A mindfulness toolkit for designers to enhance insight

The development and evaluation of *The mindful designer*

Master's thesis
Delft, August 2022

Education
MSc. Integrated Product Design (2019-2022)
Faculty of Industrial Design Engineering

Delft University of Technology
Landbergstraat 15
2628 CE Delft
+31 15 278 3012

Chair: Prof. Dr Peter A. Lloyd
Department of Design, Organisation and Strategy,
section Design Theory and Methodology
Faculty of Industrial Design Engineering

Mentor: Dr Haian Xue
Department of Human-Centred Design,
section Design Aesthetics
Faculty of Industrial Design Engineering

Author: Aidan Wyber
4488652

Summary

Overview

This project describes the development and evaluation of a mindfulness course for enabling design practitioners to develop enhanced creative insight possible, both in a moment of practice during daily design work, and in the long-term development of character. The course is centred around a novel mindfulness exercise: 'closure practice'. It aims to explicitly integrate two opposing processes of cognition that are central to the mechanism of insight: "scaling down" and "scaling up", which are isolated in traditional meditation and contemplation practices, respectively (Vervaeke and Ferraro, 2016).

Design outcome

The course to teach designers this exercise was embodied as an online podcast, *The mindful designer*. It first introduces the relevance of mindfulness for designers and then moves to separate exercises that tackle several aspects of closure practice. The goal of the podcast is to teach the listener to perform closure practice in absence of the podcast with the use of an auxiliary bracelet, similar to the traditional use of the rosary, tasbih, and mala.

Key findings

The podcast was evaluated with a mixed-methods approach with respect to the design goals. Participants (n = 3) filled in online questionnaires. They agreed that mindfulness is useful during creative problem solving, to a greater degree post-study, than they did pre-study. Feedback suggested that ideas and insights occurred as an effect of the exercises, although the guidance of the narrations was problematic at times should be improved to suit design projects better. Linguistic Inquiry and Word Count (LIWC) analysis on the response texts also indicated that the practice had cognitive effects in line with the design intent.

Recommendation

Feedback throughout the project strongly suggested that experienced mindfulness practitioners found utility in closure practice, but that less experienced or naive practitioners did not, because they lacked the skills necessary to derive the benefits from the practice. I recommend the development of a course to teach design students or professionals the basic skills of mindfulness spanning several months and eventually the performance of closure practice, which might be recognised as more valuable by then. Broader implications were also discussed.

Vervaeke, J., and Ferraro, L. (2016). Reformulating the mindfulness construct: The cognitive processes at work in mindfulness, hypnosis, and mystical states. In *Hypnosis and meditation: Towards an integrative science of conscious planes* (1st ed., pp. 241–268). Oxford University Press. ISBN: 978-0-19-875910-2

Acknowledgements

I would like to thank all of the people who have worked on this topic of mindfulness in the past, and who have caused its development and persistence. I stand on the shoulders of giants. I also want to thank everyone who is researching, developing, implementing or maintaining mindfulness today. Specifically, I'd like to thank Prof. John Vervaeke, whose cognitive scientific research on mindfulness not only provided a theoretical basis for the development of closure practice but also portrayed mindfulness as a relevant academic topic to me for the first time.

I would also like to express my gratitude to my supervisors, Peter and Haian, for their skilful guidance and warm mentorship throughout the project. I would also like to thank my friends and family who were open to hearing me out and even underwent difficult discussions, pointing out roadblocks or showing me new horizons. En dank je wel, lieve Lau, dat je bij me was op de pieken en in de dalen.

Lastly, I would like to thank being itself, for its mysterious natures of entropy and consciousness underlying the persistence of life. Evolution made me aware of myself, for which I am eternally grateful. I hope to contribute and participate in the process in the best possible ways.

Contents

"The world is given to me only once, not one existing and one perceived. Subject and object are only one."
— Erwin Schrödinger, *Mind and Matter* (1958)

"The only Zen you find on tops of mountains is the Zen you bring there."
— Robert M. Pirsig, *Zen and the Art of Motorcycle Maintenance* (1974)

Chapter 1

Introduction

1.1. Background

This document is a description of a graduation project aimed at developing and evaluating a mindfulness toolkit to help design practitioners become more insightful. The design outcome of the project was a mindfulness course to learn a novel mindfulness technique, intended to fit design processes, called 'closure practice' and was embodied in the form of a podcast named *The mindful designer*. This project is primarily a design research project and was not done in concert with an external company. The rationale for this project was to develop a first working prototype to engage designers in mindfulness and provide preliminary evidence for its effectiveness in enhancing insight.

1.2. Problem statement

The problem is the ignorance of an opportunity: designers actively influence, and enhance their cognitive processes that lead to creative insights, through mindfulness practices. Many researchers have pointed to this in various ways (e.g., Lebuda et al., 2016; Lippelt et al., 2014; Ostafin and Kassman, 2012; Ovington et al., 2018; Ren et al., 2011; Shamas and Maker, 2018; Vervaeke, 2022; Vervaeke and Ferraro, 2016; Zenner et

al., 2014). See appendix A for the original project proposal. I see an opportunity for designers to push the boundaries of their cognitive capabilities, to become more effective professionally, at least. The problem is how to integrate mindfulness practices into design processes in a way that serves this practical purpose for designers. This was accomplished by developing a set of interactions that includes a specific set of mindfulness practices, modified to the context of design practice. The design outcome embeds these interactions into a form that allows scalable distribution.

