and Bakker, 2011; Carlile, 2002). Moon (1999) notes that many visualisation exercises are reflective and may support learning. Unfortunately, Moon (1990) does not furnish practical examples of visual reflection exercises.

Figure 9 illustrates how designers visualise value-based conflicts in different ways. During the insights talk, the participant can explain the drawing. The sensitising assignment yielded different drawing styles per the skill of the designer. For example, one participant sent an illustration in a signature style for her business. Another participant chose to visualise his critical situation in a simple diagram.

When visual reflection is done in a group, the type of visuals may be prescribed, especially if the drawing is also used for plenary presentations. Metaphor and cartoon stories may be suitable for visual reflection in group sessions as they are easy to understand and self-explanatory when shared in plenary presentations.

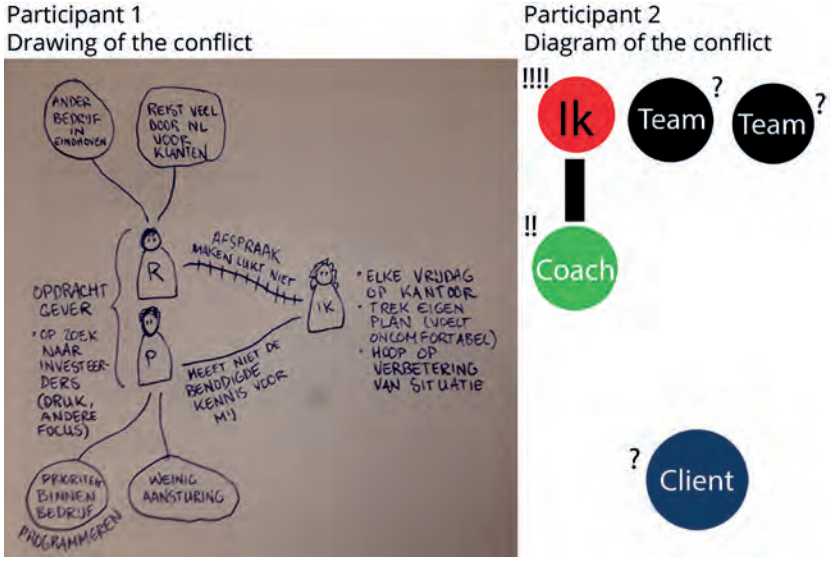


Figure 9. Two visualisations of a conflict as preparation for a coaching talk

Requirements for visual reflection

Although the visualisation of value-based conflicts needs further development, for now, we formulated the following requirements:

- Add a sketching assignment to the sensitising toolkit: Include specific sketching assignments in sensitising without prescribing the type of visual reflection.
- Prescribe metaphor or cartoon stories as a sketching assignment: A sketching task can be incorporated into the workshop description of group visual reflections. Metaphor or cartoon stories are most useful when the visual is used for plenary presentations.

CONCLUSION OF CYCLE ONE

This first cycle of the action research project collected insights via interventions in value-based conflicts, coaching talks, and analysis of visual reflection. The insights were reframed into design requirements for an approach (Table 13). Additionally, the design requirements were grouped into three support components: coaching, training, and support tools. Furthermore, Cycle One resulted in initial ideas for components of an approach to facilitate reflection; however, further exploration of the literature and practice is needed to formulate a set of activities that fit the requirements and needs of the target group.

Table 13. Design requirements grouped into support components

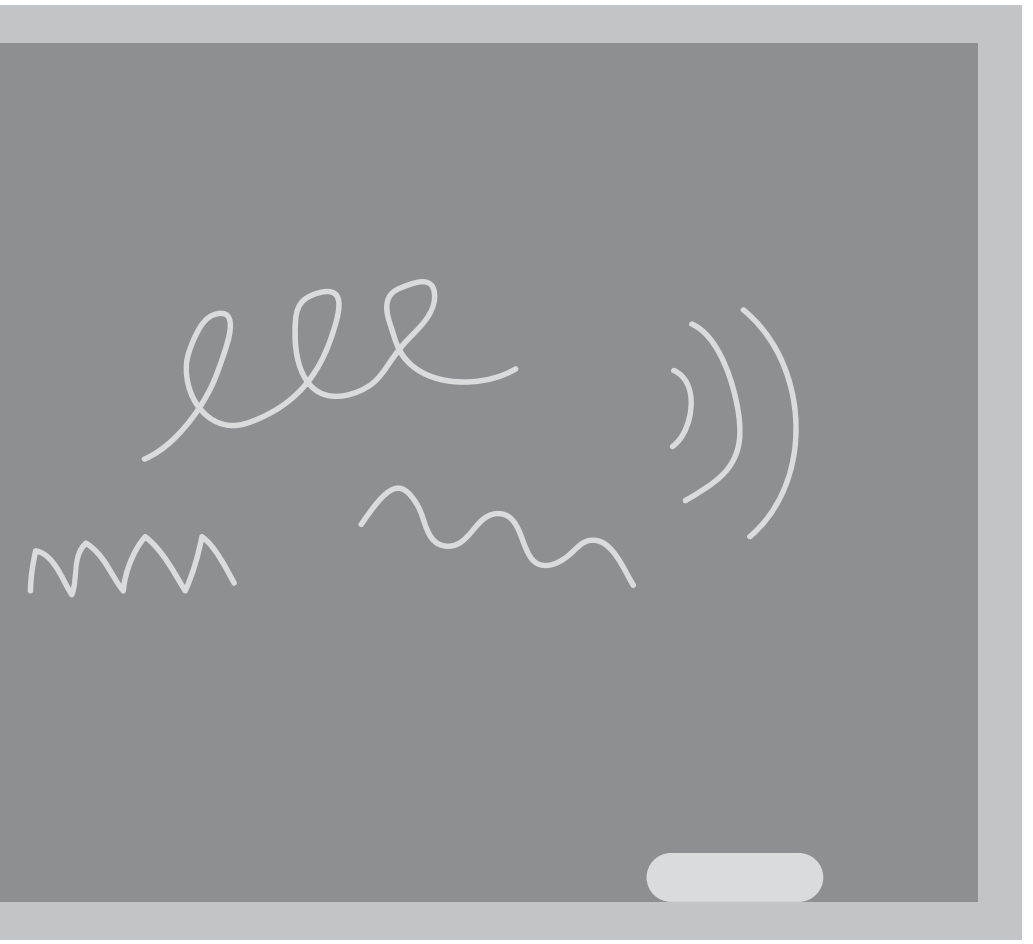
Support component	R#	Requirement
Coaching	C.1	Quick reflection
	C.2	Develop insight talk guides and stimuli
	C.3	Facilitate reflection and insight
	C.4	Define intervention motive
	C.5	Reflect in context
Training	T.1	Raising awareness of value differences
	T.2	Prepare to reflect skilfully
	T.3	Share comparable cases
Support tool	ST.1	Illustration of critical moments
	ST.2	Rich exemplary narratives
	ST.3	Comprehensible methods
	ST.4	Give sensitising activities
	ST.5	Build a sensitising toolkit
	ST.6	Add a sketching assignment to sensitising toolkit
	ST.7	Prescribe metaphor or story cartoon (groups)

Additional remarks

The cycle induced an understanding of the context and needs of the participants (Price, Wrigley, and Matthews, 2021) from the suitable network context. The Fundamentals Academy had just started a programme for junior design professionals. One Sunday, the director asked me to join the programme the following

Monday morning as a coach, which required immediate action: I had little time to make a general plan for the action research. Therefore, my focus was first to be familiar with the context and needs of the participants. My background as a designer and education developer helped me to make plans on the go. After an initial observation on the first days, I could plan actions purposefully. I started Cycle One as a coach, which allowed me to build a relationship with the participants and gain their trust, which is an essential first aim for action research (Price, Wrigley, and Matthews, 2021). Cycle One showed that the Designer's Identity programme was a suitable context to develop the support framework for junior designers.

This first cycle helped us to establish a foundation for the rest of the action research. In the following two cycles, I co-created and designed an educational approach and toolkit based on the design requirements to facilitate reflection on value-based conflicts. Chapter 7 describes Cycle Two of the action research.



Chapter 07

CO-CREATING AN APPROACH TO FACILITATE REFLECTION ON VALUE-BASED CONFLICTS TO IMPROVE PROFESSIONAL DEVELOPMENT

Reflection on value-based conflicts should be an integral part of designers' reflective practice. Expert designers often reflect on values in their practice (Tracey and Hutchinson, 2018; McDonnell, Lloyd, and Valkenburg, 2004). Therefore, this study develops an approach to facilitate reflection on value-based conflicts. Cycle One of the action research yielded 15 design requirements to facilitate reflection on value-based conflicts. Notably, the requirements suggest different ways to support junior designers. The requirements yield three components to facilitate reflection: training, coaching, and support tools.

DESIGN GOALS FOR AN APPROACH

From the literature and prior chapters, this study formulated four design goals for an approach to facilitate reflection. The first design goal was to increase the awareness of value-based conflicts. Assumedly, when junior designers are more aware of value-based conflicts, they can seek support immediately and avoid unintentional behaviour (e.g., tiredness, moods, emotions). With immediate support, junior designers can act with more determination (Malle, 2004) and prevent destructive actions, such as fight, flight, or freeze (Skinner and Zimmer-Gembeck, 2016). Awareness can be achieved via knowledge of values theories, experimenting with different methods of mapping values, and understanding of different stakeholders' value priorities. Many methods may raise awareness of design values.

The second design goal was to train junior designers to reflect on value-based conflicts to develop effective coping mechanisms, stimulate proactive behaviour, and build resilience. Resilience induces coping with less stress and difficulty (Frydenberg, 2017). Junior designers can study practical examples to train their reflection (Tracey and Hutchinson, 2016). For example, coaches can use exemplary cases to train junior designers using conflict cases in Study One. When junior designers reflected on conflicts and became more proactive in solving conflicts, they improved their coping and built resilience (Frydenberg, 2017; Skinner and Zimmer-Gembeck, 2016).

The third design goal was to develop coaching support to facilitate reflection on value differences and value-based conflicts. If personal resources are lacking (e.g., competency and perceived control), coaching can help channel negative emotions (e.g., anxiety and self-blame) (Frydenberg, 2017; Skinner and Zimmer-Gembeck, 2016). Additionally, a coach can help junior designers channel intense emotions toward more intentional behaviour. Coaches can help designers analyse the conflict, reflect on past actions, and scaffold toward more productive actions (Adams *et al.*, 2016). Furthermore, coaches can help junior designers find meaning in their experiences of value-based conflicts and reframe the situation or act as mediators (Saundry, 2016). Thus, coaches can empower junior designers by developing self-help competencies.

The fourth design goal was to develop a broader support system to stimulate reflection and learning. The support categories of training, coaching, and supportive tools form the integrated support system. Coaching and training can facilitate reflection on and learning from experiences (; Frydenberg, 2017, McDonnell, 2015; Skinner and Zimmer-Gembeck, 2016). Additionally, coaches can provide designers with a rich set of tools to reflect on, increase awareness of, and stimulate learning from experiences (McDonnel, 2015; Tracey and Hutchinson, 2018). A support system tailored to the needs of a junior designer is required (Cooper-Thomas *et al.,* 2014; McDonnell, 2015; Meyer and Norman, 2020). Fortunately, recent years have seen a trend of bottom-up movements, postgraduate programmes, and other forms that mimic the support systems of other professions in which critical reflection and individual expression are highly valued.[11] These programmes can serve as the context to integrate the approach to facilitate reflection on value-based conflicts and build a support system for junior designers.

RESEARCH METHODOLOGY OF CYCLE TWO

In this cycle, I employed design process elements to develop the approach. Chapter 3 explains the methodology. This section describes the research context, data gathering, and data analysis of Cycle Two.

Action research context

The action research continues in the same Cycle One context: the Designer's Identity programme. In Cycle One, I familiarised myself with this context from November to December 2017. For Cycle Two, I participated as a trainer and coach in the second part of the programme from January 2018 to June 2018. The 10 trainees started work, applied for jobs, or launched their companies while attending biweekly meetings and training sessions. The trainees signed consent forms allowing us to use the data gathered anonymously. Other participants in the action research were the programme coordinator, a second trainer in the last session, a student, and educational experts.

11 For example, Fundamentals Academy, Schaal+, and Studio 360

Data collection

Cycle Two collected data via three research activities (Table 14) comprising small, day-to-day actions, such as developing exercises, presenting, conducting workshops and interviews, and generating ideas. Participants interacted with resources and stimuli, such as slides, handouts, and exercises. Participants and supervisors contributed to the set-up of several actions. For example, we discussed workshop plans with the programme coordinator. Additionally, the researcher made observational notes in the research journal during and after each action and collected photographs and video recordings that documented the context and results. Finally, physical materials from the workshop were collected, comprising participant notes, drawings, or feedback.

Table 14. Data collection to co-create an educational approach (Cycle Two)

Research activity	Participants	Resources	Type of data
2.1 Professional training sessions (February – June 2018): To help trainees reflect on experienced value-based conflicts	1 coordinator 2 coaches[1] 10 trainees	Workshop experience, value-based conflicts overview, presentation slides, and workshop handout	Evaluations, research notes photographs, and video
2.2 Two coaching interviews with trainees (April 2018; 2 hours): To gain insight into experienced value-based conflicts	2 trainees 1 coach[1]	Interview guide and drives card-set	Interview recording, transcription, notes
2.3 Co-creating an approach using a design-led action research approach (April - May 2018)	1 education developer[1] 4 trainees 1 student 2 experts/educators	Education development experience and expert discussions	Design journal, research notes, presentation slides, and e-mails

Research activity 2.1 comprised four training sessions to train participants in reflection using a scaffolding approach. Before these training sessions, there was an opportunity to run a pilot training session at Delft University of Technology during the Master's degree introduction week at the Faculty of Industrial Design Engineering. This context differed slightly from the first context. The pilot session was at a university with Master's degree students and not in CPD training. However, such students may have worked in collaborative design practice during internships or jobs before they started their Master's degree. Further, the pilot helped test reflection exercises and the set-up of the training session, helping

46 Master's degree students to reflect on experienced value-based conflicts via different exercises. We evaluated the session via a survey distributed by the course coordinator, and rendered received feedback on the exercises and handouts used.

In research activity 2.1, the participants and I employed many actions, such as developing workshop plans, coaching trainees, and conducting impromptu interviews with one participant to collect feedback, where participants interacted with resources and stimuli, such as slides, handouts, and exercises. In the research journal, I reflected on each action and generated preliminary insights. After the training sessions, participants received evaluation forms (Table 15), which gathered data for the research and recommendations for subsequent training sessions, inquiring about the effectiveness of learning activities and resources employed. Additionally, the forms enquired about the usefulness of the workshop topic and the presented theory to their current practice and motivation analysis of personal conflicts. Finally, participants were required to offer practical feedback and tips for improvement. The data was quickly analysed, serving as input for the next training session. Additionally, the programme coordinator was requested to evaluate each training session, and one or more trainees were asked for more feedback after reading the participants' evaluations.

Table 15. Evaluating training sessions

Training session	Session 1	Session 2	Session 3
Number of participants	9	7	5
Distribution	Via e-mail	Via e-mail	On paper
Number of received forms	4	4	5

In research activity 2.2 I conducted two coaching talks to support value-based conflicts, with an improved interview guide and stimuli as a coaching tool. The interviews were recorded and transcribed. After the two interviews, I reflected on and formulated preliminary insights for the coaching guide and tools.

Research activity 2.3 differed from the other action research steps that mimicked the basic design cycle and iteratively applied five design activities: analysis, synthesis, simulation, evaluation,

and decision (van Boeijen *et al.,* 2020). It was combined with the research insights. Study One furnished the analysis input. The literature review furnished the design goals. Cycle One of the action research furnished the design requirements.

Four iterations to develop an approach yielded results that were presented visually and verbally to different participants. The supervisory team and participants asked clarification questions or provided feedback on the intermediate results. The first iteration of the approach hinged on intervention during critical moments of value-based conflicts. The second iteration incorporated training, coaching, and tools to facilitate reflection during interventions based on insights from Cycle One. The third iteration was co-created with participants, yielding four phases: Discover, Prepare, Intervene, and Reflect. Finally, the approach was detailed per 14 insights from the action research.

Data analysis

My supervisors and I employed a pragmatic design-driven approach while analysing the data. At first, we analysed data directly after collection to plan for follow-up actions. Furthermore, we analysed the data in a "designerly" manner to synthesise the data into different iterations of the approach (Crouch and Pearce, 2012). Three iterative steps discussed the concept approach with participants and experts. Reflection after each action yielded preliminary insights, which were compared and contrasted, yielding 14 insights to improve the concept approach, thus resulting in the fourth and final iteration.

Evaluating the educational approach with junior design professionals validated the approach. Overall, the action research context, involving junior design professionals, contributed to the validity of the approach. Furthermore, with the requirements from Cycle One we verified the final educational approach. Finally, I validated the first phase (Discover) in an educational context in the Faculty of Industrial Design Engineering at The Hague University of Applied Sciences (THUAS).

RESULTS OF CYCLE TWO: FOUR WAYS TO SUPPORT JUNIOR DESIGNERS

Three research activities resulted in 14 insights which led to four ways to support junior designers (Table 16). This section describes in-depth the research insights for each support type.

Table 16. Four ways to support junior designers

Research insights	Resulting support
1.1 Training reflection in small groups is effective when learning is shared 1.2 Training reflection in a scaffolding approach is supportive 1.3 Training should be provided on identifying perceived value-based conflicts 1.4 Role-play of conflicts and coping strategies is a preferred exercise	A CPD programme to train reflection on value-based conflicts
2.1 Group coaching is an ineffective intervention for individual cases 2.2 Individual coaching as an intervention is effective	Improved coaching support
3.1 Incorporate a preliminary phase into the approach: The Discovery phase 3.2 The phases should be independent of specific contexts 3.3 The approach should be an iterative process 3.4 Allow for an individual learning process 3.5 Coaching and training support learning from conflicts 3.6 With work experience junior designers recognise value-based conflicts more easily	An educational approach to facilitate reflection
4.1 Similar coping mechanisms for identity issues and struggles in collaborative practice 4.2 Linked development of personal and collaborative development	A model to create an abstract understanding of professional development

Insights for a professional training programme

With the coordinator and my supervisors, I co-created a training programme in Cycle Two to prepare junior designers to reflect on value-based conflicts. In the training programme, junior designers improved their conflict-handling skills and were trained using a scaffolding approach. The training programme had four sessions to raise awareness of value-based conflicts and train reflecting on them which yielded four insights on a professional training programme to facilitate reflection on value-based conflicts.

Insight 1.1: Training reflection in small groups is effective when learning is shared.

In each session, the group splits into smaller teams of two to four people to work on the cases. Analysing the conflicts in small groups helps to critically reflect on a case conflict and discuss different conflict coping mechanisms. Each session ended with a plenary sharing of the strategies of each group. The group setting seemed to be effective for sharing ways of coping and reflection training. From the evaluation of the first session, a group reflection at the end of the session could help share lessons drawn from each case. The follow-up sessions incorporated a short moment to reflect with the whole group after sharing the strategies. In the plenary group, participants and coaches could share additional strategies and formulate concrete learning insights.

Insight 1.2: Training reflection using a scaffolding approach is supportive.

The first session was set up as a structured workshop with prescribed activities and guiding questions for reflection. The trainees required fewer reflection guidance in each follow-up session. After the second session, one trainee shared via the evaluation form that the reflection approach had become more effective after analysing multiple conflicts. The fourth session revealed that the trainees could reflect independently on value-based conflicts. In the last session, they reflected on voluntarily using different techniques. Thus, the training sessions employed a scaffolding approach to train reflection on value-based conflicts. This approach means the amount of guidance reduces over the course of the training programme. Scaffolding can be helpful when thinking about future actions and direction or encouraging productive actions (Adams *et al.*, 2016). Accordingly, reflection can be trained in four training sessions using a scaffolding approach.

Insight 1.3: Training should be provided on identifying perceived value-based conflicts.

Further, the trainees must observe and study examples from others before they could identify their critical moments.[12] The training sessions prepared them on the theoretical aspects via a presentation and reflection exercises on exemplary cases. Over the course of the training, the trainees began to recognise the conflicts from their experiences. In the last session, they could identify recent critical moments in their work.

Insight 1.4: Role-play of conflicts to share coping strategies is a preferred exercise.

Role-playing is an effective learning strategy for sharing coping strategies. A role-play of a complex situation is an effective reflection and learning activity for groups (Moon, 1999). The first session introduced role-play as an exercise to share conflict insights and coping strategies. One trainee shared through the evaluation form that they found the role-play to be uncomfortable. Therefore, the second session employed insight sharing through an oral presentation and plenary reflection. In their feedback, trainees noted that the presentation was less inspiring than the role-play. In a conversation, one trainee explained to me that the discomfort from the role-play was the reason it was an effective learning activity. Hence, the third session incorporated role-playing to share conflict and coping strategies. The fourth session allowed the groups to choose for themselves their preferred mode of sharing insights. Both groups mixed oral presentations with role-playing. Thus, even though role-play can be uncomfortable, it is a more effective learning activity than presentations. The advice is to create a safe learning environment where junior designers feel encouraged to role-play in front of a group.

12 Chapter 4 presents 10 critical moments: A. Product development discussion, B. Trade-off in the design assignment, C. Disappointing professional behavior in design teams, D. Ambition choice: expert designer or management role, E. Dominant communication style of seniors or managers, F. Prestige overshadowing collaboration, G. Unexpected perspective of non-designers, H. Lacking acknowledgement of designers' professionalism, I. Missing information from collaborating parties, and J. Unsupportive mentors or managers.

Insights on coaching

Cycle Two employed group coaching during training sessions and separate individual coaching. This yielded two insights on coaching.

Insight 2.1: Group coaching as an intervention is ineffective for individual cases.

Cycle One showed that group coaching was effective when intervening in teams working on a project together. Assumedly, the group setting in the training sessions could facilitate coaching as an intervention in individual cases. Thus, the second session is set up as group coaching to intervene in voluntary individual cases. Two junior design professionals shared a recent conflict case and a small group analysed and reflected on the case (Textbox 1: Case 1 and 2). Unfortunately, the two trainees did not change their actions by implementing the generated insights into their practice. Perhaps, the issues lacked a clear intervention motive, which is required for intervention to work (Chapter 6).

Textbox 1. Case descriptions used in the training session for reflection and developing a coping strategy

Case 1: The trainee experienced an internal conflict. The conflict stems from before the program and resurfaced during the program. After a month, I enquired to see if he had applied the strategies or acted to address the situation. The trainee explained that he had avoided the conflict and worked on other jobs in the meantime. The program director later explained a similar observation in other situations to me. The program director supposed that the participant had wanted to avoid confrontation and could easily have resolved the conflict.

Case 2: The trainee experienced a conflict with a client. She had just launched her business and was unhappy about how the client communicated with her. Her case was analysed in a small group, and ideas were shared to address the situation, followed by a reflection with the whole group. From her evaluation form, she was not satisfied with the session and outcome, later explaining that she sought more practical lessons and guidelines to apply in value-based conflicts.

Case 3: Two other trainees experienced a conflict at the time of the training session. They had a clear intervention motive; however, instead of sharing their cases to find support in the training session, they did not join the session and took some time off. Most likely, the conflict was too fierce to share with the group. Thus, in several instances, group coaching did not successfully intervene and provide support in critical moments.

Insight 2.2: Individual coaching is desired for intervention on individual cases.

The trainees from Case 3 (Textbox 1) who were absent from the group coaching were interested in having an individual coaching talk with me. The Programme coordinator explained that the conflict had greatly impacted the trainees and had coached them accordingly. In my role as coach, I approached the coaching thoughtfully and improvised when necessary. This resulted in new coaching guidelines for intervention during or directly after a value-based conflict.

Insights for an approach to facilitate reflection

Different iterations of an approach to facilitate reflection was presented to junior designers, educators, and design experts, amounting to five insights to improve the educational approach.

Insight 3.1: Add a preliminary phase to the approach: The Discover phase.

In a brainstorming session, junior designers sketched the designer's journey in a timeline. One participant reflected: "When should the preparation start? When do designers get interested in this topic? Maybe during an internship?" The participant proposed incorporating a phase in which the awareness of a junior designer could be raised during, for example, education, internships, or a first training session. Design experts and educators verified this suggestion.

Insight 3.2: The phases should be independent of specific contexts.

The junior designers expressed a desire to learn about the theory of value-based conflicts during design education. However, the phases of the approach may be applied in different contexts. As a trainer, I recognised its necessity during the first training session of the professional training programme. Additionally, design experts noted that specific contexts for each phase should be left out.

Insight 3.3: The approach should be an iterative process.

In a brainstorming session, junior designers shared that they appreciated the idea of reflecting on value-based conflicts to prepare for the next conflict. They envisioned that learning to reflect on such conflicts would be iterative, where each reflection is a preparation for a new context or experience.

Insight 3.4: Allow for an individual learning process.

Junior designers recognised an individual process where the conflict experience positively affects professional development. The designer can independently reflect on it afterward and embed newly acquired insights in daily practice. Junior designers proposed to provide online support by, for instance, showing exemplary cases. For example, a junior designer could share some characteristics of a conflict with a chatbot and gets feedback on a specific problem.

Insight 3.5: Coaching and training support learning from conflicts.

The different research activities furnished the insight that coaching and training facilitate reflection and support learning. Junior designers can improve their ability to cope and learn from their experiences with coaching and training support. Coaching and training can transform a designer's negative experience into a positive learning outcome. Training induces an abstract understanding of value-based conflicts, an ability to recognise when value-based conflicts occur, and a reflective capability. Moreover, individual coaching can help junior designers share their stories, brainstorm coping actions, and develop as a professional.

Insight 3.6: With work experience junior designers recognise value-based conflicts more easily.

Junior designers need some work experience to recognise value-based conflicts in their collaborative practice. I explored such a case by preparing design interns with theory on value-based conflicts. Unfortunately, they could not identify their critical moments in

the heat of the action. However, they could observe others' critical moments. After their internship, they could identify and reflect on critical moments. In their reflections, design interns showed how they learned from the critical moments and broadened their action repertoire for new contexts.

Insights into professional development

Insight 4.1: Similar coping mechanisms for identity issues and struggles in collaborative practice.

Remarkably, this study showed a link between identity and collaborative development. During the training sessions, mechanisms for coping with professional identity issues were similar to those for coping with collaboration struggles. In the first training session, participants were divided into two groups to analyse two cases from one conflict category—the *perfectionistic designer struggles*. One group analysed a case on professional identity, and the other, a case on collaboration skills. Their analysis revealed many similarities in their role-play, how they acted out the conflicts, and how they coped with them. After the training session, I discussed this observation with two of the trainees, who confirmed the similarities and speculated that personal development might be connected to developing collaborative skills.

Insight 4.2: Professional identity development may be linked to collaborative development.

The second training session explained the potential connection observed. At this stage, the two components were termed: the self (professional identity) and the others (collaboration skills). They were linked these two components in the visual with the professionalisation framework from Adams, Daly, Mann, and Dall'Alba (2011). One trainee shared via the evaluation form their wish for a practical tool or model, noting that this framework could be a start.

AN APPROACH TO EDUCATE AND FACILITATE REFLECTION ON VALUE-BASED CONFLICTS

Table 17 shows the approach for educating and facilitating reflection. The participants and I co-created the approach based on the requirements of Chapter 6 and the insights from the action research. The approach comprises four phases: Discover, Prepare, Intervene, and Reflect. Each phase has a learning aim, a coping result, one or more learning activities and results, and supportive tools.

The phases of the approach can be compared to the iterative learning phases of Kolb (1984). The educational approach has no fixed starting point. Although the Discover and Prepare phases may assume priority in the education of the designer, the approach also allows one to start in the Intervene or Reflect phases during CPD or coaching. Moreover, I observed that junior designers need some work experience to be able to identify value-based conflicts. Thus, the educational approach can be followed iteratively and should be adjusted to the needs and experiences of the junior designers.

Table 17. The approach to educate and facilitate reflection

Phase	Discover	Prepare	Intervene	Reflect
Aim	Awareness	Share	Support	Reflecting
Coping result	Coping process	Example strategies applied in similar contexts	Improved strategy for current context	General strategy for new contexts
Learning activity	Scaffolding value theory and reflection	Train reflection with the scaffolding approach	Team coaching in critical moments; Individual coaching as an intervention	Coaching talks to reflect on past experiences
Learning results	Knowledge of value-based conflicts and coping mechanisms	Experiment with conflict analysis and share different ways of coping	Apply knowledge and new coping actions; Identify conflicts experienced	Professional development: linked personal and collaborative development
Supportive tools	1. Presentations on theory 2. Case descriptions 3. Exercises to identify values	4. Training programme, 5. Role-play exercise 6. Visual reflection	7. Coaching guidelines for intervention	8. Coaching guidelines for reflection; 9. Reflection exercises

The Discover phase aims to increase awareness of value-based conflicts. An abstract understanding of the value-based conflict theory is taught in the Discover phase via learning activities and exemplary cases. In this phase, the junior designers acquaint themselves with the value theory and value-based conflicts, yielding awareness of value-based conflicts and different coping mechanisms. Junior designers may receive introductory presentations, exemplary cases, and exercises to identify personal values.

The Prepare phase experiments through visual reflection and role-play. The Prepare phase trains junior designers for value-based conflicts they may experience in their careers. The preparation occurs in a training programme. The first step is to raise awareness of value-based conflicts in collaborative design practice. The second step is to study exemplary cases from practice and share insights. The junior designers can develop a general strategy to cope with value-based conflicts. The designers can experiment with this coping strategy during training or practice.

In the Intervene phase, coaching supports the application of a specific strategy for the conflict experienced. The Intervene phase aims to offer direct coaching when a junior designer is experiencing a value-based conflict. It starts when junior designers experience their first value-based conflict in practice. Requirement 10 states that there should be an intervention motive, without which coaching may not support learning and professional development (Bozer, 2014), as observed in this research. Once junior designers have an intervention motive, they could begin exploring their value-based conflict via reflection assignments and individual coaching. Sharing the experience with a coach can help the junior designer analyse the value-based conflict. The junior designer and coach can develop a specific strategy to cope with the value-based conflict. The designer can then apply this strategy to address the value-based conflict professionally.

In the Reflect phase, coaching supports the analysis of conflicts. The Reflect phase aims to facilitate reflection on experienced value-based conflicts to learn from them. The first step is to raise awareness of the value-based conflicts experienced. A coach could distribute assignments for reflecting on such experiences.

The designer may reflect more in a reflective insight talk and learn from the value-based conflicts experienced. Moreover, the junior designer can develop a general coping mechanism to prepare for new contexts. Finally, the designer can experiment with a coping strategy to deal more professionally with value differences and value-based conflicts in daily collaborative practice.

EVALUATION OF THE EDUCATIONAL APPROACH

The educational approach is validated by evaluating it against design requirements (Chapter 6) and goals (Chapter 7). Eight requirements for training and coaching were met in the educational approach (Table 18).

Table 18. Evaluating the educational approach against requirements

Support type	Requirement	Evaluation
Coaching	C.1 Stimulate quick reflection	Applied as coaching guideline and in exercises
	C.2 Must have coaching talk guides and stimuli	A coaching guideline and stimuli were developed to facilitate reflection
	C.3 Facilitate reflection and insight	Coaching integrated in different phases of the educational approach
	C.4 Must be used in case of intervention motives	Applied as coaching guideline and in exercises
	C.5 Let designers reflect on the context	Applied as coaching guideline and in exercises
Training	T.1 Raise awareness of value differences	Integrated as Discover phase
	T.2 Prepare designers to reflect skilfully	Resulted in the Prepare phase
	T.3 Let designers share comparable cases	Part of the training in the Prepare phase

Furthermore, in consultation with supervisors, design lecturers, and junior designers, I evaluated the educational approach using four design goals. The first design goal was to increase awareness of value-based conflicts. The Discover phase raises awareness, though other phases of the educational approach may also raise awareness. The Discover phase targeted design students at universities. Design lecturers and I co-created learning materials and activities to increase the awareness of values and value-based

conflicts. It integrated the Discover phase into the curriculum of Industrial Design Engineering at THUAS. The learning activities were well received by lecturers and design students.

The second design goal is reflection training for junior designers to develop a reflective practice on value-based conflicts. The Prepare phase of the educational approach targeted design students and junior designers to help them reflect on value-based conflicts. A training programme emerged in the actions of Cycle Two to prepare junior designers to reflect on value-based conflicts. The fourth session showed that participants could reflect autonomously in small groups and generate a list of coping actions. One training session could help raise awareness, but a longer training programme proved to be effective in reflective practice training to cope with value-based conflicts. Furthermore, junior design professionals with some experience can be trained to identify value-based conflicts. However, it was more challenging for junior designers without work experience.

The third design goal was to develop coaching support. Coaching is a component of the educational approach, developed a coaching talk guideline, and experimented with coaching tools. Study One revealed how a dialogue with someone already ignites a designer's reflection. In the two cycles, dedicated junior designers learned from past experiences in the reflective coaching talks. The junior designers found it challenging to recognise value differences or value-based conflicts; thus, a coach could assist with exercises. Moreover, coaching helped junior designers to reflect on their collaboration actions and think of other coping actions.

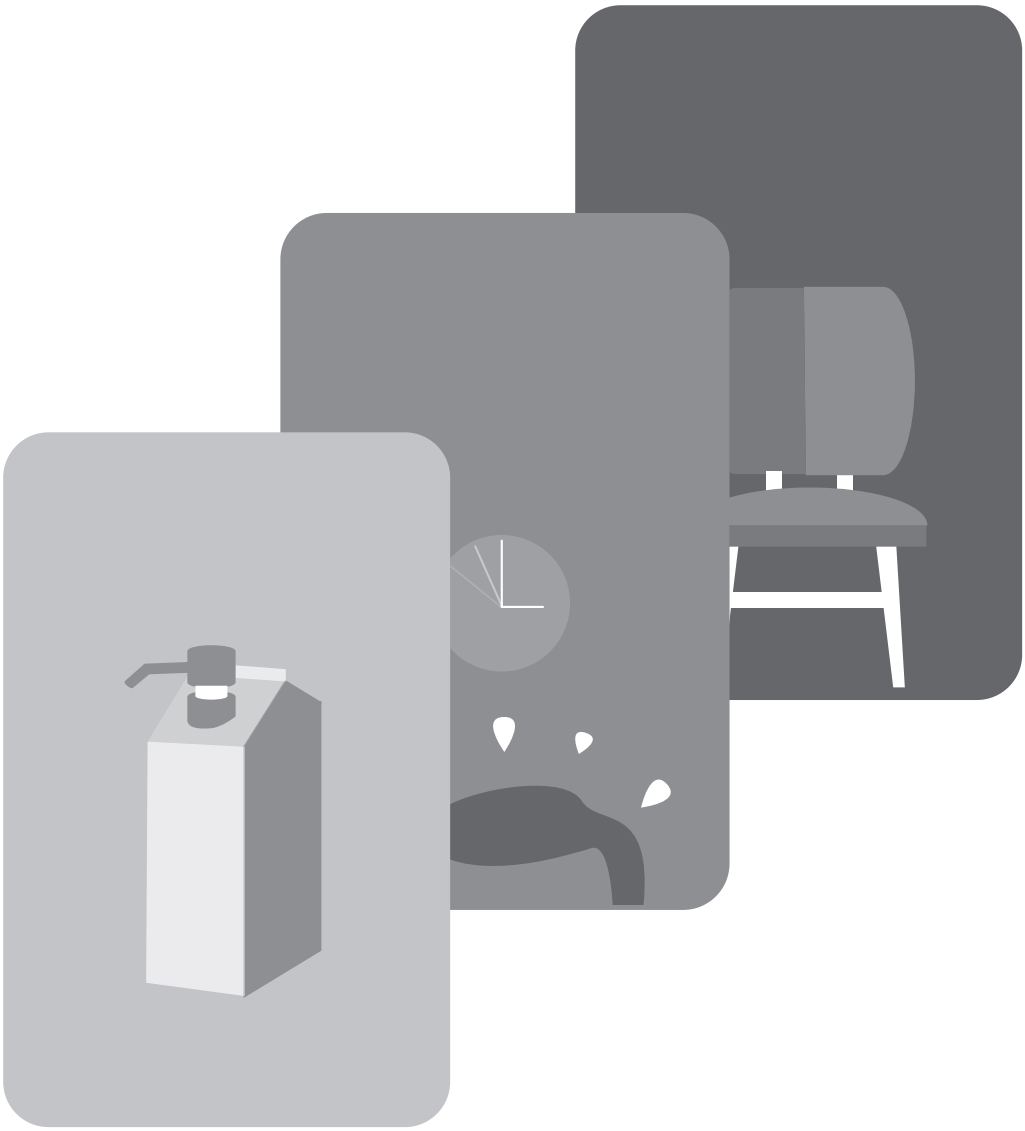
Coaching as an intervention was effective in design teams and individually with a familiar coach. In Cycle One, group coaching worked if there was conflict from a design project, given which the design team has a practical incentive to reflect. The reflection helped them become more competent, as they coped more productively with current and new contexts. Via repetitive training and adequate support, junior designers can develop the skills to cope with value-based conflict more professionally.

However, group coaching did not work when one individual had experienced a conflict. Additionally, two junior design professionals found support from long-time relationships, such as friends, family, their coach, and the programme Coordinator. Thus, intervention in high-stakes critical moments should be done individually by familiar coaches and supervisors. I verified this notion with the design interns with whom I had a three-year relationship as a tutor. The junior designers and design interns sought support from their familiar coaches in high-stakes conflicts. Thus, individual coaching by familiar coaches facilitates learning and reflection on values, enabling junior design professionals to establish an action repertoire for new contexts. They noted the importance of a manager, team leader, or mentor in supporting reflection. This finding corresponds with findings from literature and Chapter 5 that immediate support from the company helps junior designers cope more effectively through critical reflection (Cooper-Thomas *et al*., 2014; Dall'Alba and Sanberg, 2006; Jehn, 1997; McDonnell, 2015), and seniors can substantially affect (positively and negatively) the well-being of junior professionals (Monnot and Beehr, 2014).

The fourth design goal was to develop a support system. The educational approach provides training and coaching in CPD but not a complete support system to support junior designers autonomously via practical tools and help them develop effective ways to cope with value-based conflicts (see Chapter 8). Further, an integrated model can transfer generated knowledge, the educational approach, tools, and insights to other contexts, creating a full support system (see Chapter 9).

CONCLUSION

Cycle Two resulted in an educational approach to facilitate reflection using insights from Study One and meeting three out of four design goals. Unfortunately, Cycle Two did not result in a complete support system. Therefore, I propose two actions: to design a toolkit (see Chapter 8) and develop an integrated model combining insights from the literature and Study One and Two. Central in the model should be one critical insight running through both studies which is the link between developing a professional identity and improving collaboration skills when analysing value-based conflicts and coping with them. The notion that these dimensions are connected corresponds with an existing framework (Adams *et al.*, 2011). Accordingly, developing a professional design identity and improving collaborative skills are needed for effective coping with value-based conflicts. Chapter 9 employs this insight as the basis for an integrated model to support the professionalisation of junior designers.



Chapter 08

CO-CREATING A TOOLKIT TO FACILITATE REFLECTION ON VALUE-BASED CONFLICTS

Chapter 8 aims to design a toolkit to facilitate reflection on value-based conflicts The toolkit is a conceptual set of tools to support reflection, and the tools are the practical components of the toolkit. Designers like to work in collaborative practice with practical tools, such as card sets with design methods (Roy and Warren, 2019) and design games (Brandt, 2006). Chapter 2 showed that some value methods employ tools, such as the envisioning card set (Friedman *et al.*, 2013) or the HuValue Wheel (Kheirandish *et al.*, 2020). The tools found were tangible (e.g., card set) or intangible (e.g., photograph exercise). Involving users and experts in designing tools can increase the tools' effectiveness (Brandt, 2006). Therefore, this study involves junior designers and educators in co-creating tools, using their expertise and experience to make the toolkit an effective means to facilitate reflection.

EVALUATION OF PRELIMINARY TOOLS THAT EMERGED IN PREVIOUS CYCLES

The previous cycles yielded nine preliminary tools to facilitate reflection (Table 17. The approach to educate and facilitate reflection). In consultation with my supervisors, lecturers, and junior designers, I evaluated the nine preliminary tools in which stage of development they were and whether they could be combined (Appendix B, Table B1). The evaluation resulted in nine additional design requirements and categorised the tools into four tool groups: a training programme, learning materials, a book, and coaching guidelines (Table 19). These tool groups can form part of a toolkit. Furthermore, we noticed that junior designers lacked tools they could use by themselves. The design goals of Cycle Three are as follows: propose a toolkit, further develop the support tools, and co-create additional tools that junior designers can use autonomously.

Table 19. Preliminary tools grouped into four tool groups

Tool group	Preliminary tools
Training programme	Training programme Role-play exercise
Learning materials	Visual reflection exercise Presentations on theory Exercises to identify values Reflection exercises
Book	Rich exemplary narratives
Coaching guidelines	Sensitising exercises Coaching guidelines

RESEARCH METHODOLOGY CYCLE THREE

In this cycle, the participants and I employed a design approach to develop the toolkit to facilitate reflection. Chapter 3 explains the general methodology of the action research. This section describes the research context, data gathering, and data analysis in Cycle Three.