1.3. Significance

In appendix B, I elaborate on the intended cultural relevance of mindfulness and insight on a broader scale, but on a more local scale, insight is an important if not crucial phenomenon in design practice. The insight, the eureka moment: "Aha! This is how it fits together," is the key to many sub-processes: defining the problem, synthesising a context analysis, creating a first vision for the design, solving human interaction problems or uncharted technical ones. I'll quote here from the introduction episode of *The mindful designer* podcast, where I propose an example of the value of insight for designers:

> Say you're an industrial designer, and you're in the first phase of a design project, when you're researching the context of the design brief and looking for a right way to frame the problem from your perspective. You might find that the conflict that's causing the problem somehow doesn't make sense to you yet: you're using an unuseful framing of the problem. Say you're designing a product to activate and entertain elderly people with dementia, because they often become apathetic and passive, and that causes their dementia to progress even more quickly.
> So, you're researching what types of activities they typically like, when and where they need those to happen, do any caretakers need to be present to help, and so on. One of the facts you may know about this problem context is that family members of most of these people only seldom visit them. Maybe this has a cultural cause since productivity is a main value of capitalism. You may know this and understand it as a part of the problem: right, I need to focus on a device that can help these elderly people while alleviating the professional caregivers… Assuming that the familial relationships stay the same.
>
> But you can also change your representation of the problem: you can alter some connections to become more prominent, more important, and pay less attention to others. One of these changes might be much more relevant and that realisation is the insight. In the example, you might find that actually, you want the family members to become more involved in the care of the people with dementia, and to facilitate them to help more with the activities and entertainment. It might even make more sense since they would often know the person with dementia very well.

This is the type of insight that might be 'enhanced', increased in both frequency and 'depth'. Chapter 2 is an inquiry into the experience of this type of insight and its changes through mindfulness practice.

1.4. Stakeholders

The group of stakeholders for this project is much wider than I am used to. I wanted to specify it more, but I realised there was no good reason to. The intended design outcome was proposed to have generalised effects on people from the start. I chose to keep the scope large for this reason. The target group is professional design practitioners, both design professionals and students. One of their stakes in this project is that they want to become better practitioners efficiently. Ultimately, I think the target group might include practitioners of all creative professions. I come back to this point in the discussion (ch. 7).

Mindfulness and design research communities should also have an interest in the outcomes of this project. Possible contributions include the synthesis of novel mindfulness techniques and the interaction and integration of mindfulness practices and design processes. Lastly, Delft University of Technology has a stake in this project and in its demand to produce research and design output of a certain quality and standard.

1.5. Design goal and research questions

The desired outcome of this project was: to enable design practitioners to enhance their capacity for insight by practising mindfulness techniques adapted for design processes. To approach this goal, I formulated the following research question: 'How can I adapt existing mindfulness techniques to the context of practitioners' design processes in a way that enables them to engage in an enhanced capacity for insight?'

To break this main question down into manageable chunks, I started with: 'How did mindfulness help me?', followed by: 'What is the experience of other designers who have practised mindfulness similarly?' What has the body of scientific literature on mindfulness and design to say about this phenomenon? What is insight, and how can we best understand it? What is mindfulness and what are its active ingredients? What does the context of design practitioners' creative processes look like? How does this rhyme with creativity research? What do I take away from all this, into a product development process? How can I embody a mindfulness practice? What technologies are at my disposal? And after this development: 'Does the product work and how can it be improved?' These are the questions that I will answer in this document.

1.5. Methodology

1.5.1. Overview

Below I explain how this document is built up and go over the functions of each chapter. Figure 1 shows a visual representation of the global structure.

1.5.2. Heuristic inquiry

In this chapter I aim to find and communicate an in-depth representation of the *collective* experience of becoming more insightful as a designer, by practising mindfulness habitually. Loosely following the methodological paradigm of *heuristic inquiry* (Moustakas, 1990; Sultan, 2019), a phenomenologically aligned approach (Sultan, 2020, pp. 159–160) that makes researcher motivation and self-experience foundational, I investigated the commonalities and differences between my own and others' experiences. I conducted and analysed interviews with other design practitioners who were experienced in mindfulness techniques, analysed design students' pictorial representations of their feeling of an insight, synthesised this into a painting to represent an essential experiential structure, and finally extracted a verbal explanation and a summary of my insights.

1.5.3. Literature review

The purpose of the literature review was to search the body of scientific output for relevant information to the design goal. In particular, I was looking for evidence related to my experiences and for theories to explain the mechanisms underlying phenomena around mindfulness and insight.

1.5.4. Synthesising those insights

This chapter is a comparison of the previous two chapters, on the heuristic inquiry and the literature review. Its purpose is to analyse agreements, conflicts and gaps between the insights of both chapters. The conclusion of this chapter is a set of new insights that are foundational for the product development process.

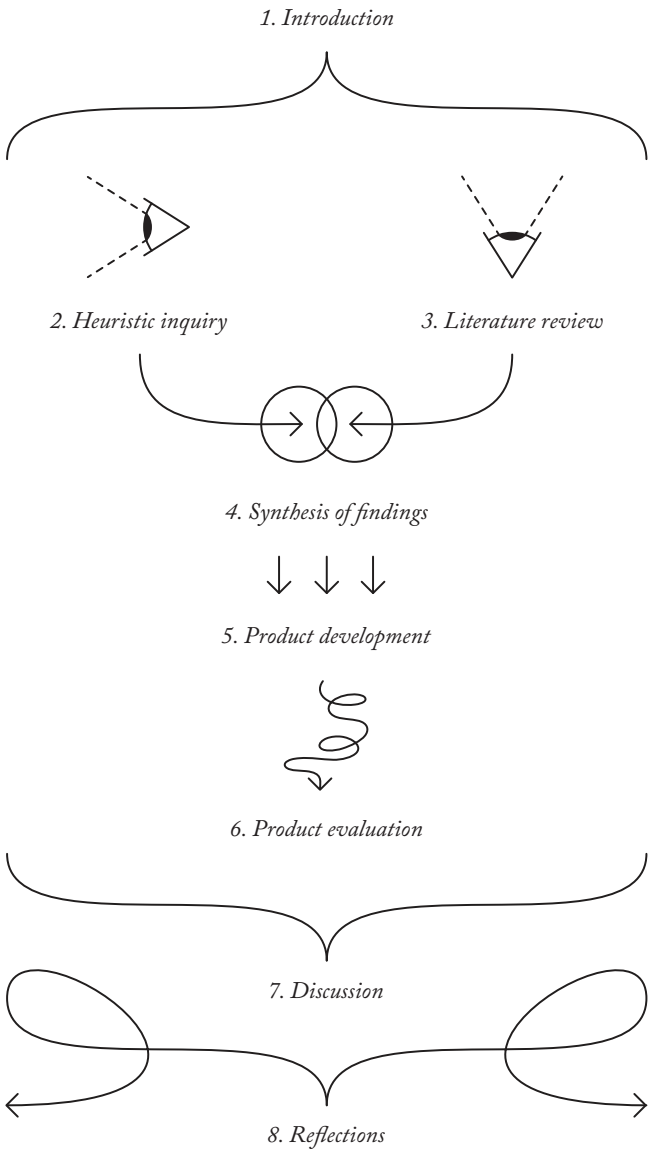


Figure 1. Global project overview.

1.5.5. Product development

In this chapter, I present the development of *The mindful designer*, an educational course aimed at teaching a novel mindfulness technique—'closure practice'—in the form of a podcast. I cover initial ideation, three design iteration cycles and finally present the design outcome of this project, *The mindful designer*.

1.5.6. Product evaluation

This chapter describes the study I conducted to evaluate the design of *The mindful designer*. I used a mixed methods approach (both quantitative and qualitative metrics) to both confirm or disconfirm its effectiveness and explore ways in which it could be improved. I used convenience sampling to create a focus group (n=10) and used an experience sampling-like paradigm to capture data. Although participation was less than anticipated, available data is presented and its implications for the design are discussed.

1.5.7. Discussion

In this next-to-last chapter, I discuss how the findings of the product development and evaluation relate to the original design goal and research questions. I then interpret the findings concerning the existing literature. I cover the limitations of the project and what they might mean, how the project could be improved upon and what opportunities might be for similar future projects. I then conclude the project and discuss its professional and academic implications.

1.5.8. Reflections

In the last chapter I close the project by reflecting on it as a whole, what I learned from it, and what the implications are for my future, professionally and more broadly.

Chapter 2

Heuristic inquiry

2.1. Introduction

2.1.1. The heuristic approach

Heuristic inquiry is a research methodology, originated by Moustakas (1990) that was developed as a way of making sense of, and exploring everyday human experience. It emphasises the curiosity and openness of the researcher and draws on their knowledge and first-hand experiences. Its research questions are autobiographical and personal so that the researcher participates in the phenomenon. It relies on tacit knowledge (Polanyi and Sen, 1966/2009) and a continuum of experience from subjective–objective (Sultan, 2019).

Drawbacks of heuristic inquiry include its incapacity for capturing purely 'objective' information, the possibility of not producing new or definitive information, the tendency to confuse, rather than enlighten and its results not being intended to be repeatable nor generalisable (Sultan, 2019). Its merit, however, for this project lies in the richness of the data that can be uncovered. The first-person-view, subjective quality is the knowledge that communicates the phenomenon under study, rather than communicating with propositions about the phenomenon.