Action research contexts

Until June 2019, participants could be involved in the Designer's Identity programme in co-creating the tools. Unfortunately, the second run of the programme from September 2019 to June 2020 was cancelled. Therefore, I sought new contexts with junior designers.

The first new context comprised two universities (chosen pragmatically), where tools used in the Discovery phase of the approach were developed and tested. I was a lecturer on an international Bachelor's degree course in Industrial Design Engineering at THUAS. Additionally, Delft University of Technology asked me to hold two workshops for international Master's degree students studying Strategic Product Design, Integrated Product Design, and Design for Interaction.

The second new context was an online training course, developed to target junior professionals. In November 2019, the online course was provided on the Instagram social media platform. This platform has two advantages: it is popular among the youth and accessible worldwide.

Data collection

Between April 2018 and January 2020, the study collected data via four research activities varying in duration, participants, and type of data (Table 20). The results of Cycles One and Two served as input for the third cycle.

Table 20. Data collection for designing tools (Cycle Three)

Research activity	Participants	Resources	Type of data
3.1. Co-creating tools with junior designers (April 2018 – September 2018)	4 trainees 1 design student +/- 30 event visitors 29 Master's degree students	Value-based conflicts overview (Chapter 4), preliminary tool ideas from Cycle Two, presentations, benchmark tools, concept framework	Concept framework, tool ideas, prototypes, design process, test event, presentation observation notes
3.2. Co-creation of the card game (January 2019 – January 2020)	1 design student 7 design experts 47 Master's degree students	Idea card game, benchmark games, cases, values, coping strategies, prototype 1 card game	Drawings, documents, prototypes 2 and 3, prototype tests, photographs, observation notes
3.3. Developing learning materials (June 2019 – November 2019)	3 lecturers (including myself)	Theory from literature and Study One, presentations from Cycle Two, learning materials	Feedback via e-mail, documents
3.4. Creating and organising an online training programme (October 2019 – November 2019)	24 participants	Instagram (social media platform)	Evaluation data, chats, exercise results, notes

Research activity 3.1 aimed to generate additional tools that junior designers could easily apply autonomously. A brainstorming session yielded eight ideas for supporting tools, such as a card set based on a popular game or a chatbot acting as an online coach (Appendix C; Table C1). With design requirements from Chapter 6 (Appendix B; Table B1) the participants evaluated the eight ideas (Appendix C; Table C2). Two trainees developed the two best ideas into two prototypes: a game (idea 2) and a chatbot (part of idea 7). The two prototypes were tested with approximately 30 participants (design professionals, students, lecturers, and researchers) at an event at THUAS. Additionally, the card game was tested at a workshop with 29 Master's degree students from Delft University of Technology in September 2018. The insights served as input for co-creating the card game.

In research activity 3.2, a design student was invited to co-create and develop the card game further. The participants designed the card game in biweekly meetings and tested the card game in a pilot study with design experts. The insights retrieved from this test were used to improve the card game visually and the game instructions. Moreover, the third prototype of the card game was

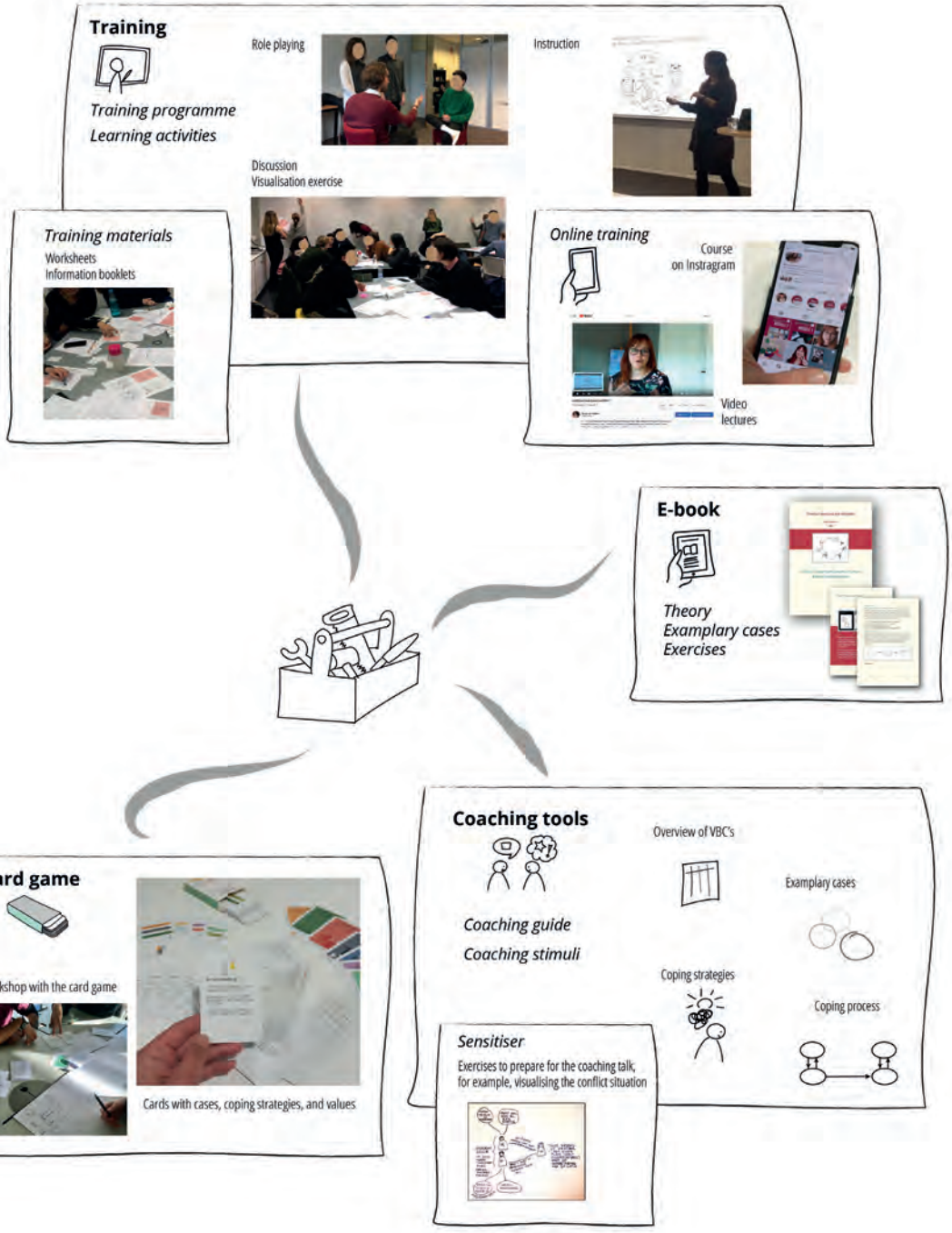
tested during a workshop at Delft University of Technology with 47 Master's degree students. Few participants provided feedback directly and indirectly through 47 evaluation forms set up by a lecturer from Delft. The feedback helped improve the card game. In January 2020, the card game was finalised and sent to a printer.

In research activity 3.3, two design lecturers and I developed learning materials to increase awareness of values and value-based conflicts in various courses I was teaching at THUAS. At Delft University of Technology, tool prototypes and the visual reflection exercise were tested with international Master's degree students: 29 in the first workshop (September 2018) and 47 in the second (September 2019). We retrieved their feedback via e-mail, observations, conversations, and evaluation forms.

In research activity 3.4, I applied and tested all tools with the participants in the professional development programme on Instagram. In total, 24 participants signed up for the course, of whom 19 were junior designers. I collected data by actively participating in the course as a trainer. Additionally, participants were required to fill in an evaluation form.

Data analysis

In this cycle, similar to the previous cycles, my supervisors and I employed a pragmatic design-driven approach to analyse the data. It employed the insights to synthesise information to generate ideas for tools and improve existing tools iteratively. Initially, we combined the new tools with tools from the previous cycles. Furthermore, it formulated 14 new design requirements (Appendix B; Table B2 and B3). Finally, participants helped improved the tools iteratively, generated new ideas for tools, and designed the four final tools. The next section describes the final tools and the toolkit.


Training
Training programme
Learning activities
Role playing
Instruction
Discussion
Visualisation exercise
Training materials
Worksheets
Information booklets
Online training
Course
on Instragram
Video
lectures
E-book
Theory
Examplary cases
Exercises
Coaching tools
Coaching guide
Coaching stimuli
Overview of VBC's
Examplary cases
Coping strategies
Coping process
Sensitiser
Exercises to prepare for the coaching talk,
for example, visualising the conflict situation
Card game
Workshop with the card game
Cards with cases, coping strategies, and values

RESULTS OF CYCLE THREE: A TOOLKIT WITH SUPPORT TOOLS

A toolkit was co-created to facilitate reflection on value-based conflicts (see photo page). This cycle yielded a toolkit with four tools: a card game, a training programme, an e-book, and coaching tools (Table 21). The card game and e-book can be used autonomously by junior designers or with the support of a trainer or coach.

Table 21. The toolkit to facilitate reflection on value-based conflicts

Tool	Description	Versions
Card game: Designer frustrations	Education and training card game for exploring cases, values, and coping strategies	-
Training programme with learning materials	Programme and materials for training the theory of value-based conflicts and how to cope (e.g., slides, videos, and exercises)	Training programme on site and online
E-book: textbook and exercises	A book to raise awareness and prepare for reflection through theory, exemplary cases, and exercises; It can be used to support the training programme, but it can also be used autonomously by junior designers	E-book for design students with integrated exercises for different levels E-book for junior professionals with exercises in a separate workbook
Coaching guidelines and tools	The guidelines can structure coaching talks. Coaching tools comprise sensitising exercises and resources for coaching talks	

Card game: Designer frustrations

Junior designers can use the card game to discover exemplary cases, values, and ways of coping. They can use the card game autonomously, and trainers can facilitate a workshop that applies the card game. The card game includes instructions on how to use it in a small group, 11 cards with cases, 11 cards with ways of coping, and 30 cards with values.

Training programme with learning materials

With the second tool, the training can be conducted on-site or online.

Table 22 shows a training including five learning modules with various learning materials (e.g. exercises, slides, and videos). The first versions of the slides and exercises emerged during action research Cycles One and Two. This study optimised the slides and exercises. Small prompts stimulated sharing of insights and experiences between participants.

Table 22. Training programme

Module	Theme	Topics	Learning material(s)
Intro	Introduction	Example case Introduction to course	10 minutes video
1	What are values?	Value theory Different types of values Know your values Conduct a test	Short videos and slides Exercises
2	Values in collaboration	Collaboration in design How values influence the work of designers When does it go wrong?	Short videos and slides Exercises
3	Value-based conflicts	Value differences Critical moments Conflict categories	Short videos and slides Visual reflection exercise
4	Coping with value-based conflicts	Coping with value-based conflicts When are actions taken? Coping mechanism Learning from value-based conflicts	Short videos and slides Visual reflection Exercises
5	Professional development	Map key experiences Future scenarios based on two values Back casting and planning	Short videos and slides Visual reflection Exercises

E-book: textbook and exercises

The third tool is an e-book describing the theory of value-based conflicts and exemplary cases, based on the insights from the previous chapters. The structure of the e-book followed the training programme; thus, it can be used as a learning material in the training programme. Cycle Three integrated the worksheets developed in Cycle Two into the e-book. Junior designers could, therefore, use the e-book for self-study or as a self-help book.

Coaching guidelines and tools

The study resulted in coaching guidelines for the coaches to use during a coaching talk and created support tools to use before or during a coaching talk. It ascertained when individual and group coaching would work best for intervention and reflection resulting in three coaching contexts. The first coaching context is intervening in groups. Group coaching works in project teams during critical moments to discuss effective coping mechanisms. An experienced coach can intervene intuitively or use tools from the toolkit. The second coaching context is intervention for individuals to help junior designers when they perceive value-based conflicts. A coach can support junior designers with a coaching talk using the (memorised) coaching guidelines and tools adjusted to the needs of the junior designer. The third coaching context is helping individuals reflect on past experiences and stimulate learning. A coach should use the guide structurally to help junior designers prepare for future value differences and broaden their action repertoire. Sensitising exercises can help junior designers prepare for the coaching talk.

EVALUATION OF THE TOOLKIT

Cycle Three yielded four practical tools that were combined into the toolkit. In consultation with my supervisors, design lecturers, and junior designers, I evaluated the toolkit (Table 23). The tools and the toolkit against 21 requirements formulated during the three cycles of Study Two with different participants (Appendix B).

Table 23. Evaluating the toolkit against the requirements

R#	Requirement	Evaluation
ST.1	Include an illustration of critical moments.	Four tools illustrate critical moments, exemplary cases, values, and coping processes. Junior designers are also encouraged to draw from them for a deeper understanding.
ST.2	Provide rich exemplary narratives.	The book and the card game have rich and exemplary narratives.
ST.3	Must comprise comprehensible methods.	The learning materials and worksheets have step-by-step exercises.
ST.4	Provide sensitising activities for coaching.	All tools have exercises for reflecting on value-based conflicts. Coaches can use specific sensitising exercises before coaching.
ST.5	The toolkit should contain four or five tools.	The toolkit has four tool groups with several versions and exercises applicable to different situations.
ST.6	At least one tool must have a sketching assignment.	All tools have one or more visual reflection exercises. Five participants applied visual reflection and were positive about the exercise.
ST.7	Prescribe metaphors (individual/groups) or story cartoons (groups).	For group workshops, the use of metaphor or cartoon stories is recommended when visualising a conflict.
ST.8	Visual reflection exercises should be integrated into other tools.	These exercises are in all the tools.
ST.9	Common narratives should be formulated based on case descriptions.	Each type of critical moment in the e-book had 10 exemplary cases and each way of coping in the card game had 11.
ST.10	Add sensitising exercises to toolkit as coaching tool.	Sensitising exercises are added as coaching tool.
ST.11	Presentations should be integrated into other tools.	The learning materials in the training programme have presentations and videos based on the presentations.
ST.12	Exercises to identify values should be integrated into other tools.	These exercises are in all the tools.

ST.13	Finalise learning materials of the training programme.	The learning materials were finalised. They are part of the training programme and e-book.
ST.14	Add role-play exercises to toolkit as learning material of training programme.	The role-playing exercise is integrated into the offline training programme and added as an exercise in the e-book.
ST.15	Tailor guidelines to specific coaching needs Add coaching guidelines to toolkit.	The coaching guidelines are tailored to three different coaching needs. The coaching guidelines are added to the toolkit as a coaching tool.
ST.16	Reflection exercises should be integrated into other tools.	These exercises are in all tools.
ST.17	Provide about 10 exemplary cases for early-career conflicts and coping strategies.	Each type of critical moment in the e-book had 10 exemplary cases and each way of coping in the card game had 11.
ST.18	Must be straight to the point.	The tools improved after testing and became clearer and more straight to the point based on feedback from participants.
ST.19	Must be exciting to use.	A card game was co-created with a design student, and an online training course was developed.
ST.20	Must be interesting but not overload information.	An e-book was made with a short introduction to the theory, exemplary cases, and practical exercises.
ST.21	Must preferably be a tangible tool.	The card game is a tangible tool. Though the other tools were shared digitally, they could be printed.

Based on the evaluation, I formulated four recommendations to improve the toolkit, the tools, and the approach to facilitate reflection.

Recommendation 1: Provide a way to track the learning progress or professional development.

An integrated model can help track the learning progress or professional development. Therefore, develop an integrated model in the next chapter to help junior designers learn from value-based conflicts and develop as professionals.

Recommendation 2: Make an online version of the card game for remote usage.

The card game was printed in February 2020 before the pandemic became official. Thus, workshops to use the card game could not be held during the consequent lockdown. The idea then emerged

that an online version of the card game could help disseminate it to a larger audience. Junior designers worldwide could then learn from an online version.

Recommendation 3: Create more video content.

The online training employed videos to explain the theory and instructions for different exercises. Given the platform capabilities at that time, the videos were of low quality. Thus, the video quality must be improved, and more video material must be created to explain the theory and exercises better, thereby reaching junior designers globally. Furthermore, video content also fits the educational trend for blended learning approaches, which supports a-synchronous learning online and offline.

Recommendation 4: Make more tangible tools.

Junior designers are skilled in using online and digital tools. However, they prefer to have useful tools and books "they can keep in their drawer." They can consult such tangible tools easily whenever they need support on a topic like value-based conflicts. Thus, the e-book could be made into a printed book.

CONCLUSION

Cycle three yielded a toolkit with four tools to facilitate reflection: a card game, a training programme, an e-book, and coaching tools. Junior designers can use the tools for self-help or self-study. However, it is important to seek the help of a supportive mentor or coach who can provide another perspective on the value-based conflict and encourage junior designers to formulate effective coping strategies and evaluate the outcomes.

REFLECTIONS ON STUDY TWO

This study aimed to develop support that is readily available and tailored to the needs of design professionals. Study Two formulated four design goals to facilitate reflection on value-based conflicts, yielding a good solution for the first three design goals. The fourth design goal was a more broadly applicable support system for stimulating reflection and learning among junior designers, for which Study Two generated an incomplete solution because the educational approach and support tools were solutions specific to the action research context

Study Two was situated in four different contexts in the Netherlands in international groups of junior designers. Even so, it would be interesting to investigate further how other design educators, trainers, and coaches would teach the theory to junior designers. The action research in four contexts employed a group of designers of different nationalities and educational backgrounds. Further research could explore other contexts, such as homogeneous groups of a specific culture, group training for a large design agency, or a traineeship in a corporation. Moreover, researchers could delve into the different needs of specific groups, such as design fields (graphic design versus architecture), gender, and social background. The next chapter proposes an integrated model—the Professionalisation Wheel—combining insights from the literature and Study One and Two. The integrated model allows other scholars and educators to test the findings in other contexts and implement the educational approach for other designers.

Chapter 09

THE PROFESSIONALISATION WHEEL TO IMPROVE COPING WITH VALUE-BASED CONFLICTS

The previous chapters highlighted the need for an approach to facilitate reflection on value-based conflicts such that junior designers can cope with them more professionally and may learn from them. Chapter 2 identified that value-based conflicts may emerge during the socialisation period when junior designers start their internship or first job. When designers start their first jobs commercial projects are less focussed on the meaningful design they may have been used which may yield value-based conflicts. Furthermore, junior designers must transition from an all-designer environment in education to a more diverse collaborative practice, which may induce the emergence of a wide range of potential value differences and value-based conflicts. Awareness of potential value differences and reflection on experienced value-based conflicts can facilitate coping with them.

Unfortunately, the literature lacks methods to facilitate reflection for effective coping with value-based conflicts. Study Two yielded an educational approach and support tools design educators and coaches can implement in design courses. A crucial insight was that professional identity development may be linked to collaborative development. Chapter 9 employed this insight as among the fundaments of an integrated model combining insights from the literature and Study One and Two. An integrated model can more easily apply the generated knowledge to other contexts (Stappers and Giaccardi, 2017). Furthermore, such a model can help develop a support system tailored to the needs of junior designers (Cooper-Thomas *et al.,* 2014; McDonnell, 2015). Thus, an integrated model allows other scholars and educators to test the findings in other contexts. Additionally, an integrated model may support junior designers to learn from value-based conflicts and develop as professionals.

This chapter presents the Professionalisation Wheel—an integrated model abstracted from the different insights and results from the previous chapters. The Professionalisation Wheel offers insights into an important career struggle of junior designers. This chapter first explains the development of the Professionalisation Wheel. It then explains the Professionalisation Wheel in-depth. Finally, it evaluates the virtues of the Professionalisation Wheel. The chapter concludes with suggestions for further developing the support system.

DEVELOPMENT OF THE INTEGRATED MODEL

The integrated model should help junior designers cope more professionally with value-based conflicts in collaborative practice. It could be used to implement the study findings in different contexts, such as design schools, training programmes, and coaching sessions. Three criteria for the model are as follows:

1. The integrated model should guide design and other creative professional educators and coaches implement the findings in their education or training to organise an overall support system.

2. The model should be a support tool for coaching. Career coaches should use the model to facilitate reflection on value-based conflicts.
3. The model should be easy to interpret and use. Junior designers should use the model to monitor their progress in developing a professional way of coping with value differences and value-based conflicts.

The study targeted junior designers who are Bachelor's degree students in their final year, students in a Master's degree programme, or design professionals working in collaborative practice with up to 7.5 years of experience. The junior designers can use this model autonomously or with support.

Our goal is to have a complete support system for junior designers, and we want others to be involved in pursuing this goal. Design educators may guide students with the model in their first work experiences. Additionally, design educators are crucial to the Discovery phase of the educational approach, as they can raise awareness of values and value-based conflicts in collaborative design practice among junior designers. Moreover, coaches can use the model to set up coaching and training programmes to facilitate reflection and may include instructors, experts, peers, and community and industry stakeholders (Adams *et al.*, 2016). Thus, a coach can use an integrated model in numerous situations, such as individual guidance or setting up a traineeship programme.