As a designer, the heuristic inquiry is a way to achieve an embodied understanding of the phenomenon central to the design context, so that the designer also becomes a "user", an experienced and exemplary member of the target group. It makes sense to participate in this design context, adopt new perspectives, acquire relevant skills and form propositional knowledge about it this way, from the top down and from the bottom up, rather than to learn propositions only from the top down, say from scientific literature or interviews with the target group. Heuristic inquiry is a structured example of such an embodied practice that can be utilised effectively for designers to understand their problem contexts.

2.1.2. Phases of a heuristic inquiry

Heuristic research is characterised by six phases (Sultan, 2019, Chapter 4): engagement, immersion, incubation, illumination, explication and creative synthesis. In the engagement phase, one chooses a particular phenomenon to investigate based on personal interest and then participates in the phenomenon in question. In immersion, co-researchers are involved to convey their version of the experience and knowledge of the collective aspects is deepened. The acquired knowledge is then reflected on in the incubation phase until the illumination phase starts, in which insights happen and understanding of the collective phenomenon starts to coalesce. In the explication phase, the essence of the collective experience is teased out of the insights and laid out verbally. The creative synthesis is a culmination of the research and tries to capture the perceptual and emotional structure of the essential, collective experience in an artistic production.

2.1.3. Modifications

This chapter does not describe the incubation, illumination and explication phases. The incubation period wasn't performed as a separate phase, as I just focused on other aspects of the project, like the literature review and prototyping. Illuminations happened along the way at informal moments and weren't recorded as events, but formed the basis for the creative synthesis. I've tried to explain some of the insights in the creative synthesis (sect. 2.5), but I chose not to define the phenomenon verbally, as I felt that words would overconstrain it, leaving out the transcendent aspect of becoming more insightful, that which goes beyond the currently know propositional, but that is particular to this heuristic inquiry.

2.1.4. The heuristic research question

The main research question for this heuristic inquiry was: 'What is the essence of the experience of becoming more insightful as a designer through habitual mindfulness practice?' This is the question I tried to approach through introspection and analysing anecdotes and interviews. I tried to suggest it in words and painting.

2.2. Self-experience

The engagement phase is marked by intrinsic motivation for the research topic (Sultan, 2019). Below I lay out a personal account of becoming more insightful through habitual mindfulness practice. This account is a reflection on past years, drawing from notes I took during this time.

2.2.1. Initial engagement with meditation

I took up meditation after a spiritual experience in a psychedelic, altered state of consciousness (similar to descriptions by James, 1902/1982). The primary fact of consciousness, of being alive and aware, had never been noticeable before in as strong a way as it was then. I developed an interest in consciousness and exploring the variety of its possible structures. I had read that it was possible to attain very different states from everyday awareness only through meditation and I decided to try it out. As I practised more, I became better at it, experiencing increasingly longer periods of silence from automatic thinking, and eventually deeper states of calm, progressively becoming emptier. This happened over several years, the frequency of practice increasing from once every one or two months, to a few times every week without habit.

2.2.2. Noticing a deepening of insight

Several realisations happened at the end of this period, some of which were revealing, as they made clear to me a greatness or profundity that was beyond any experience I had had before, conveying a greater depth to the world and a greater depth to myself than I had ever been aware of. I had experiences of what I would describe as a unity with the universe, and panpsychist-like experiences of an almost infinitely

diluted consciousness woven like fabric or fluffy like foam throughout space-time, constantly seeking to develop itself into sentient beings.

2.2.3. Collective consciousness

One of these was the realisation of my ancestral lineage: that my awareness was caused by an unbroken chain of reproduction of people much like me, lying in different contexts but having similar fundamental experiences, particularly of moods, emotions and feelings: grumpy and blissful, hatred and infatuation, the coldness of water and the warmth of another body. Recurring experiences, always and everywhere. The experience showed evolutionary continuity back to the last common ancestor with chimpanzees and back way beyond that to the development of the nervous system. A feeling of real connection to other animals and their experiences, in degrees of evolutionary separation. This insight was the main reason I decided to become and remain a vegan.

2.2.4. Unity of matter and consciousness

Another time after this, I was looking out over a lake from my window and I realised the equality of the fact of matter both in the lake and in myself. I thought of the lake as a kind of object before: now I saw it was the same as I, made up of molecules, atoms, and subatomic particles, guided by the grand process of—objectified nature. But what, then, does the fact of my consciousness mean? This was like an expulsion from Plato's cave. It had a heavy implication for me: if I am matter, and I am conscious, where does consciousness stop in matter? Oysters? Cells? RNA and other molecules? Leaping: the universe is alive, all the way down to its most basic elements and processes, and matter and consciousness are like two perspectives in the same processes, from the outside and the inside, respectively: like they arise without and within me. And the sense that I am, and we are all of it.

2.2.5. Deciding on development and Prajna practice

It is hard to say, like with any insight, if it is deluded: you have to follow up on their implications and act differently in the world to find out their validity. It seems, so far, however, that there has been great value to these new perspectives. After the last one, I decided to make my practice systematic and habitual, to

continue the trend of increasing insightfulness and understanding: this is what development must mean, I thought. I followed an online mindfulness course by John Vervaeke, whose theoretical frameworks also proved central to the development of this project. The most important practice from this series has been the "Prajna" practice (Vervaeke, 2020), named after the Pali word *paññā* in Buddhism, meaning 'supreme knowledge' of *impermanence*, *suffering* and *non-self*, or specifically of *emptiness* (in Mahayana Buddhism). The practice aims at a state that affords the realisation of this kind of knowledge in awareness. The structure of the practice is outlined in the product development chapter (5.2) and became foundational to the practice I developed.