Layout of the integrated model

The integrated model was developed and verified iteratively for two years while consulting expert designers, design researchers, junior designers, and the supervisory team. My supervisors and I analysed and combined insights described in the previous chapters to develop an integrated model (see Appendix D). It explored different layouts to visualise the different components iteratively while consulting expert designers, design researchers, and design coaches. After attempting various layouts, a matrix proved to be more suitable, as it is easy to understand. The insights from Chapters 2 and 4 could be mapped on the axes. Unfortunately, the matrix layout was too simple to integrate the insights of Chapters 6, 7, and 8. Finally, the matrix was converted into a layout similar

to a dart board which often represents 'purpose-finding' (Brand, 2019). The typical features of the dart board served as metaphors for the different components of the model (Figure 10).

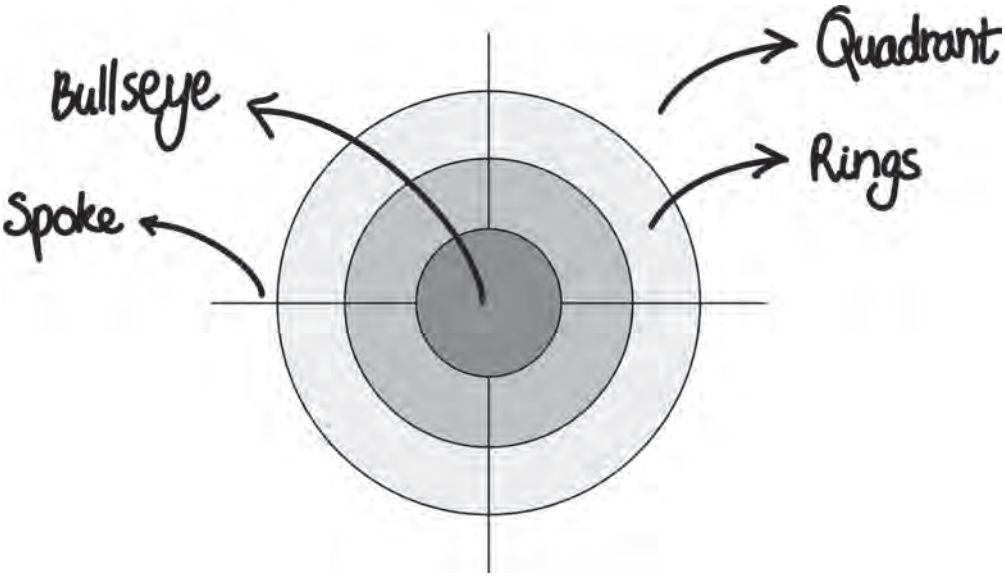


Figure 10. The layout of the integrated model

The Bullseye: The wheel has a distinct centre. The bullseye represents the aim of the Professionalisation Wheel to develop professional coping with value-based conflicts.

The Spokes: The wheel has four spokes sprouting from the bullseye. On the spokes are mapped two processes that are part professionalisation of junior designers: learning to cope and professional development. The spokes differ from axes, as they represent four learning foci in an iterative learning process: awareness, reflection, identity, and collaboration.

The Quadrants: The two spokes divide the model into four quadrants. For each quadrant, a professionalization target is formulated by combining the learning foci of the two professionalisation processes. The professionalisation targets include increasing self-awareness, cultivating a shared responsibility, building identity, and growing empathy. Developing each professionalisation target may induce a professional way of coping.

The Rings: The model has two rings that divide the quadrants into two support objectives. Theour support objectives for each ring are based on the insights of Study Two. The outer ring represents the first step toward more professional coping. The objectives of this ring introduce different aims to the junior designers and can be implemented in any design programme to prepare junior designers for practice. The inner ring is the second step junior designers must take to develop a professional mindset toward the different aims. The support objectives on the inner ring need practical experience and are ideally attained during the early stages of a design career.

THE PROFESSIONALISATION WHEEL

Figure 11 depicts the integrated model—The Professionalisation Wheel. The Professionalisation Wheel integrates the different components: learning foci, professionalisation targets, and support objectives. This section describes the components of the Professionalisation Wheel in depth.

Learning processes and foci

The central goal of the Wheel is professional coping, which results from two learning processes: improving coping and professional development. Junior designers may employ ineffective coping mechanisms; thus, improvement is necessary. Coping can be improved by focusing on awareness of value-based conflicts and reflecting on them (Frydenberg, 2017; Skinner and Zimmer-Gembeck, 2016). *Awareness* can help one discover and prepare for value-based conflicts. *Reflection* regards exploring and discussing the impact of values. Junior designers achieve self-awareness via reflection (Tracey and Hutchinson, 2018) and becoming explicitly aware of personal values (Kosonen, 2018). When using the Professionalisation Wheel, one can first discover and prepare for value-based conflicts or reflect on the experience of value-based conflicts. Distinguishing between awareness and reflection highlights their importance. However, their components are interrelated, with no set starting point.

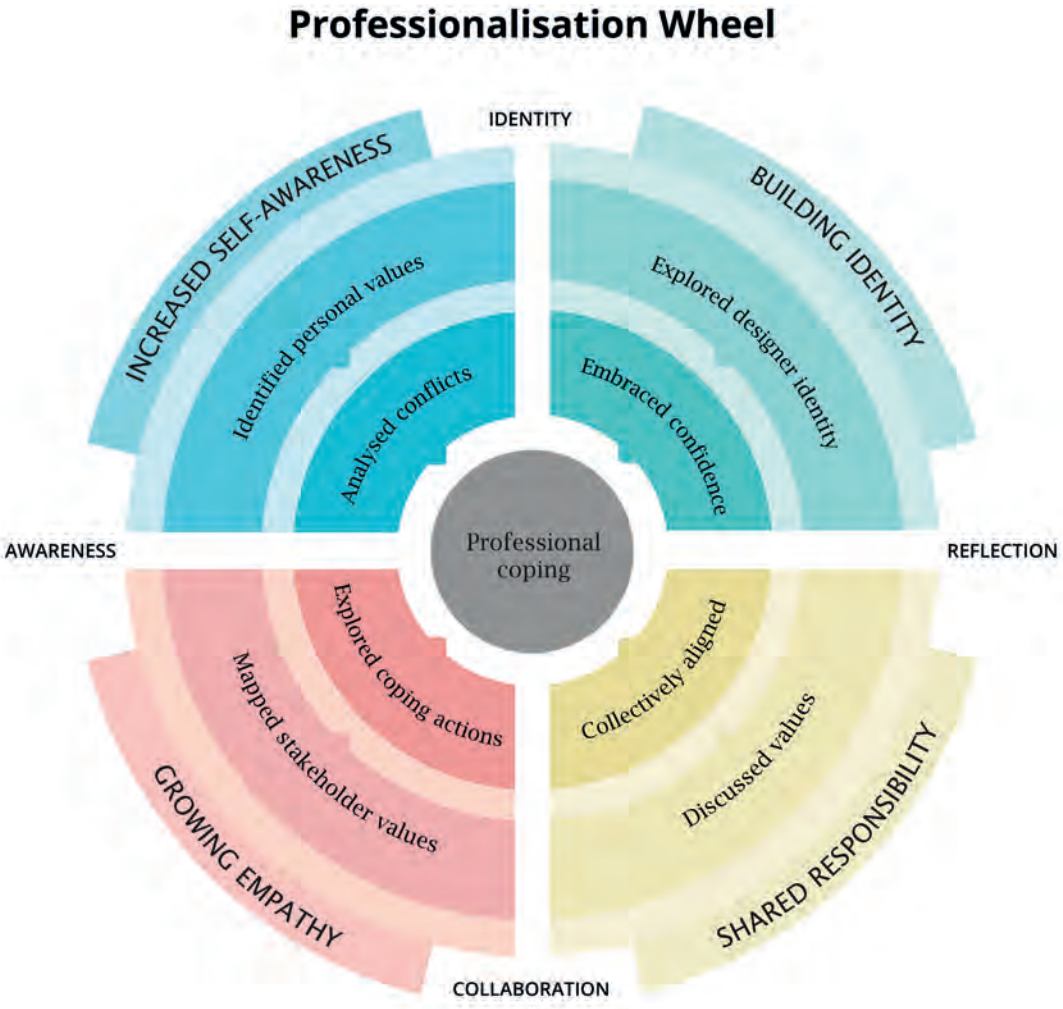


Figure 11. The Professionalisation Wheel

Professional development addresses identity development and the acquisition of collaborative skills (Adams *et al.*, 2011; Ricouer,1994). It includes thinking (awareness of differences), acting (in collaboration), and being (identity) to embody the knowledge and skills in practice (Adams *et al*., 2011). *Identity* concerns learning about oneself as a professional designer; *Collaboration* regards learning to interact professionally with colleagues and stakeholders. The critical moments focussed on collaboration or self-awareness and building a professional identity (see Chapter 4). Junior design professionals cope similarly in both types of critical moments (see Chapter 7). During their development, they shift back and forth between reflection on collaboration and their identity as a designer. The Professionalisation Wheel encourages the identity development of junior designers and their collaborative skills such that they can learn to cope more professionally.

Professionalization targets

Each of the four quadrants represents a professionalisation target. These targets contribute to the professional development of junior designers, allowing them to develop a professional way of coping with value-based conflicts. Design educators and coaches should increase the awareness of junior designers on subjects like value priorities and value-based conflicts. Therefore, *increasing self-awareness* of personal values and experiences of value-based conflicts is the professionalisation target in the top left quadrant. Self-awareness stems from self-analysis (Ricoeur, 1994) and may yield ambitious designers who frequently critique and correct their skills and knowledge (Sennett, 2008), helping junior designers cope with value-based conflicts (Gregg, Sedikides and Gebauer, 2011). Thus, in challenging situations, designers are empowered through self-awareness and situational awareness (Zamenopoulos, 2021). In the Professionalisation Wheel, *increasing self-awareness* means that junior designers develop an understanding of personal values and perceived value-based conflicts.

In the top left quadrant, building a *professional designer identity* by focussing on one's values is the target. A person's identity is based on their values (Ricoeur, 1994; Tracy and Hutchinson, 2018). Designers can identify their values and develop a narrative of their professional design identity through reflection (Kosonen, 2018),

inducing job satisfaction and meaningful application of personal values in design (Baha *et al.* 2018; Duffy and Dik, 2013; Nelson and Stolterman, 2012). Thus, building identity means exploring and embracing one's professional designer identity confidently.

The professionalisation target in the right lower quadrant is strongly situated in collaborative practice. *Cultivating a shared responsibility* refers to the learning process of discussing values in collaboration with others and aligning values cooperatively. S*hared* regards discussing and dividing collective team elements (Kleinsmann, 2006). *Responsibility* regards values, as it may refer to what "ought" to be done professionally for the clients and morally for society and the environment (Chan 2018; Rivard, Lehoux and Hagemeister, 2021). Responsible designers use their skill sets to act upon values when designing a product (Rivard, Lehoux and Hagemeister, 2021).

Growing empathy in collaboration is the target of the left lower quadrant. *Empathy* is an intuitive ability to identify with or understand another person's situation or feelings (Brown, 2009; Kouprie and Sleeswijk-Visser, 2009; Nelson and Stolterman, 2012; Pink, 2008). Being empathetic has long been considered an essential skill for designers (Cross, 1982). Design empathy is the ability to imagine or immerse oneself in the lives of stakeholders to understand their needs through research and design methods (Heylighen and Dong, 2019; Kouprie and Sleeswijk-Visser, 2009), thereby developing empathy for their perspectives and values, as this study advocates. Designers must learn to adopt alternative perspectives and be empathic before they can learn how to convince collaborators successfully. Thus, *growing empathy* defines designers' professional ability to appreciate stakeholder values and explore effective coping actions when value differences arise.

Support objectives

This research identifies two support objectives that contribute to each professionalisation target. Junior designers can break down their learning process and achieve the professionalisation targets by working on the two support objectives per target or following the two rings iteratively. For each support objective, there are support guidelines and contexts in which support can be

provided. The support context is a setting in which the support can be provided, such as a university or professional training course. The guidelines give concrete suggestions on how to achieve the support objectives.

The professionalisation target to increase self-awareness can be achieved via two objectives (Table 24): increasing awareness of personal value priorities and identifying and analyse value-based conflicts. Junior designers should identify their values and understand that their priorities may differ from others. The Personal Values Questionnaire (Schwartz *et al.*, 2012) or cards with values (e.g., the Designer Frustrations card game) may support identifying one's value priorities. Further, knowing how to analyse value-based conflicts can help junior designers understand their conflicts better and decide on which coping actions can improve their situation. By providing tools and learning materials, junior designers can learn to signal value differences and practice analysing conflict situations.

Table 24. Support objective guidelines and settings for increasing self-awareness

Support objectives	Guidelines for support	Support setting
Identified personal values	Explore topics of personal values and values theory Recognise and prioritise personal values	Design school Professional training
Analysed value-based conflict	Reflect on personal values and value differences to gain insight into one's professional identity Explore practical experiences through visual and storytelling exercises	Personal coaching

Building a designer identity can be achieved by exploring the professional designer identity and embracing confidence in such an identity (Table 25). Reflection through visualising and storytelling exercises may help designers explore their identities (Kosonen, 2018). Focussing on values and experiences with value-based conflicts can yield rich insights into their professional identity. They can map out their past and reflect on the values they used to make their career choices. Further, confidence in one's professional designer identity is beneficial, as many junior designers can feel uncertain about their careers (Kasonen, 2018) and may choose a job that is unaligned with their values (Jonkmans *et al.*, 2016).

Embracing their design identity with confidence allows for using their values meaningfully, thus increasing their job satisfaction (Baha *et al.,* 2018; Nelson and Stolterman, 2012).

Table 25. Support objectives guidelines, and settings for building a designer identity

Support objectives	Guidelines for support	Support setting
Explored designer identity	Reflect on personal values and value differences to gain insight into one's professional identity Explore practical experiences via visual and storytelling exercises	Personal coaching
Embraced confidence	Seek the support of a coach for intervention Align career with personal values	Personal coaching
	Investigate personal values and professional identity Build a career roadmap based on intrinsic values	Professional training

Further, sharing responsibility can be achieved by discussing values in design and collectively aligning values (Table 25). Discussing values can improve collaboration as values are explicitly mapped, and team members can align their values accordingly. When value differences or value-based conflicts emerge, the team is better prepared as their values are already explicit. Training or intervention by a senior or coach can help in situations where the team members find it challenging to cope with value-based conflicts.

Table 26. Support objectives guidelines, and settings for cultivating a shared responsibility

Support objectives	Guidelines for support	Support setting
Discussed values	Reflect weekly on collaboration and values Intervene when value differences or value-based conflicts occur	Design school Professional training
Collectively aligned	Investigate the values of the team, the company, and the project stakeholders Align company and stakeholder values with personal value priorities	Personal coaching
	Reflect on collaborative practice Share value priorities and experiences in collaborative practice Align values in collaborative practice (internship or first job)	Professional training

Finally, growing empathy can be achieved by mapping the values and perceptions of users and other stakeholders involved and exploring effective coping actions (Table 27). Awareness of stakeholder values can improve the co-design approach and may yield a satisfying solution for the stakeholders. Chapter 2 investigated various design methods for mapping stakeholder values. Furthermore, for effective coping, junior designers must develop a broad action repertoire for when value differences emerge.

Table 27. Support objectives guidelines, and settings for growing empathy

Support objectives	Guidelines for support	Support setting
Mapped stakeholder values	Explore topics of cultural, stakeholder, and design values Map value differences between groups	Design school Professional training
Explored coping actions	Visual reflection on value differences in collaboration Share effective coping actions	Design school Professional training Personal coaching

USING THE PROFESSIONALISATION WHEEL TO FACILITATE JUNIOR DESIGNERS

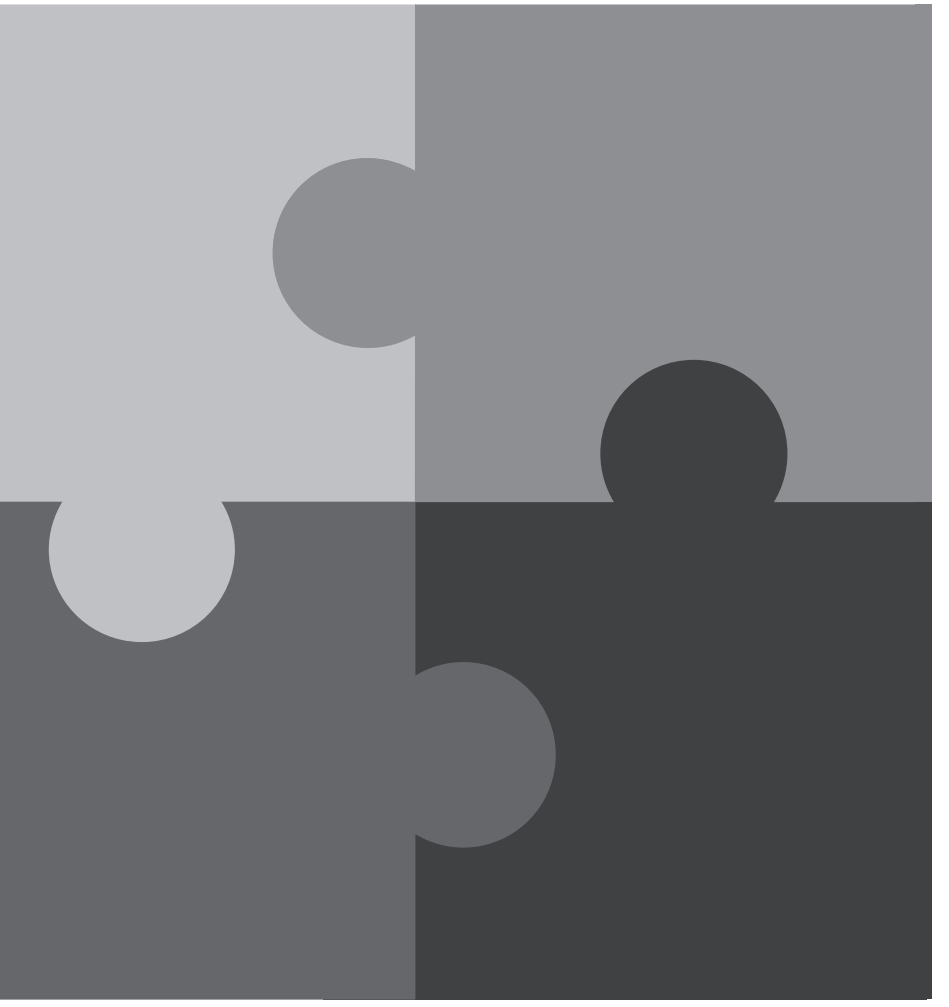
The Professionalisation Wheel facilitates a complete support system, for which various target groups must be involved. Junior designers can use the Wheel to monitor their learning and development progress and identify the steps they must take to develop their professional coping abilities at different stages of their education and early career. The Professionalisation Wheel can help to discuss values and professionalisation with a manager during a performance review or informally with colleagues at the coffee table.

Furthermore, the Wheel can be used to set up a support system in design education and CPD. The Wheel presents four professionalisation targets that can be used to outline a complete support system for junior designers. Currently, CPD for design professionals focusses on skill development but requires a focus on building an identity as a design professional. For example, design educators can use the professionalisation targets as learning goals to develop learning activities or implement them in their curricula. Design

lecturers and mentors can apply the support tools in their classes or tutoring. Furthermore, in CPD, the Wheel can be used to set up training programmes for junior designers. Moreover, HR and design managers can use the Professionalisation Wheel to professionalise their junior designers. Other researchers may use them to further study such professionalisation. Finally, career coaches can use the Wheel to identify the specific support needed, such as reflection support after experiencing a critical moment or a career guidance session that calls for reflecting on multiple experiences.

CONCLUSION

The Professionalisation Wheel may help junior designers cope more effectively with value-based conflicts and learning from them. Training reflection and deeper learning may help junior designers develop the competency to cope professionally with value-based conflicts, as they savour moments of reflection and develop insights from such reflections. They often become aware of what they find important and value the most through experiences with value-based conflicts. Notably, I validated the Professionalisation Wheel by involving junior designers at THUAS and the Fundamentals academy, design educators at THUAS, and a career coach for designers. Additional peer review could test whether the Wheel applies to other creative professional contexts, such as architects, communication workers, or art directors.