2.2.6. Mindfulness practice habits

I started to practise this technique as follows: day 1, focused awareness and open monitoring meditation (*Vipassana*); day 2, loving-kindness contemplation (*Metta*) and day 3, Prajna practice. From December 2021 to around May 2022, I aimed at a total of an hour of practice a day, first in one sitting, then in three sessions of twenty minutes. I succeeded in doing at least twenty minutes a day for this period with some exceptions, and the average would have been between 30–40 minutes. I stopped after May for no good reason. Habits are hard to keep up. I think I also started to feel that it might not be necessary anymore, as my life had already changed for the better, and (see also: Quach et al., 2017). It was a gradual decrease in frequency over about four weeks.

2.2.7. Stopping and self-deception

The effects of stopping weren't instantly noticeable, and I was surprised. I thought I had permanently changed for the better. This continued until, slowly, over months, self-deceptive behaviour started to increase. Awareness "of the present moment" started to slowly decline, becoming more immersed and identified with the situation and with the contents of awareness. Rationalisations started to gain more control in decision-making, parasitic habits regained some control of my motor functions and I noticed that I was becoming increasingly identified with my ego in situations with social associations, seemingly all because I was becoming generally less aware. I should note, however—and this was a problematic part of the appearance of a static increase in cognitive development—that the depth of my awareness, when focused in a meditative manner, for example, seemed equivalent in depth to earlier experiences. I still think this holds: it seems that the depth of awareness, or its possibility for being 'reproduced' is

permanently altered. It is just that its spontaneous surfacing starts decreasing in frequency.

2.2.8 Insight and beauty

During the period of habitual practice, I felt that my insightfulness increased in frequency, depth and emotional intensity. I would more often have more prominent realisations: small ones felt more intense and the large ones too. These all became more abundant, it seems to me. A component of beauty in insights was often noticeable, seemingly more than before meditation practice.

I noticed that I often found a new sense of normalcy or everydayness in what I had previously thought of as beautiful. I also often found unexpected depths in the things I believed to be mundane. The teeming beauty that had seemingly always resided between me and every *thing* increasingly became noticeable and appreciable in daily life: a special type of in-sight. Generally, I felt that at any moment I was just experiencing *more*, both in depth and in sensory 'flatness', or apparent superficiality.

2.2.9. Insight and creativity

I found that I also acted in creative ways more often, both in smaller and larger ways. I would more often perform a new movement in a routine that I hadn't done before, like chopping an onion in a new way or opening my front door with one hand, and small things like that. It seems that being aware of performing a habit was a part of it. It also surfaced in larger ways: I took up oil painting to quench a thirst for expressing feelings and ideas in a non-verbal way and I made big alterations to the style of music I was producing.

Furthermore, it seems to me that more than one aspect of creativity was enhanced: the originality (far-out-ness) of ideas and actions, the frequency of production of the accompanying insights and also their appropriateness to the situation at hand. It felt like I was going deeper into my associations, acting more readily on looser associations, and weaker links, and still coming up with feasible actions or implications.

2.3. Co-researchers' experiences

2.3.1. Co-researchers and interviews

To create an understanding of the collective experience of becoming more insightful from habitual mindfulness practice, I gathered data from others who also experience a similar transformation. I conducted interviews with design practitioners, in which I asked questions to elicit their accounts and took notes of quotes and relevant interpretations. See appendix C for the prototypical interview outline. The goal of the interviews was to record an account of their experience with mindfulness and insight. In total, I interviewed three design students and five professional designers (n = 8). Table 1 is an overview of information about these co-researchers that gives some credibility to their contributions to this research. I made up pseudonyms for the sake of their anonymity.

Co-researcher pseudonym	**Type of practitioner**	**Practice type**	**Experience**	**Current practice habits**
Flatleaf	Professional furniture and product designer	Guided meditations, hatha yoga, Metta Bhavana (loving-kindness contemplation),	Eight years	20 mins yoga, 20 mins Metta, five days a week
Wallfern	Interaction design student	VGZ mindfulness app (guided audio), mindfulness meditation, hatha yoga, "rock climbing"	About a year	A few times a week
Evergreen	Interaction design student	Started with Headspace (guided audio), now Waking Up app (guided audio), meditation and mindful walking	Started five years ago	Three days a week
Seaweed	Professional industrial designer	Headspace (guided audio), "drawing"	Started this year	None

Grassflower	Professional industrial designer	Focused awareness and open monitoring meditation, various guided audio meditations, Metta (loving-kindness contemplation), started with Headspace (guided audio)	Six years, including a ten-day Vipassana (meditation) retreat	Every morning (aim), 20 mins guided audio, then 20 mins silent meditation
Datepalm	Interaction design student	Meditation, Wim Hof method (breathing technique)	Two–three months, two years ago	Meditation every two–three days
Oakroot	Professional strategic designer	Focused awareness meditation, both silent and with guided audio	Three months	Five minutes every morning
Sugarcane	Professional industrial designer and design educator	Mindfulness-Based Stress Reduction, focused awareness meditation	Around nine years	N/A*

Table 1. Overview of co-researchers and some details of their practices. *Not recorded.