Chapter 10

TOWARDS FACILITATING REFLECTION ON VALUE-BASED CONFLICTS

This chapter addresses the main research problem of how junior designers can cope with the value-based conflicts they experience in collaborative practice. It first summarises the key findings of the empirical studies, followed by a description of the theoretical implications. Furthermore, it evaluates and discusses the implications of the Professionalisation Wheel. Additionally, this chapter gives recommendations and describes implications for further research, design education, design professionals, and collaborative design practice. The thesis concludes with reflections on the research approach and the author's practice.

KEY FINDINGS

This thesis addresses the problem statement by answering three research questions. The following section provides answers to each question by summarising the key findings of the thesis.

Value-based conflicts experienced by junior designers

RQ 1 focused on generating an overview of value-based conflicts experienced by junior designers.

RQ 1. What conflicts induced by value differences in collaborative practice do junior design professionals experience?

Study One provided a comprehensive overview of 24 value differences, 10 critical moments, and five conflict categories experienced by junior designers. It divided the conflict cases into five categories: perfectionist designer struggles, professional dilemmas, relationship challenges, differing perceptions, and creative frustrations. The perfectionist designer struggles category covered the largest group of cases. Cases in this category were based on value differences between business-economic values and idealistic design values corresponding to the literature. Additionally, the study resulted in four categories of value-based conflicts based on other value differences. These were related to economic worth, personal worth, personal priorities, design priorities, design ethics, work ethics, and extrinsic and intrinsic motivational drivers.

In Study Two, junior designers employed the overview of conflicts to investigate and address value-based conflicts in collaborative practice. It facilitated value-based conflict observations and helped support junior designers to cope with such conflicts. Furthermore, the numerous cases provided practical examples junior designers can use to acquaint themselves with value-based conflicts and prepare themselves for practical application.

Ways of coping with value-based conflicts

For RQ 2, the study explored different ways of coping with value-based conflicts.

RQ 2. What ways of coping do junior design professionals employ?

Chapter 5 drew from Study One to identify 11 different ways of coping with value-based conflicts. It identified coping mechanisms similar to strategies applied by other professionals like industrial workers (e.g., persevering before change) and nurses (e.g., switching perspectives) but also mechanisms (e.g., pursuing perfection) that are likely typical for designers and other creative professionals, reflecting the pursuit of design values (e.g. creativity).

From the analysis, the coping process is iterative. A value-based conflict starts with an unproductive way of coping when junior designers repeat their actions without changing their course of actions based on reflection. Coping becomes more productive when junior designers apply new actions to achieve existing leading values, reflect on collaboration and values, develop professionalisation insights, and take proactive steps for new contexts. Linking our findings to the professionalisation and design literature, we suggest that productive coping may lead to job satisfaction and can support junior designers to contribute better to thought-provoking conflicts in the creative process and collaborate better in the co-design process.

The results highlight coping mechanisms junior designers can use at different stages of their professional development and changes in the coping strategies they can rely on as their careers progress. Typical ways of coping with the transition from a student to a practitioner include switching perspectives and harmonising. Moreover, persevering before a change is typical during organisational changes and marks a transition in ways of coping from a junior stage to more seniority. Finally, the results suggest that designers first learn to understand other perspectives and empathise before they learn to convince others in collaborative design practice. Understanding coping and how coping evolves paved the way for Study Two.

Support for junior designers in coping more professionally

Value-based conflicts may frustrate and demotivate junior designers given a lack of support. Consequently, this study addresses RQ 3:

RQ 3. How can junior designers be supported to cope more effectively with value-based conflicts?

An educational approach (Chapter 7) and a toolkit with four supportive tools (Chapter 8) were co-created to facilitate reflection on value-based conflicts. The educational approach proposes a way of educating junior designers to improve coping with value-based conflicts. The toolkit provides four practical, supportive tools: a card game, an e-book, a training programme, and coaching tools. The findings from Study Two can help junior designers cope more productively in their personal and professional development while collaborating with others, as they develop more productive and intentional coping strategies. When junior designers reflect on values and develop a broader action repertoire, conflicts can even yield productive outcomes and stimulate professional development.

Furthermore, the Professionalisation Wheel can clarify junior designers' professional development, inspire learning goals for courses, or structure a complete support system in different contexts (Chapter 9), where they can develop knowledge of values in design, value differences, value-based conflicts, and the coping process. Knowledge of design methods that could map out value differences can broaden their skill set. Over time, junior designers can develop conflict-handling skills by exploring alternative coping actions. They can broaden their action repertoire while sharing coping actions in design teams and explore design strategies that may improve collaboration using the Professionalisation Wheel.

THEORETICAL IMPLICATIONS

This section discusses three theoretical insights from the findings that provide a better understanding of value-based conflicts, the coping process, and the effect of value-based conflicts on professional development.

Components of value-based conflicts in collaborative design practice

Chapter 4 highlights two components of value-based conflicts in collaborative practice: value differences and critical moments. Value differences emerge in collaborative design practice, as designers can perceive a value difference between two parties (van de Poel, 2009), when they weigh two values (Goldschmidt, 1995; Trimingham, 2008), or when they do not act according to their ideals (Clark, 1997; Dick and Dalmau, 2000) of pursuing their prioritised values in a design project. Further, value differences occur when extrinsic values oppose intrinsic values (Kasser and Ahuvia, 2002). However, two intrinsic values did not induce value-based conflicts, which may indicate that value-based conflicts in co-design are most likely induced by the extrinsic values of at least one of the parties involved.

Furthermore, value-based conflicts are situationally triggered, starting with a critical moment when a value difference becomes intolerable. The critical moment may include emotional coping or a quick situational appraisal (Skinner and Zimmer-Gembeck 2016). As expected, each conflict category identified critical moments oriented on others in the collaboration. Curiously, another type of critical moment was oriented on values related to self-awareness and identity development (e.g. ambition and acknowledgment). Thus, value-based conflicts in co-design comprise two types of critical moments related to collaboration (i.e. interpersonal skills) and identity development (i.e. intrapersonal skills). Hence, improving coping with value-based conflict should focus on collaborative development, increasing self-awareness, and building a professional identity.

Process of coping with value-based conflicts in collaborative design practice

Chapter 5 furnished a visualisation of the process of coping with value-based conflicts. Beyond components established in Chapter 4 such as value differences and collaborative actions, supplementary components determined were critical moments, reflecting on values, proactive coping in new contexts, and insights on professional development.

Chapter 2 assumed that the reflective practice of a design professional should include reflection on collaboration to improve coping with value-based conflicts. In Study One, reflection on collaboration proved to be practical, aiming at small changes within the current context. The findings show that designers become more skilled in reflection on collaboration through experience and self-development. Moreover, junior designers also reflect on their values to improve coping and acquire insights for their professional development. Reflection on values is a deeper, inward reflection that drives the professional development of designers (Dorst and Overveld, 2009).

When junior designers encounter somebody with opposing views in their collaborative work, taking a moment to reflect on and adjust their course of action to one that induces more productive outcomes is beneficial. If the value difference is a reoccurring issue or persists over an extended period, the designer usually confides in mentors, friends, or coaches. Seeking such support helps identify what is important to them as design professionals. Self-awareness is an excellent basis for proactive coping with value differences in a new context.

When comparing the coping process with learning models, a similar iterative process emerges. In Chapter 5, coping after reflection on collaboration showed similarities with *single-loop learning* aims to achieve existing leading values with new actions (Argyris and Schön, 1978). Coping after reflection on values showed similarities with *double-loop learning* of adapting and modifying prioritised values (Argyris and Schön ,1978). In Chapter 7, an educational approach that showed similarities with the learning cycle of Kolb (1984) was co-created. Study Two showed that acting out the coping actions in addition to reflecting on the value-based

conflicts helps designers learn. Designers develop themselves as professionals in an iterative cycle of acting, observing, reflecting, and learning (Kolb, 1984; Thieme and van Boeijen, 2011). This thesis highlighted the multitude of value differences junior designers may encounter and by internalising new ways of coping, the designer applies more effective coping actions and prevents disarray.

Professional development through learning from value-based conflicts

This thesis shared insights suggesting that experiencing value-based conflicts influences the professional development of junior designers. Initially, the pilot study showed that senior designers can cope better with value-based conflicts. The design literature endorsed this notion of skilful handling of value differences and conflicts by senior designers in collaborative practice (McDonnell, 2012; Le Bail, Baker, Détienne, 2020; Lloyd and Oak, 2018; Schön, 1983). Furthermore, in the professionalisation process, junior professionals acquire new values and frequently experience value differences (Maierhofer, Rafferty, and Kabanoff, 2003). Additionally, Study One revealed that senior designers were less frustrated by value-based conflicts, and junior designers learn from value-based conflicts. After reflection on collaboration or values, they learn to adapt their course of action, broaden their action repertoire, and improve their professional capabilities (see Chapter 5). Moreover, two conflict categories specifically concerned the professionalisation of a designer with underlying value differences, such as ambition versus enjoyment or achievement versus self-direction (i.e., creativity).

From the findings, it became clear that experiencing value-based conflicts early on in a junior designer's career can benefit their professional development. Junior designers become aware of their value priorities through such experiences. Those who reflect on their values after the value-based conflict can generate strategies to cope pro-actively and more effectively with value differences in a new context. Additionally, they may generate valuable insights for their professional development. The action research showed that junior designers can be trained to reflect on value-based conflicts and generate alternative coping strategies. Furthermore, immediate support and reflective talks guided by coaches reduce frustrations with junior designers.

EVALUATION OF SUPPORT TO IMPROVE COPING

This thesis aims to explore how junior designers can cope more effectively with value-based conflicts in collaborative practice, thereby supporting the facilitation of reflection on value-based conflicts and using the Professionalisation Wheel to improve coping. The following section evaluates the results.

Support to facilitate reflection on value-based conflicts

Study Two co-created support, an educational approach and a toolkit, to facilitate reflection on value-based conflicts. The former was co-created with junior design professionals and other relevant stakeholders in four contexts: a Bachelor's degree course in Industrial Design Engineering at THUAS, three Master's degree programmes at the Faculty of Industrial Design Engineering at Delft University of Technology, a training programme for professional designers at the Fundamentals Academy, and an online training programme on a social media platform. Thus, the support is validated in four different contexts with different target groups.

Moreover, the educational approach was evaluated with design requirements. During the action research, I implemented and tested parts of the approach in different contexts. Once the approach is implemented completely, it will be possible to evaluate and validate the approach entirely. Other universities with product design and architecture have shown interest in the approach, indicating its relevancy for a wider audience. Implementing the educational approach in various contexts (e.g. higher education and CPD) could train a new generation of junior designers to reflect on value-based conflicts.

The toolkit was co-created with junior designers, educators, expert designers and design researchers. In consultation with them, I validated the toolkit by evaluating it with design requirements from the three action research cycles. The theory on values in the literature and insights from Study One were incorporated into the supportive tools to raise awareness and train the ability to reflect on value-based conflicts. For example, the overview of value-based conflicts was employed in the book and learning materials. Additionally, the cases of value-based conflicts were used to

formulate exemplary cases used in the book, the card game, and learning materials. The coping mechanisms and process were explained in the book and learning materials.

Thus far, the impact of the toolkit is limited. The learning materials were shared with design educators and coaches. The card game was given to a hundred design students and junior design professionals. Thus, the participants and I collected feedback and suggestions to improve the tools for future usage. The tools can still be disseminated to a wider audience to increase their impact. Even though the toolkit is practical and easy to use in different contexts, it may take a while for it to reap its effects in collaborative design practice. Much time and effort are likely needed to promote the toolkit to reach its intended audience.

The Professionalisation Wheel to improve coping

The integral model—the Professionalisation Wheel—can help junior designers improve coping with value-based conflicts. In consultation with my supervisors, I employed theoretical and empirical insights from the literature and the two studies to develop the Professionalisation Wheel. The Professionalisation Wheel was developed iteratively by frequently consulting experts and design educators for their feedback. Yet, evaluation after application by the target groups and peer review are necessary to validate the model. Publishing the Professionalisation Wheel in a scientific article will allow other scholars to apply the model and critically reflect on it.

PRACTICAL IMPLICATIONS OF RESULTS

Implications for design education

THUAS has implemented the theory concerning values, value-based conflicts, and coping with value-based conflict in the industrial design engineering curriculum to raise awareness among first-year design students. Additionally, there are workshops for industrial design engineering Master's degree students at Delft University of Technology to train them to cope effectively with value-based conflicts. With the learning materials and guidelines for educators from the action research, institutions can next

focus on reaching out to design educators to offer such learning materials and tools and formulate guidelines for using the tools in their coaching work. Further, a seminar can give design educators practical instructions and guidance on embedding the insights in their curricula.

Current design education often undervalues the motivational factor of the personal values of design students. Design schools with an arts background may stimulate the exploration of personal values (Participant 3 from Study One). However, designers with an engineering background are often regarded as neutral facilitators (Manzini, 2016). This view of designers undermines the current need for transformative and meaningful innovations for which junior designers must attune their intrinsic values to cope with thought-provoking conflict productively and deliver valuable results. Moreover, extrinsic values trigger value-based conflicts. Therefore, design education must raise junior designers' awareness of intrinsic values and the potential conflict with extrinsic values to avoid frustration and burnout. The Professionalisation Wheel can serve as a blue print to structure educational support. Design educators should employ the objectives on the outer ring and prepare design students to reflect on value-based conflicts.

Finally, the findings show the value of visual reflection for junior designers. Unfortunately, even though visual reflection can be much more effective for understanding conflicts and learning how to cope with them, junior designers write their reflections in design schools. Thus, design education must employ visual reflection for junior designers to quickly map out the context, the parties involved, and their perspectives and create an overview to serve as boundary objects in coaching.

Implications for junior design professionals

Traineeships to develop professionals skills are common in other professions but rare in design practice (Meyer and Norman, 2020). Long-term career support is often unavailable in design education and industrial companies, particularly regarding interpersonal skills, such as conflict handling. The design profession has its roots in craftsmanship, and a craftsman teaches his apprentice everything about the craft for the apprentice to succeed him. Potentially, industrialisation shifted its focus to teaching engineering skills

and efficient design methods. Furthermore, mimicking apprenticeships may be too reminiscent of pre-modern times where they were hierarchical, with no room for critical reflection and individual expression (Nasseri and Wilson, 2017).

Fortunately, there is a rising trend in offering junior design professionals support in their careers. Alongside training for specific software programs, acquiring practical skills, and specialising, educators offer junior designers CPD programmes focussed on identity and interpersonal skills (e.g. Designer Identity programme from the action research). In such CPD programmes design educators and coaches can use the Professionalisation Wheel to help junior designers cope more effectively with value-based conflicts.

Notably, junior designers postpone seeking support or hesitate to tap from available coaches. Thus, the professional culture of designers requires an essential change. Junior designers need convincing that coaching and training in conflict-handling skills can improve their practice. Further, the experienced designers must help junior designers improve in coping with value-based conflicts.

Coaching professionals is a general growing trend. However, coaching and other types of career support for junior designers remains a niche to be further developed. This thesis describes value-based conflicts and coping mechanisms that are typical for junior designers and differ from what other professionals experience. Thus, it encourages junior designers to find coaches who understand their unique situations, as it provides a theoretical basis and practical guidelines for coaches to support junior designers. The coaches at universities and in CPD programmes can implement the insights and facilitate reflection on past and current value-based conflicts. The Professionalisation Wheel can be used as a structure to set up a complete career support system for junior designers. Finally, once junior designers are introduced to the Professionalisation Wheel, they can use the model for self-development.

Implications for collaborative design practice

Per study findings, the process of coping with value-based conflicts by junior designers in collaborative practice is now comprehensible, making it possible to develop an educational approach, support tools, and a Professionalisation Wheel for professional coping. My personal experience, preliminary studies, and the literature highlighted the conflict between meaningful design and commercial practice. However, by adopting a broad view the findings revealed more categories of value-based conflicts that designers may experience in their professional development. Thus, managers and HR departments of design firms should be aware that junior designers may struggle with different types of conflicts.

Further, a diverse set of values may influence co-design: economic worth, design ethics, and values related to personal worth, design priorities, personal priorities, work ethics, and intrinsic and extrinsic motivational drivers. The findings can support junior designers, whether regarding a clash between idealistic design values and commercial practice or any other value difference.

The HR departments of companies could encourage setting up traineeships, coaching, or apprenticeships to support junior designers in their transition from university to practice. The Professionalisation Wheel may again serve as an outline to structure a complete support system to improve coping with value-based conflicts.

Implications for society

In a capitalist society, most companies focus on profit. Thus, junior designers' desire to work on meaningful design can clash with generating profit for company survival, investments, and paying salaries. Thus, junior designers need help in handling such conflicts to pursue their values in meaningful design work.

Despite the increase in climate change awareness and the desire for businesses to invest in meaningful design, value-based conflicts remain. For example, climate change is denied by many (influential) people worldwide (Schrear and Devlin, 2021). Research

and sustainability agendas are often heavily critiqued. In 2020, when the World Economic Forum announced the need for a major reset to achieve big climate goals (World Economic Forum, 2021), a countermovement emerged, as people believed it to be an attempt by powerful people to take away civil liberties (BBC Monitoring and BBC Reality Check, 2021). Thus, though meaningful design is growing in popularity, people may distrust innovation and resist consequences. Hence, designers must be aware of such consequences and opposing views that may induce value-based conflicts.

LIMITATIONS AND SUGGESTIONS FOR FURTHER RESEARCH

This section proposes suggestions for further research on value-based conflicts, other actors' points of view, the value differences, and the application of the Professionalisation Wheel in other contexts against the limitations of the study.

Study One employed open, retrospective interviews and generated an overview of value-based conflicts, which can be used to survey the most frequently experienced value-based conflicts and applied coping strategies. Furthermore, both studies revealed multiple value differences and value-based conflicts that may arise in critical moments or people perceive the conflict differently. However, such phenomena were not explored in-depth, which will be worthwhile for further examinations. With the value-based conflict overview, future studies can identify value differences and value-based conflicts and collect more in-depth material through observations, direct interviews, and multiple-informant interviews to understand interactions between different actors in a conflict situation

Additionally, Study One found value-based conflicts induced by opposing (intrinsic versus extrinsic) and competing (two or more extrinsic) values. Two or more intrinsic values exhibited no such difference. Notably, this study merely assumes intrinsic values are congruent with one another and as such may not result in a value-based conflict. Thus, future in-depth studies can attempt to support this notion.

Study Two observed multiple conflicts with the knowledge gained from Study One and gathered information from multiple informants. Accordingly, how junior designers cope with value-based conflicts differs per person. Additionally, how designers perceive and respond to a value-based conflict may likewise differ. Four junior designers apply four different ways of handling the same situation; for only one person, this situation evolved into a significant value-based conflict. The reason for such a situation to occur is absent in this study. Hence, further research can explore the reasons for this difference in perception of and ways of coping with value-based conflicts.

Moreover, both studies gathered data from designers' perspectives to help them cope with the value differences and value-based conflicts they perceive in collaborative practice. Study Two gathered data from the perspectives of coaches, educators, and students. However, despite observations of conflicts with clients and other stakeholders, neither study explored the perspectives of clients and other stakeholders. Thus, future research can explore the perspective of other professionals in the process, such as specialists, marketers, engineers, mentors, or managers.

Evidently, designers face challenges in promoting their capabilities, as they felt their skills and contributions were undervalued or unacknowledged. This unexplained observation gives scope for future studies to investigate them and find ways to help junior designers feel more confident of their contributions.

Finally, this study was situated in the Netherlands, with Dutch and international participants. Thus, further research can investigate other contexts, compare homogeneous groups from specific cultures, or explore group training for design agencies and departments. Additionally, researchers can study the different needs of designers in other creative professions (graphic design versus architecture) or specific gender or social groups. Further, researchers can investigate whether the Professionalisation Wheel applies to other professions, such as engineers or care workers. This study advocates for educators, coaches, and academics to use and verify the tools in their practice. Finally, in addition to the findings, supplementary tools can be developed to expand the toolkit.

REFLECTIONS

Reflections on the research

I would like to reflect first on the research approaches (grounded theory and action research) and then the roles. The grounded theory approach for Study One helped to generate a broad overview of value differences and value-based conflicts, yielding several components of coping and 11 coping mechanisms. One of my supervisors advised me to stay attuned to my curiosity. In retrospect, this helped me to gather the main concerns of the participants in the open interviews. The grounded theory approach helped identify value differences underlying participants' concerns and experiences. Even in uncertain cases of conflicts that participants shared, it was possible to identify value-based conflicts. The grounded theory approach helped gather such cases without prior judgment. Beyond the open-interview methodology, I applied ethnographic interview skills with the research questions in mind. The grounded theory analysis identified value differences underlying cases experienced internally and implicitly or less dramatic conflicts like discussions and disagreements. Furthermore, it helped find unexpected conflict categories in the professional development of junior designers.

For Study Two, I employed action research to develop support for conflict intervention and facilitate reflection on value-based conflicts. As a designer and researcher, I could be creative in developing an educational approach and supportive tools. Further, I was flexible in adapting actions to changing circumstances during the project. I learned that carefully planned actions can be cancelled, and improvisations are necessary. Being pragmatic and flexible as an action researcher helped me to generate improvised actions to test the educational approach in an online training programme.

I would like to reflect on my two roles in the action research. I felt my roles as a coach and a researcher clashed. At the Fundamentals Academy, I sometimes felt like an observant outsider rather than an involved coach. As a researcher, I gathered data, tried out interventions, and tested prototypes, whereas, as a coach, I was expected to teach and train. Perhaps, this feeling emerged because I was introduced as a researcher when I first met the trainees. Additionally, when

I received feedback, I was sometimes too focussed on data gathering and not on the best learning outcomes. In the other contexts where I was a lecturer, the feeling was the opposite and my focus was on teaching resulting in less structured and rigorous data collection. As an action researcher, I learned that the purpose of each role may compete with each other. Additionally, the participants should know that they are involved in research for ethical reasons. However, once they know research actions could distract them leading to unfavourable results. Research actions should aim to improve or support their practice alongside collecting data for the research.

A final point for reflection is on the "autonomy" value. In Study Two, it conflicted with the participatory aspect of the research where collaboration and participation were important. There were a few moments when I deviated from the participatory approach. During such moments, I made decisions for actions and prototypes based on my insights and experiences as an educator and entrepreneur. I was aware of my inclination to work independently; thus, I actively involved the participants weekly. In the three cycles, I involved junior designers and design students in co-creating the support tools and educators in developing educational materials. During my reflection on the action research, I realised I could have connected better with the design coaches and been responsive to their needs. I corrected this by involving educators and coaches in developing the educational approach, the support tools, and the Professionalisation Wheel with other career coaches. Additionally, as a researcher, I could analyse and integrate the results of different studies into the Professionalisation Wheel to create an integrated model to implement the support system in other contexts. Ultimately, what I appreciate the most, as per my values, is that the toolkit and the model are tangible and can be used independently by junior designers.

Reflections on my practice

This thesis began with my personal experiences as a junior designer in collaborative design practice. Among professional designers and design students, I had observed challenges in interacting with stakeholders when value-based conflicts emerged. I experienced these conflicts because, as an adolescent, I decided I wanted to change industrial design from a wasteful profession to one that was more sustainable and future-oriented. At that time the design school promoted an ethical, empathetic, and neutral stance in design

projects. However, I was far from neutral and determined to learn about topics like eco-design, sustainable design, and cradle-to-cradle. I graduated with ideas for photovoltaic energy in consumer products and a new design method to explore sustainable technologies and find product applications. With that background and motivation to change the design world, a value-based conflict was inevitable.

Indeed, in my early working years, there was a value difference between my intrinsic motivation to pursue sustainable innovation (design ethics and intrinsic motivation) and making a living as a freelance designer (personal priority). From the findings, I learned that I experienced an internal conflict belonging to the perfectionistic designer struggles category.

Given the two studies, I can reflect effectively on the value-based conflict I experienced as a junior designer. Initially, I approached the conflict quite pragmatically. Eventually, though, it became frustrating. I was unaware of my value-based conflict, and there were no support tools. I sought help from friends, mentors, and like-minded designers. I also participated in CPD for engineers, though the participants were unfamiliar with my issues. Therefore, they could not facilitate my reflection on the value-based conflict, and I could not immediately cope. After a couple of years, I found a way to cope. In a small book about applying for jobs, I found exercises to identify my core values, which helped me understand my frustration. I changed my career path and switched to academia, where I could pursue my values without conflict, as I could teach students about sustainability. Becoming a lecturer in Industrial Design Engineering at THUAS was joyful, as the design programme had responsible and future-oriented design as its core values.

Recently, I experienced a key value-based conflict. My Ph.D. research gave me a different perspective on my work as a design lecturer. With this study, I aimed to help junior designers and set up a support system beyond the scope of the study programme. I considered collaborating with a colleague, but I could not figure out why our conversations made me anxious and unhappy. Eventually, I recognised that my values competed with hers, which enlightened the situation. This highlights the challenge to recognise value-based conflicts. Only after conversations with a mediator did I fully understand the conflict and was able to act upon it.

REFERENCES

Adams, R. S., Forin, T., Chua, M., & Radcliffe, D. (2016). Characterizing the work of coaching during design reviews. *Design Studies*, *45*, 30–67. https://doi.org/10.1016/j.destud.2015.12.007

Adams, R. S., Daly, S. R., Mann, L. M., & Dall'Alba, G. (2011). Being a professional: Three lenses into design thinking, acting, and being. *Design Studies*, *32*(6), 588–607. https://doi.org/10.1016/j.destud.2011.07.004

Ahmed, S., Wallace, K. M., & Blessing, L. T. (2003). Understanding the differences between how novice and experienced designers approach design tasks. *Research in Engineering Design*, *14*, 1–11. https://doi.org/10.1007/s00163-002-0023-z

Akkerman, S. F., & Bakker, A. (2011). Boundary crossing and boundary objects. *Review of Educational Research*, *81*(1), 132–169. https://doi.org/10.3102/0034654311404435

Allee, V. (2008). Value network analysis and value conversion of tangible and intangible assets. *Journal of Intellectual Capital*, *9*(1), 5–24. https://doi.org/10.1108/14691930810845777

Argyris, C. (1957). *Personality and organization: The conflict between system and the individual*. Harper & Brothers.

Argyris, C., & Schön, D. A. (1978). *Organizational learning: A theory of action approach*. Addison Wesley.

Arieli, S., Sagiv, L., & Roccas, S. (2020). Values at work: The impact of personal values in organisations. *Applied Psychology*, *69*(2), 230–275. https://doi.org/10.1111/apps.12181

Arnold, L. (2002). Assessing professional behavior: yesterday, today, and tomorrow. *Academic Medicine*, *77*(6), 502–515.

Badke-Schaub, P., & Frankenberger, E. (1999). Analysis of design projects. *Design Studies*, *20*(5), 465–480. https://doi.org/10.1016/S0142-694X(99)00017-4

Baha, E., Dawdy, G., Sturkenboom, N., Price, R., & Snelders, D. (2018). Good design-driven innovation. In C. Storni, K. Leahy, M. McMahon, P. Lloyd, & E. Bohemia (Eds.), *Design as a catalyst for change - DRS International Conference 2018*, 98–111. Design Research Society 2018. https://doi.org/10.21606/drs.2018.648

Baker, M. J. (2016). The negotiation of meaning in epistemic situations. *International Journal of Artificial Intelligence in Education*, *26*(1), 133–149. https://doi.org/10.1007/s40593-015-0050-3

Ball, L. J., Ormerod, T. C., & Morley, N. J. (2004). Spontaneous analogising in engineering design: a comparative analysis of experts and novices. *Design Studies*, *25*(5), 495–508. https://doi.org/10.1016/j.destud.2004.05.004

Banks, M., Gill, R., & Taylor, S. (2013). *Theorizing cultural work: Labour, continuity and change in the cultural and creative industries*. Routledge.

Barki, H., & Hartwick, J. (2004). Conceptualizing the construct of interpersonal conflict. *International Journal of Conflict Management*, *15*(3), 216–244. https://doi.org/10.1108/eb022913

BBC Monitoring and BBC Reality Check (2021, June 24). *What is the Great Reset – and how did it get hijacked by conspiracy theories?* BBC News. https://www.bbc.com/news/blogs-trending-57532368

Benton, S., Miller, S., & Reid, S. (2018, June 26). *Design Economy 2018*. Design Council. https://www.designcouncil.org.uk/our-work/skills-learning/resources/design-economy-2018/

Bergema, K., Kleinsmann, M., de Bont, C., & Valkenburg, R. (2011). Exploring collaboration in a networked innovation project in industry. In S. J. Culley, B. J. Hicks, & T. C. McAloone (Eds.), *Proceedings of the 18th International Conference on Engineering Design (ICED 11), Impacting Society through Engineering Design, Vol. 3: Design Organisation and Management*, 211–220.

Bertaux, D., & Kohli, M. (1984). The life story approach: A continental view. *Annual Review of Sociology*, *10*, 215–237. http://www.jstor.org/stable/2083174.

Björklund, T. A., Keipi, T., & Maula, H. (2020). Crafters, explorers, innovators, and co-creators: Narratives in designers' identity work. *Design Studies*, *68*, 82–112. https://doi.org/10.1016/j.destud.2020.02.003

Bleek, W. (1987). Lying informants: A fieldwork experience from Ghana. *Population and Development Review*, *13*(2), 314–322. https://www.jstor.org/stable/1973196%0AJSTOR

Blessing, L. T. M., & Chakrabarti, A. (2009). *DRM, a design research methodology*. Springer.

Bocken, N., Short, S., Rana, P., & Evans, S. (2013). A value mapping tool for sustainable business modelling. *Corporate Governance*, *13*(5), 482–497. https://doi.org/10.1108/CG-06-2013-0078

Bonsiepe, G. (1999). *Interface: An approach to design*. Jan van Eyck Akademie, Department of Design.

Boradkar, P. (2010). *Designing things: A critical introduction to the culture of objects*. Berg.

Bos-de Vos, M. (2018). *Open for business: Project-specific value capture strategies of architectural firms*. (Publication No. 13) [Doctoral dissertation, Delft University of Technology] https://doi.org/10.7480/abe.2018.13.2399. A+BE | Architecture and the Build Environment

Bouckenooghe, D., Buelens, M., Fontaine, J., & Vanderheyden, K. (2005). The prediction of stress by values and value conflict. *The Journal of Psychology*, *139*(4), 369–384. https://doi.org/10.3200/JRLP.139.4.369-384

Boztepe, S. (2007). Toward a framework of product development for global markets: A user-value-based approach. *Design Studies*, *28*(5), 513–533. https://doi.org/10.1016/j.destud.2007.02.010

Bradbury Huang, H. (2010). What is good action research?: Why the resurgent interest? *Action Research*, *8*(1), 93–109. https://doi.org/10.1177/1476750310362435

Brand, W. (2018). *Visual doing*. BIS Publishers.

Brandt, E. (2006). Designing exploratory design games: A framework for participation in participatory design? *Proceedings of the 9th Conference on Participatory Design: Expanding Boundaries in Design, PDC 2006*, 57–66. https://doi.org/10.1145/1147261.1147271

Briggs, C. L. (1984). Learning how to ask: Native metacommunicative competence and the incompetence of fieldworkers. *Language in Society*, *13*(1), 1–28. https://doi.org/10.1017/S0047404500015876

Broadbent, G. (1984). Design and theory building. In N. Cross (Ed.), *Developments in Design Methodology* (pp. 277–290). John Wiley & Sons.

Brouillette, S. (2013). Cultural work and antisocial psychology. In M. Banks, R. Gill, & S. Taylor (Eds.), *Theorizing Cultural Work: Labor, Continuity and Change in the Cultural and Creative Industries* (pp. 30–43). Routledge.

Carlile, P. R. (2002). A pragmatic view of knowledge and boundaries: Boundary objects in new product development. *Organization Science*, *13*(4), 355–457. https://doi.org/10.1287/orsc.13.4.442.2953

Carvalho, L., Dong, A., & Maton, K. (2009). Legitimating design: A sociology of knowledge account of the field. *Design Studies*, *30*(5), 483–502. https://doi.org/10.1016/j.destud.2008.11.005

Casakin, H., & Goldschmidt, G. (1999). Expertise and the use of visual analogy: Implications for design education. *Design Studies*, *20*(2), 153–175. https://doi.org/10.1016/S0142-694X(98)00032-5

Chan, J. K. H. (2018). Design ethics: Reflecting on the ethical dimensions of technology, sustainability, and responsibility in the Anthropocene. *Design Studies*, *54*, 184–200. https://doi.org/10.1016/j.destud.2017.09.005

Chiaradia, A. J. F. F., Sieh, L., & Plimmer, F. (2017). Values in urban design: A design studio teaching approach. *Design Studies*, *49*, 66–100. https://doi.org/10.1016/j.destud.2016.10.002

Clark, P. G. (1997). Values in health care professional socialization: Implications for geriatric education in interdisciplinary teamwork. *The Gerontologist*, *37*(4), 441–451. https://doi.org/10.1093/geront/37.4.441

Cockton, G. (2006). Designing worth is worth designing. *ACM International Conference Proceeding Series*, *189*(October), 165–174. https://doi.org/10.1145/1182475.1182493

Cooper-Thomas, H. D., Paterson, N. L., Stadler, M. J., & Saks, A. M. (2014). The relative importance of proactive behaviors and outcomes for predicting newcomer learning, well-being, and work engagement. *Vocational Behavior*, *84*(3), 318–331. https://doi.org/10.1016/j.jvb.2014.02.007

Coyne, I. T. (1997). Sampling in qualitative research. Purposeful and theoretical sampling; merging or clear boundaries? *Journal of Advanced Nursing*, *26*(3), 623–630. https://doi.org/10.1046/j.1365-2648.1997.t01-25-00999.x

Creswell, J. W. (2003). *Research design: Qualitative, quantitative and mixed methods approaches* (second edition). Sage Publications.

Crilly, N., Blackwell, A. F., & Clarkson, P. J. (2006). Graphic elicitation: Using research diagrams as interview stimuli. *Qualitative Research*, *6*(3), 341–366. https://doi.org/10.1177/1468794106065007

Cross, N. (2001). Designerly ways of knowing: Design discipline versus design science. *Design Issues*, *17*(3), 49–55. https://doi.org/10.1162/074793601750357196

Cross, N. (1982). Designerly ways of knowing. *Design Studies*, *3*(4), 221–227.

Cross, N. (1995). Discovering design ability. In R. Buchanan & V. Margolin (Eds.), *Discovering Design* (pp. 105–121). University of Chicago Press.

Cross, N., & Cross, A. C. (1996). Winning by design: The methods of Gordon Murray, racing car designer. *Design Studies*, *17*(1), 91–107. https://doi.org/10.1016/0142-694X(95)00027-O

Crouch, C., & Pearce, J. (2012). *Doing research in design*. Berg.

Dall'Alba, G., & Sandberg, J. (2006). Unveiling professional development: A critical review of stage models. *Review of Educational Research*, *76*(3), 383–412. https://doi.org/10.3102/00346543076003383

De Dreu, C. K. W. (2006). When too little or too much hurts: Evidence for a curvilinear relationship between task conflict and innovation in teams. *Journal of Management*, *32*(1), 83–107. https://doi.org/10.1177/0149206305277795

de Graaf, G., Huberts, L., & Smulders, R. (2016). Coping with public value conflicts. *Administration and Society*, *48*(9), 1101–1127. https://doi.org/10.1177/0095399714532273

De Lille, C. (2014). *UCD4SME: Small to Medium-sized Enterprises involving their users and clients for product innovation*. [Doctoral dissertation, University of Technology]. Institutional Repository. https://doi.org/10.4233/uuid:4b5de062-16d4-4ab7-af7b-78078432d374

den Ouden, E. (2012). *Innovation design: Creating value for people, organizations and society* (Issue Book, Whole). Springer. https://doi.org/10.1007/978-1-4471-2268-5

Détienne, F., Baker, M., & Burkhardt, J. M. (2012). Quality of collaboration in design meetings: Methodological reflexions. *CoDesign*, *8*(4), 247–261. https://doi.org/10.1080/15710882.2012.729063

Dick, B., & Dalmau, T. (2000). Argyris and Schön: Some elements of their models. http://www.uq.net.au/action_research/as/argyris2.html

Dorst, K. (2019). Design beyond design. *She Ji*, *5*(2), 117–127. https://doi.org/10.1016/j.sheji.2019.05.001

Dorst, K., & van Overveld, K. (2009). Typologies of design practice. In Meijers, A. (Ed.) *Handbook of the Philosophy of Science, Philosophy of Technology and Engineering Sciences* (pp.455-487). North Holland. https://doi.org/10.1016/B978-0-444-51667-1.50021-5

Duffy, R. D., & Dik, B. J. (2013). *Research on calling: What have we learned and where are we going? Journal Article*, 428–436. https://doi.org/10.1016/j.jvb.2013.06.006

European Commission, Directorate-General for Research and Innovation, (2013). Options for strengthening responsible research and innovation : report of the Expert Group on the State of Art in Europe on Responsible Research and Innovation, Publications Office. https://data.europa.eu/doi/10.2777/46253

Farh, J.-L., Lee, C., & Farh, C. I. C. (2010). Task conflict and team creativity: A question of how much and when. *Journal of Applied Psychology*, *95*(6), 1173-1180. https://doi.org/10.1037/a0020015

Feast, L. (2012). Professional perspectives on collaborative design work. *CoDesign*, *8*(4), 215–230. https://doi.org/10.1080/15710882.2012.734828

Fitzpatrick, R.L. (2007). A literature review exploring values alignment as a proactive approach to conflict management. *International Journal of Conflict Management*, *18*(3), 280–305. https://doi.org/10.1108/10444060710826007

Fleischmann, K. R., Wallace, W. A., & Grimes, J. M. (2011). How values can reduce conflicts in the design process: Results from a multi-site mixed-method field study. *Proceedings of the ASIST Annual Meeting*, *48*(1), 1-10. https://doi.org/10.1002/meet.2011.14504801147

Friedman, B., & Hendry, D. G. (2012). The envisioning cards: A toolkit for catalyzing humanistic and technical imaginations. *CHI'12: Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, 1145–1148. https://doi.org/10.1145/2207676.2208562

Friedman, B., Kahn, P. H., Borning, A., & Huldtgren, A. (2013). Value Sensitive Design and Information Systems. In Doorn, N., D. Schuurbiers, I. van de Poel, & M. Gorman (Eds.), *Human-computer interaction in management information systems: Opening up the laboratory. Philosophy of Engineering and Technology* (Vol. 16, pp. 55–95). Springer. https://doi.org/10.1007/978-94-007-7844-3_4

Frydenberg, E. (2017). *Coping and the challenge of resilience*. Palgrave Macmillan. https://doi.org/10.1057/978-1-137-56924-0

Glaser, B. G., & Holton, J. (2004). Remodeling grounded theory. *Forum: Qualitative Social Research*, *5*(2). https://doi.org/10.17169/fqs-5.2.607

Glassman, M., & Erdem, G. (2014). Participatory action research and its meanings: Vivencia, praxis, conscientization. *Adult Education Quarterly*, *64*(3), 206–221. https://doi.org/10.1177/0741713614523667

Goldschmidt, G. (1995). The designer as a team of one. *Design Studies*, *16*(2), 189–209. https://doi.org/10.1016/0142-694X(94)00009-3

Gregg, A. P., Sedikides, C., & Gebauer, J. E. (2011). Dynamics of identity: Between self-enhancement and self-assessment. In S. J. Schwartz, K. Luyckx, & V. L. Vignoles (Eds.), *Handbook of identity theory and research* (pp. 305–328). Springer, New York. https://doi.org/10.1007/978-1-4419-7988-9_14

Halloran, J., Hornecker, E., Stringer, M., Harris, E., & Fitzpatrick, G. (2009). The value of values: Resourcing co-design of ubiquitous computing. *CoDesign*, *5*(4), 245–273. https://doi.org/10.1080/15710880902920960

Hekkert, P. (2020, January 10). *The beauty of doing the right thing* [DIES lecture]. Dies Natalis, Delft University of Technology. https://d1rkab7tlqy5f1.cloudfront.net/News/2020/01_Januari/DIES 2020 speech Paul Hekkert.pdf

Heylighen, A., & Dong, A. (2019). To empathise or not to empathise? Empathy and its limits in design. *Design Studies*, *65*, 107–124. https://doi.org/10.1016/j.destud.2019.10.007

Iversen, O. S., Halskov, K., & Leong, T. W. (2012). Values-led participatory design. *CoDesign*, *8*(2–3), 87–103. https://doi.org/10.1080/15710882.2012.672575

JafariNaimi, N., Nathan, L., & Hargraves, I. (2015). Values as hypotheses: Design, inquiry, and the service of values. *Design Issues*, *31*(4), 91–104. https://doi.org/10.1162/DESI_a_00354

Jehn, K. A. (1995). A multimethod examination of the benefits and detriments of intragroup conflict. *Adm.Sci.Q.*, *Journal Article*, 256–282. https://doi.org/10.2307/2393638

Jehn, K. A., Chadwick, C., & Thatcher, S. M. B. (1997). To agree or not to agree: The effects of value congruence, individual demographic dissimilarity, and conflict on workgroup outcomes. *International Journal of Conflict Management*, *8*(4), 287–305. https://doi.org/10.1108/eb022799

Jonkmans, A., Wurl, J., Snelders, D., & van Onselen, L. (2016). Junior designers' awareness of personal values and their employment choices. In P. Lloyd & E. Bohemia (Eds.), *Future Focused Thinking - DRS International Conference 2016*. https://doi.org/10.21606/drs.2016.115

Joore, P. (2018). *Applied design research as catalyst of change*. https://www.nadr.nl/portfolio_page/applied-design-research-as-catalyst-of-change-2/

Judge, T. A., Thoresen, C. J., Bono, J. E., & Patton, G. K. (2001). The job satisfaction–job performance relationship: A qualitative and quantitative review. *Psychological Bulletin Bulletin*, *127*(3), 376–407. https://doi.org/10.1037/0033-2909.127.3.376

Julier, G. (2017). *Economies of design*. Sage.