2.3.2. Interview highlights

A quote from a blog post of one professional furniture and product designer (Sewell, 2019), whom I also interviewed, made it obvious to me that others had similar experiences. Notice that she points to both high-level personality effects, and *practical* value for her as a designer:

> [... Meditation has] offered me an increased level of empathy, forgiveness, clarity, and understanding, powerful qualities for a designer to have — I also see it as a practical tool, and feel its effect on my work, creativity and social life in a way that is functional and totally un-mysterious.

In a preliminary interview with her, she also showed criticisms of mindfulness, remarking that she had come back from seeing mindfulness as "the ultimate solution" to social problems and referred to *McMindfulness* by Ronald Purser. She also commented on the importance of mindfulness as a formal practice, rather than doing "mindful drawing or mindful painting". I come back to this in the main

discussion (ch. 7).

Evergreen, in a post-interview Whatsapp conversation said that meditation may have helped them with setting domains, converging, or focussing on the potential of the current knowledge instead of looking further, presentations: translating "a cloud of relationships into a linear story".

Oakroot said that "active meditation", like drawing circles and squares with the rhythm of breathing was pleasurable and calming.

About the meaning of mindfulness Sugarcane said: "Mindfulness is not really the right term. Being aware, being self-aware, a person on the planet. It enhances self-awareness and responsibility." "Realising that you are a part of the whole" was supposed to make you responsible for the whole. They put a contemplative twist on the common narrative around the sensory surface that is approached in meditation. This aligned with my intentions for product development, which were rooted in attentional scaling (see ch. 3).

Sugarcane said that having a methodology makes you "go into autopilot". Awareness fro them was about questioning and "looking at things".

2.3.3. Shared experiences

Ending up in daily–weekly practice

Four co-researchers said they currently practised daily or weekly. Three days a week for Evergreen, five a week for Flatleaf, "a few times a week" for Wallfern and "daily" for Grassflower (though "in periods"). Although at the time of writing, I'm currently in the process of regaining my mindfulness habits, I'd say I also want to be practising daily, ideally every day.

Started with guided meditations

Three co-researchers told me they started with mindfulness by exploring guided meditations on the internet: the Dutch VGZ Mindfulness coach app (VGZ, n.d.) for Wallfern, Headspace (Headspace, n.d.) and Sam Harris's Waking Up app (Waking Up, n.d.) for Evergreen, and recordings by John Kabat-Zinn (e.g., Sounds True, 2014) for Flatleaf, and Headspace for Grassflower. Similarly, I also started with various recordings that I found on YouTube. I still occasionally put on recordings from the Waking Up app.

Enhanced insight and creativity

Evergreen reported "more insight" and "more awareness of feeling" in a way that is "not opposed to the scientific side of designing". Divergent thinking "comes [more] naturally." Oakroot noted, "a better idea flow, naturally". Flatleaf also remarked on this in their blog post (Sewell, 2019). My own experiences align with this collective theme.

Generalised effect

It seems to be hard to describe the effects of mindfulness in work as separate from the general effects on the person as a whole. Flatleaf noted that it was "hard to separate [the changes] from my personality". Oakroot said about mindfulness that it "impacts everything" because you can "focus more, and more on one thing". Grassflower too noted that the effects were "being more conscious and aware", and generally having "more connection". I also feel this way, and would also suggest that there was a tendency of becoming generally more aware.

Self-control

Evergreen said that they inquired for a reason behind emotions "in difficult situations", instead of "shooting off into a distraction" and "not acting automatically". Flatleaf notes that mindfulness helps for "predicting how you're going to feel" and for "controlling moods." Grassflower said they had more "grip on what happens in my head." I'm not so sure if I found this effect in myself, but I did find that I'm more often aware of what is going on, even if I don't actively decide to interfere in impulsive behaviour.

Stress reduction

Evergreen said mindfulness could be described as a "*mistig*" (misty), "*rustig*" (peaceful) feeling. They meditated more when stressed as a coping strategy. Grassflower said they used it for "staying calmer" and that it "creates less stress". Oakroot employed mediation for coping with anxiety and perfectionism. Sugarcane practised MBSR (Mindfulness-Based Stress Reduction, from Kabat-Zinn's *Full Catastrophe Living*) which has this value as its main goal. I also feel that this is an effect for me, although I wouldn't always say it is a positive one. I often tend to stay too relaxed about pressing issues and don't necessarily feel compelled to act.