Kaland, L., Vernooij, A., & van Onselen, L. (2016). Project contribution of junior designers: Exploring the what and the how of values in collaborative practice. In P. Lloyd & E. Bohemia (Eds.), *Future Focused Thinking - DRS International Conference 2016*. https://doi.org/10.21606/drs.2016.88

Kasser, T., & Ahuvia, A. (2002). Materialistic values and well-being in business students. *European Journal of Social Psychology*, *32*(1), 137–146. https://doi.org/10.1002/ejsp.85

Kheirandish, S., Funk, M., Wensveen, S., Verkerk, M., & Rauterberg, M. (2020). HuValue: A tool to support design students in considering human values in their design. *International Journal of Technology and Design Education*, *30*, 1015–1041. https://doi.org/10.1007/s10798-019-09527-3

Kleinsmann, M. S. (2006). *Understanding collaborative design*. [Doctoral dissertation, Delft University of Technology]. Instutional Repository. http://resolver.tudelft.nl/uuid:0a7a57d4-c846-4458-a59f-24c25acbafa9

Kleinsmann, M., Deken, F., Dong, A., & Lauche, K. (2012). Development of design collaboration skills. *Journal of Engineering Design*, *23*(7), 485–506. https://doi.org/10.1080/09544828.2011.619499

Knight-Turvey, N., & Maierhofer, N. I. (2005). Person-organisation fit and employee proactivity: Do shared values matter? In D. Davies, G. Fisher, & R. Hughes (Eds.), *Engaging the Multiple Contexts of Management: Convergence and Divergence of Management Theory and Practice: Pro- ceedings of the 19th ANZAM Conference*.

Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development. Prentice*-Hall.

Kosonen, K. (2018). *Finding one's own way in design* [Aalto University School of Arts]. http://urn.fi/URN:ISBN:978-952-60-7946-2

Kosonen, K., & Mäkelä, M. (2012). Designing platform for exploring and reflecting on creative process. *Procedia - Social and Behavioral Sciences*, *45*, 227–238. https://doi.org/10.1016/j.sbspro.2012.06.559

Kouprie, M., & Visser, F. S. (2009). A framework for empathy in design: Stepping into and out of the user's life. *Journal of Engineering Design*, *20*(5), 437–448. https://doi.org/10.1080/09544820902875033

Lawson, B., & Dorst, K. (2009). *Design expertise*. Routledge.

Le Bail, C., Baker, M., & Détienne, F. (2020). Values and argumentation in collaborative design. *CoDesign*, *18*(2), 165–185. https://doi.org/10.1080/15710882.2020.1782437

Le Dantec, C. A., & Do, E. Y.-L. (2009). The mechanisms of value transfer in design meetings. *Design Studies*, *30*(2), 119–137. https://doi.org/10.1016/j.destud.2008.12.002

Lekes, N., Hope, N. H., Gouveia, L., Koestner, R., & Philippe, F. L. (2012). Influencing value priorities and increasing well-being: The effects of reflecting on intrinsic values. *Journal of Positive Psychology*, *7*(3), 249–261. https://doi.org/10.1080/17439760.2012.677468

Liu, A. M. M., & Leung, M. Y. (2002). Developing a soft value management model. *International Journal of Project Management, 20(5), 341-349*. https://doi.org/10.1016/S0263-7863(01)00023-0

Lloyd, P. (2009). Ethical imagination and design. *Design Studies*, *30*(2), 154–168. https://doi.org/10.1016/j.destud.2008.12.004

Lloyd, P., & Oak, A. (2018). Cracking open co-creation: Categories, stories, and value tension in a collaborative design process. *Design Studies*, *57*, 93–111. https://doi.org/10.1016/j.destud.2018.02.003

Maier, A. M., & Kleinsmann, M. (2013). Studying and supporting design communication. *Artificial Intelligence for Engineering Design, Analysis and Manufacturing*, *27*(2), 87–90. https://doi.org/10.1017/S0890060413000139

Maierhofer, N. I., Kabanoff, B., & Griffin, M. A. (2002). The influence of values in organizations: Linking values and outcomes at multiple levels of analysis. In C. L. Cooper & I. T. Robertson (Eds.), *International Review of Industrial and Organizational Psychology 2002* (pp. 217–264). John Wiley & Sons.

Maierhofer, N. I., Rafferty, A. E., & Kabanoff, B. (2003). When and why are values important in organizations. In D. Teine, S. Gilliland, & D. Skarlicki (Eds.), *Emerging perspectives on values in organizations* (pp. 3–32). Information Age Publishing Inc.

Malle, B. F. (2004). *How the mind explains behavior: Folk explanations, meaning, and social interaction*. MIT press.

Manders-Huits, N. (2011). What values in design? The challenge of incorporating moral values into design. *Science and Engineering Ethics*, *17*, 271–287. https://doi.org/10.1007/s11948-010-9198-2

Manzini, E. (2016). Design culture and dialogic design. *Design Issues*, *32*(1), 52–59. https://doi.org/10.1162/DESI_a_00364

McCuen, R. H., & Gilroy, K. L. (2011). *Ethics and professionalism in engineering*. Broadview Press.

McDonnell, J. (2012). Accommodating disagreement: A study of effective design collaboration. *Design Studies*, *33*(1), 44–63. https://doi.org/10.1016/j.destud.2011.05.003

McDonnell, J. (2015). Gifts to the future: Design reasoning, design research, and critical design practitioners. *She Ji*, *1*(2), 107–117. https://doi.org/10.1016/j.sheji.2016.01.007

McDonnell, J. (2016). McDonnell, J. (2016). Scaffolding practices: A study of design practitioner engagement in design education. *Design studies*, 45, 9-29. https://doi.org/10.1016/j.destud.2015.12.006

McDonnell, J., Lloyd, P., & Valkenburg, R. C. (2004). Developing design expertise through the construction of video stories. *Design Studies*, *25*(5), 509–525. https://doi.org/10.1016/j.destud.2004.05.005

Meyer, M. W., & Norman, D. (2020). Changing design education for the 21st century. *She Ji*, *6*(1), 13–49. https://doi.org/10.1016/j.sheji.2019.12.002

Miles, M., & Huberman, M. (1992). *Qualitative data analysis: An expanded sourcebook* (second edition). Sage.

Monnot, M. J., & Beehr, T. A. (2014). Subjective well-being at work: Disentangling source effects of stress and support on enthusiasm, contentment, and meaningfulness. *Vocational Behavior*, *85*(2), 204–218. https://doi.org/10.1016/j.jvb.2014.07.005

Moon, J. A. (1999). *Reflection in learning & professional development*. Kogan Page Limited.

Muratovski, G. (2016). *Research for designers: A guide to methods and practice*. Sage Publications.

Nasseri, M., & Wilson, S. (2017). A reflection on learning crafts as a practice for self-development. *Reflective Practice*, *18*(2), 194–205. https://doi.org/10.1080/14623943.2016.1265495

Nelson, H. G., & Stolterman, E. (2012). *The design way: Intentional change in an unpredictable world*. The MIT Press.

Pei, E., Campbell, I. R., & Evans, M. A. (2010). Development of a tool for building shared representations among industrial designers and engineering designers. *CoDesign*, *6*(3), 139–166. https://doi.org/10.1080/15710882.2010.510197

Pink, D. H. (2008). *A whole new mind: Why right-brainers will rule the future*. Marshall Cavendish International.

Posner, B. Z. (2010). Another look at the impact of personal and organizational values congruency. *Journal of Business Ethics*, *97*, 535–541. https://doi.org/10.1007/s10551-010-0530-1

Price, R., Wrigley, C., & Matthews, J. (2021). Action researcher to design innovation catalyst. *Action Research*, *19*(2), 318–337. https://doi.org/10.1177/1476750318781221

Ricoeur, P. (1994). *Onself as Another* (K. Blamey, Trans.). The University of Chicago Press. (Original work published 1990).

Rivard, L., Lehoux, P., & Hagemeister, N. (2021). Articulating care and responsibility in design: A study on the reasoning processes guiding health innovators' 'care-making' practices. *Design Studies*, *72*. https://doi.org/10.1016/j.destud.2020.100986

Rokeach, M. (1968). *Beliefs, attitudes and values: A theory of organization and change*. Jossey-Bass Publishers.

Rothkegel, D. (2012). Innovation in large organizations: A matter of value and belief? In P. Israsena, J. Tangsantikul, & D. Durling (Eds.), *Research: Uncertainty Contradiction Value - DRS International Conference 2012* (pp. 1617–1628). https://dl.designresearchsociety.org/drs-conference- papers/drs2012/researchpapers/119

Roy, R., & Warren, J. P. (2019). Card-based design tools: A review and analysis of 155 card decks for designers and designing. *Design Studies*, *63*, 125–154. https://doi.org/10.1016/j.destud.2019.04.002

Rygh, K. (2013). Value Pursuit: explanation of workshop tool. In K. Rygh (Ed.), *Value Pursuit* (pp. 19–26). Design Academy Eindhoven.

Sagiv, L., & Schwartz, S. H. (2000). Value priorities and subjective well-being: Direct relations and congruity effects. In *European Journal of Social Psychology* (Vol. 30, Issue 2). https://doi.org/10.1002/(SICI)1099-0992(200003/04)30:2<177::AID-EJSP982>3.0.CO;2-Z

Saldaña, J. (2009). *The coding manual for qualitative researchers*. Sage.

Sanders, E. B.-N., & Stappers, P. J. (2012). *Convivial toolbox: Generative research for the front end of design*. BIS Publishers.

Saundry, R. (2016). Conceptualizing workplace conflict and conflict management. In R. Saundry, P. Latreille, & I. Ashman (Eds.), *Reframing Resolution* (pp. 13–33). Palgrave Macmillan. https://doi.org/10.1057/978-1-137-51560-5_2

Schoffelen, J., Claes, S., Huybrechts, L., Martens, S., Chua, A., & Moere, A. Vande. (2015). Visualising things. Perspectives on how to make things public through visualisation. *CoDesign*, *11*(3–4), 179–192. https://doi.org/10.1080/15710882.2015.1081240

Schön, D. A. (1983). *The reflective practitioner: How professionals think in action*. Routledge.

Schraer, R. & Devlin, K. (2021, November 17). *COP26: The truth behind the new climate change denial.* BBC News. https://www.bbc.com/news/science-environment-59251912

Schwartz, S. H. (2017). The refined theory of basic values. In S. Roccas & L. Sagiv (Eds.), *Values and Behavior* (pp. 51–72). Springer, Cham. https://doi.org/10.1007/978-3-319-56352-7_3

Schwartz, S. H., Lönnqvist, J.-E., Beierlein, C., Ramos, A., Cieciuch, J., Davidov, E., Vecchione, M., Verkasalo, M., Konty, M., Fischer, R., Dirilen-Gumus, O., & Demirutku, K. (2012). Refining the theory of basic individual values. *Journal of Personality and Social Psychology*, *103*(4), 663–688. https://doi.org/10.1037/a0029393

Schwartz, S. H., & Sortheix, F. M. (2018). Values and subjective well-being. In E. Diener, S. Oishi, & L. Tay (Eds.), *Handbook of well-being*. DEF Publishers. http://www.nobascholar.com/chapters/51%0D

Sennett, R. (2008). *The craftsman*. Penguin.

Sheldon, K. M., & Kasser, T. (2001). Goals, congruence, and positive well-being: New empirical support for humanistic theories. *Journal of Humanistic Psychology*, 41(1), 30-50. https://doi.org/10.1177/0022167801411004

Shilton, K., Koepfler, J. A., & Fleischmann, K. R. (2013). Charting sociotechnical dimensions of values for design research. *The Information Society*, *29*, 259–271. https://doi.org/10.1080/01972243.2013.825357

Skinner, E. A., & Zimmer-Gembeck, M. J. (2016). *The development of coping: Stress, neurophysiology, social relationships, and resilience during childhood and adolescence*. Springer International Publishing. https://doi.org/10.1007/978-3-319-41740-0

Snelders, D. (2015, March 13). *The design professional*. [Inaugural speech]. Delft University of Technology, Delft.

Snelders, D., Morel, K. P. N., & Havermans, P. (2011). The cultural adaptation of web design to local industry styles: A comparative study. *Design Studies*, *32*(5), 457–481. https://doi.org/10.1016/j.destud.2011.03.001

Sortheix, F. M., Dietrich, J., Chow, A., & Salmela-Aro, K. (2013). The role of career values for work engagement during the transition to working life. *Journal of Vocational Behavior*, *83*(3), 466–475. https://doi.org/10.1016/j.jvb.2013.07.003

Stappers, P. J., & Giaccardi, E. (2017). Research through design. In M. Soegaard & R. Friis-Dam (Eds.), *The Enceclopedia of Human-Computer Interaction* (second edition). The Interaction Design Foundation. https://www.interaction-design.org/literature/book/the-encyclopedia-of-human-computer-interaction-2nd-ed/research-through-design

Stappers, P. J., & Sleeswijk Visser, F. (2014). Meta-levels in design research: Resolving some confusions. In Y. Lim, K. Niedderer, J. Redström, E. Stolterman, & A. Valtonen (Eds.), *Design's Big Debates - DRS International Conference 2014*. https://dl.designresearchsociety.org/drs-conference- papers/drs2014/researchpapers/63%0AThis

Stoimenova, N., van Onselen, L., & Valkenburg, R. C. (2015). Four guiding factors for facilitators of multidisciplinary collaboration. In R. C. Valkenburg, C. Dekkers, & J. Sluijs (Eds.), *Pin-C 2015 Reframing Design - Proceedings of the 4th Participatory Innovation Conference 2015* (pp. 51–59).

Stumpf, S. A., Tymon, W. G., & van Dam, N. H. M. (2013). Felt and behavioral engagement in workgroups of professionals. *Journal of Vocational Behavior*, *83*(3), 255–264. https://doi.org/10.1016/j.jvb.2013.05.006

Susman, G. I., & Evered, R. D. (1978). An assessment of the scientific merits of action research. *Administrative Science Quarterly*, *23*(4), 582–603. https://doi.org/10.2307/2392581

Thieme, J. C., & van Boeijen, A. G. C. (2011). Some students are more different than others. *Journal of Design Research*, *9*(2), 119–130.

Tracey, M. W., & Hutchinson, A. (2016). Uncertainty, reflection, and designer identity development. *Design Studies*, *42*, 86–109. https://doi.org/10.1016/j.destud.2015.10.004

Tracey, M. W., & Hutchinson, A. (2018). Reflection and professional identity development in design education. *International Journal of Technology and Design Education*, *28*(1), 263–285. https://doi.org/10.1007/s10798-016-9380-1

Trede, F., Macklin, R., & Bridges, D. (2012). Professional identity development: A review of the higher education literature. *Studies in Higher Education*, *37*(3), 365–384. https://doi.org/10.1080/03075079.2010.521237

Trimingham, R. (2008). The role of values in design decision-making. *Design and Technology Education: An International Journal*, *13*(2), 37–52.

Tromp, N., & Hekkert, P. (2019). *Designing for society: Products and services for a better world*. Bloomsbury.

Valkenburg, R. (2000). *The reflective practice in product design teams* [Doctoral dissertation, Delft University of Technology]. Institutional Repository. http://resolver.tudelft.nl/uuid:8bbe62ab-e761-46f7-b386-3ead14a9d56d

Valkenburg, R., & Sluijs, J. (2012). *The world of the open innovator*. The Hague University of Applied Sciences.

van Boeijen, A. G. C. (2015). *Crossing cultural chasms: Towards a culture-conscious approach to design* [Doctoral dissertation, Delft University of Technology]. Institutional Repository. https://doi.org/10.4233/uuid:fc87dfd1-b7eb-4c84-b6c7-6835c5e837f8

van Boeijen, A. G. C., Daalhuizen, J. J., & Zijlstra, J. J. M. (Eds.). (2020). *Delft Design Guide: Perspectives-Models-Approaches-Methods* (Revised Edition). BIS Publishers.

van de Poel, I. (2009). Values in engineering design. In Meijers, A. (Ed.) *Handbook of the Philosophy of Science, Philosophy of Technology and Engineering Sciences* (pp. 973-1006). North Holland. https://doi.org/10.1016/B978-0-444-51667-1.50040-9

van den Hoven, J., Vermaas, P., & van de Poel, I. (2015). *Handbook of ethics, values and technological design*. Springer Netherlands. https://doi.org/10.1007/978-94-007-6970-0

van der Velden, M., & Mörtenberg, C. (2015). Participatory design and design for values. In J. van den Hoven, P. Vermaas, & I. van de Poel (Eds.), *Handbook of Ethics, Values, and Technological Design: Sources, Theory, Values and Application Domains* (pp. 41–66). Springer. https://doi.org/10.1007/978-94-007-6970-0_33

van Onselen, L., De Lille, C., & Snelders, D. (2019). Design requirements to educate and facilitate junior design professionals to reflect more effectively on critical situations and conflicts at work. In Wartzack, S., Schleich, B., Gon (Eds.), *Proceedings of the 22nd International Conference on Engineering Design (ICED19)*, *Responsible Design,* 3241–3250. https://doi.org/10.1017/dsi.2019.331

van Onselen, L., & Valkenburg, R. (2015). Personal values as a catalyst for meaningful innovations: supporting young designers in collaborative practice. In Weber, C., Husung, S., Cascini, G., Cantamessa, M., Marjanovic, D., & Bordegoni, M. (Eds.), *Proceedings of the 20th International Conference on Engineering Design (ICED 15), Vol. 1: Design for Life*, 547–556.

van Onselen, L., & Valkenburg, R. C. (2013). *A different approach on gaining practical experience by acting as an (open) innovator at Industrial Design Engineering*. In Reitan, J.B., Lloyd, P., Bohemia, E., Nielsen, L.M., Digranes, I., & Lutnæs, E. (Eds.), *DRS // Cumulus: Design Learning for Tomorrow*. https://doi.org/10.21606/learnxdesign.2013.152

Verbrugge, J. K. (2012). *Creative reflection in industrial design: Five demand driven design cases*. [Doctoral dissertation, University of Twente]. Research Output. https://doi.org/10.3990/1.9789036534161

Vignoles, V. L., Schwartz, S. J., & Luyckx, K. (2011). Introduction: Toward an integrative view of identity. In S. J. Schwartz, V. L. Vignoles, & K. Luyckx (Eds.), *Handbook of Identity Theory and Research*. Springer. https://doi.org/10.1007/978-1-4419-7988-9_1

Wandahl, S. (2004). Visual value clarification - A method for an effective brief. *Journal of Civil Engineering and Management, 10(4), 317-326*. https://doi.org/10.1080/13923730.2004.9636325

World Economic Forum (2021, June 21). *The great reset*. Retrieved July 26, 2022, from https://www.weforum.org/great-reset

Zamenopoulos, T., Lam, B., Alexiou, K., Kelemen, M., De Sousa, S., Moffat, S., & Phillips, M. (2021). Types, obstacles and sources of empowerment in co-design: the role of shared material objects and processes. *CoDesign*, *17*(2), 139–158. https://doi.org/10.1080/15710882.2019.1605383

Zelenko, O., & Felton, E. (2013). Framing design and ethics. In E. Felton, O. Zelenko, & S. Vaughan (Eds.), *Design and Ethics: Reflections on Practice* (pp. 3–9). Routledge.

Zupan, K. (2012). *Values, conflicts & value conflict resolution* (Publication No. NR97841). [Doctoral dissertation, University of Toronto]. ProQuest Dissertations Publishing.

ACKNOWLEDGEMENTS

The first person I want to acknowledge is Rianne Valkenburg who encouraged and supported me to become a researcher from day one at the Hague University of Applied Sciences. Thanks to you, I could join the Designerly Innovation research group and as a lecturer the Open Innovator course. Throughout my research, you helped me to find structure and balance. Furthermore, I would like to thank my promotor Dirk Snelders. You transformed me into a critical researcher. You showed me how to follow my curiosity while staying true to an academic approachc. With your guidance, I became aware of the nitty gritty details. I am truly grateful that you trusted me to grow and that you supported me at difficult moments. I loved our philosophical talks and I hope we can continue. Christine, you were the last to join the team. You acted as a lever that was needed to kick-start study 2. Thank you for your support and connecting me with crucial people for my research.