Zooming out

Both Evergreen and Wallfern commented on the effect of mindfulness to increase the capacity to look at their design projects from a distance. R.K. called this "a birds-eye view" ("*vogelvluchtperspectief*"). Evergreen noted that seeing the "layers of perspectives" helps "switching between levels" of the project (*"schakelen tussen niveaus"*). This is a familiar effect for me and is well explained by the theory of mindfulness laid out in the literature review (ch. 3), especially relating to *opponent processing*.

Ambitions for mindfulness

Two others told me that they had established the distribution of mindfulness as a professional goal. Wallfern said that it had become "an obsession" to involve mindfulness "in my own projects" and wanted to "introduce the values of mindfulness in the lives of other people." Flatleaf is a professional designer who has developed a meditation pod and an EEG device to train mindfulness with. They noted that "a part of their work is directly about mindfulness". This coincides with my intentions with this project as such. I felt compelled to grant others the possibility of experiencing the positive changes that happened in me.

Enlightenment experiences

While asking for "enlightenment-like experiences" mostly fell flat, there were three positive responses. Evergreen was "close to a burn-out" and one morning, "it was too much", so they meditated, and were "staring at the trees outside my window for an hour". They then experienced "cold shivers", which were "unexplainable" and they recovered from all symptoms of the nearing burn-out that day, suggesting that the experience had taken away all stress.

Flatleaf said on the notion of enlightenment: "it must seem great", but also said: "incremental moments of mini-enlightenments do happen" during their practice. They said that lots of small insights may be what enlightenment meant for them.
Grassflower recounted three significant experiences linked to mindfulness, one of which was during a ten-day Vipassana retreat, which gave them motivation to "keep meditating". About another one about "self-acceptance" they mentioned that "[it] always has some influence [on everyday experience]".

2.4. Designers' depictions of insight

To gain an understanding of how a designer might experience an insight, I walked around the industrial design department of the university, asking students to 'make a quick drawing of the feeling of an insight' with crayons on a 10 by 10 cm card. This resulted in a total number of twenty-two (n=22) different representations of a design student's feeling of an insight. I've described the figures according to my recollections of the interactions. Below, I discuss the drawings in three distinct themes: bright light, explosions and light bulbs (12); diagrams, puzzles and connecting the dots (6); and emotional metaphors (4).

2.4.1. Bright light

Metaphors related to light are common in the language surrounding insight: "a *flash* of *brilliance*", "it *dawned* upon me", "her face *lit up*", "I *see* what you mean", "please *enlighten* me", "a *clear* explanation", "to see the world in a new *light*", "*dull* material", "remaining *blind spots*", and so on. I propose that twelve of the drawings draw upon this metaphorical theme and try to suggest a feeling of brightness (see figs. 2–14). I divided this theme into two sub-themes, explosions and light bulbs.

Explosions

The following seven drawings seem to me to suggest bright light by using tools of flashes, rapid movement from a centre, high (colour) contrast 'loudness', or the exclusive use of bright or warm colours. The explosion seems to suggest the suddenness of the experience and maybe its unpredictability. To me, there is also a sense of passivity, as though it was determined to happen without the influence of will.

Figure 2. A unified feeling. Notice an orbiting movement around a centre, instead of moving away from it. May suggest a gradient in a 'mental space', but this was not specified.

Figure 3. Rapid movement from a centre, the star shapes denote the distinct, constituent facts and their brightness.

Figure 4. A small insight might occur in parallel or as a consequence of the main insight.

Figure 5. The yellow inside the body of the person represents a preceding confusion.

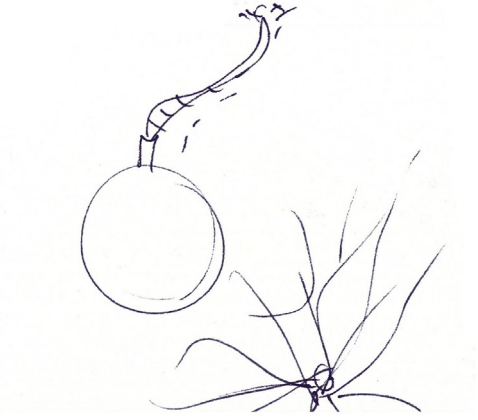


Figure 6. An ignited bomb and its explosion.

Figure 7. A grey mist or cloud becomes coloured and differentiated.

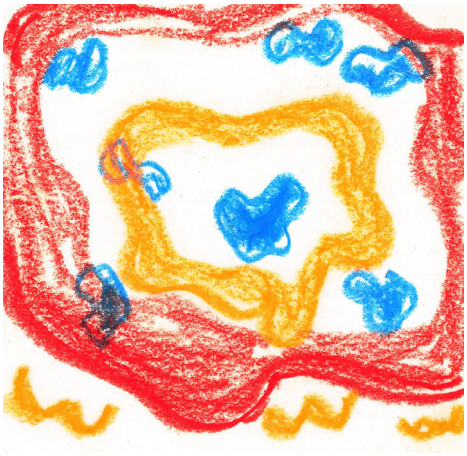


Figure 8. Successive insights (cascade, suggesting *flow*), The orange double-us were "associations".