I would like to thank all the participants in my research. Thank you for sharing openly and trustingly your concerns and ideas. I want to acknowledge Niya, Lennart, Annelijn, Julia, and Anna, who piloted research ideas and wrote conference papers with me. Furthermore, I wish to thank Jens Gijbels who invited me warmly as coach and trainer at Fundamentals Academy. Marloes, Jan, and Mark, I am grateful for your ideas and for co-designing tools with me. Darlaine Heitinga thank you for testing and evaluating the Professionalisation Wheel.

Furthermore, I want to acknowledge my former colleagues from The Hague University of Applied Sciences. I enjoyed my time as lecturer thanks to you! Some of you acted as lecturers and advisors in the action research, especially: Hanna de Bruin, Senko Kabbes, and Gabriela Bustamante. Laura Stevens helped me cope with my own conflicts. Thank you so much that I could always call you when I needed it. Janneke Sluijs thank you for being my paranymph. Your contribution to my research was subtle but perfectly timed and always with a warm embrace. Additionally, I am grateful to join such an inspiring and helpful team at Utrecht University of Applied Sciences. Remko van der Lugt for encouraging me to finish my thesis. Anita Cremers, Karlijn van Ramshorst, Berit Godfroij, Tanja Enninga, Caroline Maessen, Rosa de Vries, and Lotte van der Schoot for helping me finish the last details. Christa van Gessel, how special to have you next to me as my paranymph. We have studied together in design, worked at the same office, practiced yoga, brainstormed with friends, celebrated life events, and now we are colleagues!

Als laatste wil ik mijn familie en vrienden bedanken voor gezellige afleiding en een luisterend oor. Jullie zijn met te veel om allemaal op te noemen en ik voel mij gezegend met zoveel lieve mensen om mij heen. Toch in het bijzonder: Eva, dank je voor alle tips en je inspirerende voorbeeld als moeder en promovenda. Al sinds de schoolbanken leren we samen obstakels te overwinnen. Mama en Margreet bedankt voor het oppassen op de kindjes. Daardoor had ik de tijd om aan mijn onderzoek te werken en wist ik zeker dat ze een leuke dag hadden. Tom en Fedde, dank jullie wel mijn liefste vriendjes voor de afleiding en knuffels waardoor ik mijn onderzoek even kon vergeten. Marco, (bijna) acht jaar geleden hebben we elkaar ontmoet aan het begin van mijn promotieavontuur. Het heeft altijd een rol gespeeld in onze relatie. Dank je wel voor je begrip en steun! Zal ik dan vanaf nu echt vakantie vieren en meehelpen klussen zonder dat ik moet schrijven tussendoor?

APPENDIX A: OVERVIEW OF ACTIONS PER CASE

Case	Value differences	Coping actions towards value differences (before critical moment)			Coping actions to handle value-based conflicts (after critical moment)			Insights to handle new context	
		Designer	*Interactions*	*Other party*	*Other party in same context*	*Designer in same context*	*New contexts*	*Reflections on actions*	*Emerged insights*
C1: Design etiquette	Security – creativity	Off the radar, Sending		Resist				Stakeholder involvement Show perspective	Professional involvement
C2: Misunderstood	Power & tradition – creativity	Explain, Research		Reject					Learn to convince
C3: Gadget	Income – meaningful design	Service					Choose other projects	Job refusal (not ideal) Don't follow through (not ideal)	
C4: Freelance	Income – quality					End collaboration			Entrepreneurial skills
C5: Quality versus costs	Costs – quality			Reduce costs		Inquiry			Accepting situation
C6: Disrespectful behaviour	Dominance – helpfulness, social justice & honesty	Observe				Open up conversation			Resolved
C7: Politics	Authority – meaningful		Collaboration	Support					Change perception
C8: Money versus morality	Income – meaningful design		Hired				Choose other projects	Job refusal	
C9: For a cause	Income – meaningful design		Collaboration			Inquiry	Choose other projects		

Case	Value differences	Coping actions towards value differences (before critical moment)			Coping actions to handle value-based conflicts (after critical moment)			Insights to handle new context	
C10: Unclear assignment	Achievement – self-direction					Work overtime	Improvise		Understand capabilities
C11: Fundamental misunderstanding	Dominance – understanding	Avoid confrontation							Harmony in collaboration
C12: Work dismissed	Authority – meaningful	Research Last-minute changes	Collaboration	Dismiss Adds shallow idea	No contract renewal Freelance job offer	Refuse freelance job offer	Start-up company		
C13: Gut-based decision-making	Personal gain– collaboration	Observe		Positive feedback Decision					
C14: Pick your battles	Time – perfectionism	Integration Presentation		Support		Work overtime	Go with the flow		
C15: Not doing what you like	Ambition – enjoyment	Be involved	Collaboration	Creative work			Change career		
C16: Shift in attitude	Personal gain – collaboration		Collaboration	Send bill	Pointing out	Seek support			More business-minded
C17: Not just a client	Income – meaningful design	Work overtime		Does not reprimand			Compromise		
C18: Seen as liability	Security – ambition			Advises Make concessions		Maximise experience	Change job		Involve others Exchange tasks
C19: Insecure of capabilities 1	Achievement – self-direction		Hired						Grow into Self-confidence Stay yourself
C20: Chaotic project management	Structure – freedom	Seek support		Briefing		Explain	Align team		

Case	Value differences	Coping actions towards value differences (before critical moment)			Coping actions to handle value-based conflicts (after critical moment)		Insights to handle new context	
C21: Change of strategy	Income – quality		Hired	Change strategy		Choose other projects Initiate other projects		
C22: Valued as a designer	Status – respect & friendship	Adds value	Collaboration	Maintains relation Show-off	End collaboration		Time out	
C23: Working overtime 1	Costs – quality	Points out problem		Give in	Work overtime		Involve engineer Formulate clear assignment	
C24: Unaligned design vision	Influence – conformity			Briefing	Search process		Regulate front end Convince Direct contact decision-makers	
C25: Negative feedback	Stimulation – good-will				Seek support		Stand up for yourself	
C26: Working overtime 2	Time – perfectionism			Gave many responsibil-ities	Work overtime			Learned a lot
C27: Unable to deliver	Detachment - achievement & self-discipline		Urgent meetings Create	Finger pointing			Take early action Be precise Improve process Develop negotiation skills	

Case	Value differences	Coping actions towards value differences (before critical moment)			Coping actions to handle value-based conflicts (after critical moment)			Insights to handle new context	
C28: Miscommunication	Costs – quality	Investigation						Compromise Change printer (not ideal)	
C29: Not taken seriously	Authority – social recognition	Observe				Retract			
C30: Third person	Politeness – self-respect	Made notes		Assumed		Retract		Stand up for yourself	
C31: Insecure of capabilities 2	a. Security – capability b. Achievement – social recognition	Avoid confrontation Unwind		Give managing role		Seek support			People will tell you if you are wrong
C32: Only see the problem	Problem – solution-oriented	Observe Seek support							Self-confidence
Total		**24**	**11**	**24**	**3**	**18**	**13**	**20**	**17**

APPENDIX B: DESIGN REQUIREMENTS SUPPORT TOOLS

Requirements formulated in Cycle One

Chapter 6 resulted in seven insights for tool requirements (Table B1).

Table B1. Requirements for support tools based on insights Chapter 6

R#	Requirements for support tools
ST.1	Include illustration of critical moments.
ST.2	Provide rich exemplary narratives.
ST.3	Must comprise comprehensible methods.
ST.4	Provide sensitising activities for coaching.
ST.5	The toolkit should contain four or five tools.
ST.6	At least one tool must have a sketching assignment.
ST.7	Prescribe metaphors (individual/groups) or story cartoons (groups).

Requirements formulated in Cycle Two

Chapter 8 yielded in total 14 additional requirements. Table B2 assesses preliminary tools that emerged from Cycle Two (Table 17. The approach to educate and facilitate reflection). In consultation with my supervisors and participants, I formulated requirements 8 to 16 for improving or for adding the tool in the support toolkit.

Table B2. Assessment of tools and resulting requirements for further development

Tool	State	Insight	R#	Requirement
1. Visual reflection exercise	Tested multiple times with different target groups	Could be integrated into workbook, training programme, and other tools.	ST.8	Visual reflection exercise should be integrated into other tools.
2. Rich exemplary narratives	Cases are raw materials; pilot test	Case descriptions should be translated into generic narratives and could be integrated into a workbook and other tools.	ST.9	Generic narratives should be formulated based on case descriptions.
3. Sensitising exercises	Tested multiple times with different target groups	Could be added to a toolkit as a coaching tool.	ST.10	Add sensitising exercises to toolkit as coaching tool.
4. Presentations on theory	Tested multiple times with different target groups	Could be further developed as learning or training materials.	ST.11	Presentations should be integrated into other tools.
5. Exercises to identify values	Tested multiple times with different target groups	Could be integrated into workbook, training programme, and other tools.	ST.12	Exercises to identify values should be integrated into other tools.

6. Training programme	Tested with junior design professionals	Near-finished state. Finalise learning materials based on feedback from participants.	ST.13	Finalise learning materials of the training programme.
7. Role-play exercise	Tested with junior design professionals	Near-finished state.	ST.14	Add role-play exercises to toolkit as learning material of training programme.
8. Coaching guidelines	Tested with junior design professionals	Guidelines could be tailored to specific coaching needs.	ST.15	Tailor guidelines to specific coaching needs Add coaching guidelines to toolkit.
9. Reflection exercises	Tested multiple times with different target groups	Could be integrated into workbook, training programme, and other tools.	ST.16	Reflection exercises should be integrated into other tools.

Requirements formulated in Cycle Three

Participants of a brainstorm session in Cycle Three formulated five design requirements for support tools (Table B3).

Table B3. Five additional requirements for support tools

R#	Requirements for tools	Remarks
ST.17	Provide about 10 exemplary cases for early-career conflicts and coping strategies.	Relates to R# 2, but more specific about the number of exemplary cases.
ST.18	Must be straight to the point.	Relates to R#3
ST.19	Must be exciting to use.	Like an exciting game or inspirational platform.
ST.20	Must be interesting but not overload information.	For example, a book may contain too much information.
ST.21	Must preferably be a tangible tool.	A tangible tool is worth more as a junior designer can own it. A junior designer can refer back to tangible tools in later stages of their career. Self-help tools have the advantage that a junior design can define for themselves what they need.

APPENDIX C: PRELIMINARY IDEAS FOR TOOLS

Research activity 3.1 resulted in design ideas during a brainstorm session with junior designers. The goal of these tools is to help designers to open up discussions or give support when needed. To inspire junior designers, the tools should be adapted to their lifestyle and generation.

Table C1. Eight tool ideas from a brainstorm with junior designers

Idea	Description
1. Support channel	Video channel with stories, interviews and animations
2. "Black Stories" game	10 extreme problems – fit the problem to the solution
3. Offline linked with online	sharing experiences through events or physical props
4. Designer hotline	A call/chat service to provide immediate support. Make use of experts who "donate" their tips and tricks to cope with conflicts.
5. Uncomfortable confrontation	rap battle or roleplaying
6. Online venting	Twitter account for sharing troubles, cases and memes
7. Support platform	chatbot to find your conflict with practical tips from real designers (app & website
8. Support book	flipbook with stories and practical tips

To evaluated ideas, the participants selected three requirements from Cycle One (Table B1) and two from Cycle Three (Table B3). Table C2 evaluates the ideas using the selected requirements.

Table C21. Evaluation of eight ideas with four criteria (top) and three design values (bottom).

Requirements	IDEA 1	IDEA 2	IDEA 3	IDEA 4	IDEA 5	IDEA 6	IDEA 7	IDEA 8
ST.1. Include illustration of critical moments	+	+	-	-	-	-	++	++
ST.2. Provide rich exemplary narratives	++	++	+	+	+	-	++	+
ST.3. Must comprise comprehensible methods	+	-	-	-	+	+	+	+
ST.19. Must be exciting to use	+	++	+	-	+	-	+	-
ST.20. Must be interesting but not overload information	--	+	+	+	+	-	+	-

Ideas 2, 5, and 7 are the most promising ideas. Uncomfortable confrontation (Idea 5) is an easy-to-develop idea and was integrated into the training programme as a roleplaying exercise. Ideas 2 and 7 were further developed. Two junior designers volunteered to develop two ideas into concepts which they found most interesting: a game (Idea 2) and a chatbot (part of Idea 7). The card game was based on the Black Stories game. Two cards were designed and printed for a quick user test. These cards provided a good starting point and were received enthusiastically. The chatbot was programmed to give quick advice in case of an emergency. In a test, the participants seemed enthusiastic about the idea and a few started to interact with the chatbot.

Other ideas were transformed into new tools during Cycle Three. The flipbook (Idea 8) was changed into a syllabus and e-book for educational and training purposes. The video channel (Idea 1), designer hotline (Idea 4), online venting (Idea 6), and support platform (Idea 7) were incorporated in the online version of the training programme.

APPENDIX D: COMPONENTS OF THE INTEGRATED MODEL

Table D1 shows which insights were used for formulating two professionalisation processes and four learning foci.

Table D1. Formulating two professionalisation processes and four learning foci

Insight	Source	Professionalisation process	Learning foci
Two foci to improve coping: increase awareness of and reflection on value-based conflicts	Literature (Chapter 2)	Learning to cope	Awareness – reflection
Two foci of critical moments: the self (designer identity) and others (collaboration)	Study One (Chapter 4) Study Two (Chapter 7)	Professional development	Identity - collaboration

We formulated the professionalisation targets by combining the four learning foci from the two professionalisation process (Table D2), crosschecking them with requirements from Chapter 6 and insights from Chapter 7 and 8, and testing them with junior designers and experts.

Table D2. Combined learning foci to formulate professionalisation targets

		Professional development	
		Identity	Collaboration
Learning to cope	Awareness	Increasing self-awareness	Cultivating a shared responsibility
	Reflection	Building identity	Growing empathy

Table D3 details de professionalisation targets using the requirements from Chapter 6 and the insights from Chapter 7 and 8 to formulate support objectives.

Table D3. Detailing professionalisation targets based on requirements and insights to formulate support objectives

Target	Requirement (Chapter 6)	Insight/results (Chapters 7 and 8)	Support objectives
Increasing self-awareness	T.1 – Raising awareness of value differences ST.4 – Give sensitising activities	Training programme topics	Increase awareness of personal value priorities
	ST.2 – Rich exemplary narratives ST.3 – Comprehensible methods C.2 – Use coaching talk guides and stimuli	Training programme exercises Coaching guidelines	Identify and analyse perceived value differences and value-based conflicts
Building identity	T.2 – Prepare to reflect skilfully C.3 – Facilitate reflection C.5 – Reflect in context	Insight 2: train reflection using a scaffolding approach Insight 8: identify perceived value-based conflicts when reflecting Coaching guidelines	Explore designer identity
	C.4 – Define reflection motive	Insight 6: individual coaching as an intervention Coaching guidelines	Embraced confidence
	ST.3 – Comprehensible methods	Insight 2: train reflection using a scaffolding approach Activities of the training programme	
Cultivating a shared responsibility	C.1 – Quick reflection T.2 – Prepare to reflect skilfully	Insight 2: train reflection using a scaffolding approach Insight 5: group coaching as an intervention Coaching guidelines	Discussed values
	C.3 – Facilitate reflection	Insight 4: linked development of personal and collaborative development. Coaching guidelines	Collective alignment
	T.2 – Prepare to reflect skilfully T.3 – Share comprehensible cases	Insight 3: role-play conflicts and coping strategies Training programme activities Coaching guidelines	
Growing empathy	T.1 – Raising awareness of value differences ST.2 – Rich exemplary narratives	Training programme topics	Map stakeholder values
	ST.1 – Illustration of critical moments T.3 – Share comprehensible cases ST.6 – Add sketching assignment to sensitising toolkit ST.7 – Prescribe metaphor or story cartoon (groups	Insight 1: visual reflection exercise using metaphor or story cartoon Activities of the training programme Coaching guidelines	Explore effective coping actions

CURRICULUM VITAE

Date of birth: June 11, 1982
Place of birth: The Hague, the Netherlands

Lenny van Onselen is a senior researcher at HU Utrecht University of Applied Sciences. She received her Master's Degree in Strategic Product Design from the Faculty of Industrial Design Engineering of Delft University of Technology in 2007. Her Master thesis aimed to generate valuable product ideas for photovoltaic technologies. She developed an approach to determine product-market combinations for emerging technologies. After graduation she implemented the approach as an independent consultant.

From September 2006 and January 2007, she worked as researcher on the influence of packaging design littering and waste behaviour at the Faculty of Industrial Design Engineering of Delft University of Technology. After this she continued working at the Delft University of Technology as a design lecturer.

In 2011, she became a lecturer Industrial Design Engineering at the Hague University of Applied Sciences and researcher in the research groups Designerly Innovation and Networked Innovation. She studied the educational approach at Industrial Design Engineering and these insights lead to the research topic of this thesis.

Education

Delft University of Technology, faculty of Industrial Design Engineering
Mater of Science, Strategic Product Design (2004 - 2006)
Bachelor of Science, Industrial Design Engineering (2000 - 2005)

ISW, 's-Gravenzande
VWO (1994 - 2000)

List of Publications

van Onselen, L., R. Valkenburg, & D. Snelders (2020). Exploring how junior design professionals cope with and learn from value-based conflicts. *CoDesign*, https://doi.org/10.1080/15710882.2020.1834584

van Onselen, L., R. Valkenburg, & D. Snelders (2020). Value-based conflicts experienced by junior design professionals in collaborative practice. *CoDesign*, https://doi.org/10.1080/15710882.2020.1854314

van Onselen, L., De Lille, C., & Snelders, D. (2019). Design requirements to educate and facilitate junior design professionals to reflect more effectively on critical situations and conflicts at work. In Wartzack, S., Schleich, B., Gon (Eds.), *Proceedings of the 22nd International Conference on Engineering Design (ICED19), Responsible Design*, 3241–3250. https://doi.org/10.1017/dsi.2019.331

Jonkmans, A., J. Wurl, D. Snelders, and L. van Onselen (2016). Junior designers' awareness of personal values and their employment choices. In Lloyd, P. and Bohemia, E. (Eds). *Proceedings of DRS 2016 International Conference: Future-Focused Thinking*. 27-30 June 2016, Brighton, UK. https://doi.org/10.21606/drs.2016.115

Kaland, L., A. Vernooij, and L. van Onselen (2016). Project Contribution of Junior Designers: Exploring the What and the How of Values in Collaborative Practice . In Lloyd, P. and Bohemia, E. (Eds). *Proceedings of DRS 2016 International Conference: Future-Focused Thinking*. 27-30 June 2016, Brighton, UK. https://doi.org/10.21606/drs.2016.88

van Onselen, L., & Valkenburg, R. (2015). Personal values as a catalyst for meaningful innovations: supporting young designers in collaborative practice. In Weber, C., Husung, S., Cascini, G., Cantamessa, M., Marjanovic, D., & Bordegoni, M. (Eds.), *Proceedings of the 20th International Conference on Engineering Design (ICED 15)*, Vol. 1: Design for Life, 547–556.

Stoimenova, N., L. van Onselen, and R. Valkenbrug (2015). How to Improve Co-Creation? Four Guiding Factors to Optimize Collaboration. In: proceedings of the 4th Participatory Innovation Conference 2015, May 2015, The Hague, The Netherlands.

van Onselen, L., & Valkenburg, R. (2013). A different approach on gaining practical experience by acting as an (open) innovator at Industrial Design Engineering. In Reitan, J.B., Lloyd, P., Bohemia, E., Nielsen, L.M., Digranes, I., & Lutnæs, E. (Eds.), DRS // Cumulus: Design Learning for Tomorrow. https://doi.org/10.21606/learnxdesign.2013.152

Wever, R., L. van Onselen, S. Silvester, C. Boks (2010). Influence of Packaging Design on Littering and Waste Behavior, *Journal of Packaging Technology and Science*, 23 (5), 239-252. https://doi.org/10.1002/pts.892

van Onselen, L., K. Lauche, S. Silvester and S. Rikoll Dehli (2010). Technology Windows in Sustainable Innovation Projects: Experiences with an Innovation Tool for Identifying Sustainable Application Domains. *Proceedings 4th International Conference on Sustainability Engineering and Science: Transitions to Sustainability*, November 2010, Auckland, New Zealand.

van Onselen, L., K. Lauche, S. Silvester and M. Veefkind (2007). Technology Windows: a New Method to Determine Valuable Product-Market Combinations, *Proceedings of the 16the International Conference on Engineering Design (ICED 07)*, August 2007, Paris, France.