Light bulbs

To my surprise, five of the twenty-two were clear representations of incandescent light bulbs. This common cultural symbol for insight had not been brought to my attention before, in association with this project. The earliest cultural reference to the incandescent light bulb as a symbol for the insight I could find was from around 1937 (see fig. 9), 57 years after Edison's original patent. As the adoption of electric light had revolutionary implications, the light bulb was probably first only associated with clever ideas but changed over time to symbolise the flash of the insight itself. Through cartoons and other media, the symbol has been a successful idea as a communication device.

One participant, who made the picture in figure 19, first chose the light bulb as an obvious first iteration but then continued ideating to come up with the diagram. About this, the participant said: "The light bulb is a metaphor for what is actually happening. I wanted to think deeper and draw what is actually happening to me during an insight. Yes, the light bulb represents a moment where it all clicks, and lights up, but what is it that clicks? And why does that feel good? That's what I was thinking [before making the drawing]." This suggests that the light bulb symbol might be obvious to many others as well. Furthermore, it suggests a difference in introspecting about insights between people, where some relied on readily available cultural symbols and others took the time to construct more authentic representations.

Figure 9. Use of the light bulb symbol in an animation from ca. 1937, probably by Fleischer Studios (GettyImages, n.d., via https://media.gettyimages.com/videos/grampy-attempts-to-come-up-with-a-good-idea-video-id479081736?s=640x640).

Figure 10. "Insight" and an angular range of illumination in orange.

Figure 11. Note both concentric and radial movement, reinforcing the centrality of the 'location' of the insight.

Figure 12. Similar to the previous, without radial movement. Note the choice of warm colours.

Figure 13. A light bulb above a stick figure showing positive emotion. This symbolism is associated with cartoons and suggest that the illumination is external rather than internal, throwing light *on the world*.

Figure 14. Shows initial illumination and "ooooh" expression of sudden understanding and a consequential positive emotional state, with a halo: a Christian symbol associated with saints and angels, which may suggest goodness or peacefulness, or even holiness or sacredness.

2.4.2. Diagrams

Various schematic representations were also drawn, not only conceptualising elements of insight, but also their relationships (see figs. 15–20). Two main themes were found. The 'puzzle pieces' show a 'fittedness' of new information into an existing frame of other information. The other subtheme, 'connecting the dots', shows relationships between single facts that form the overall 'feeling' of the insight.

Puzzle pieces

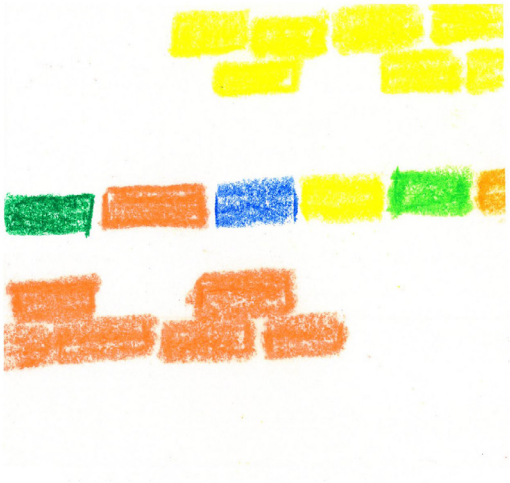


Figure 15. Facts fit like bricks into a 'line' of thought.

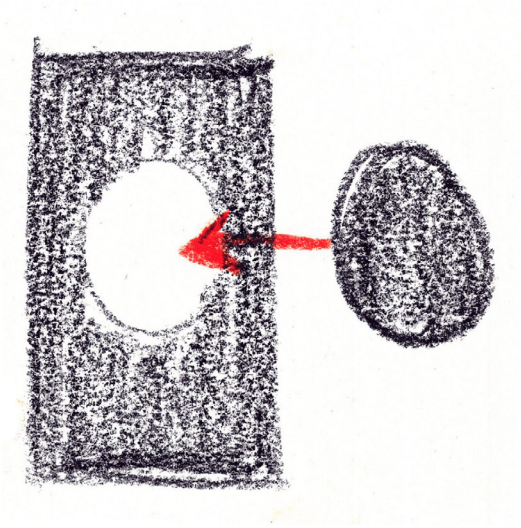
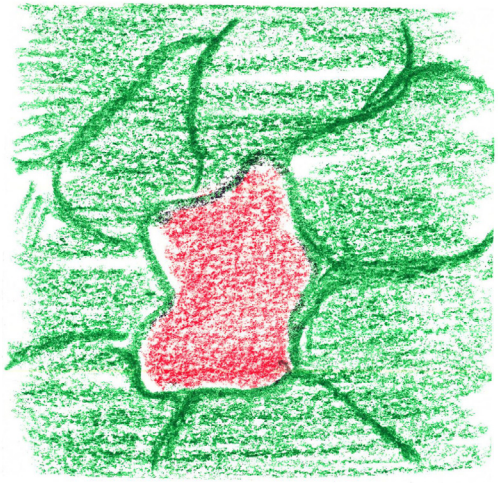


Figure 16. A precise and active fit.



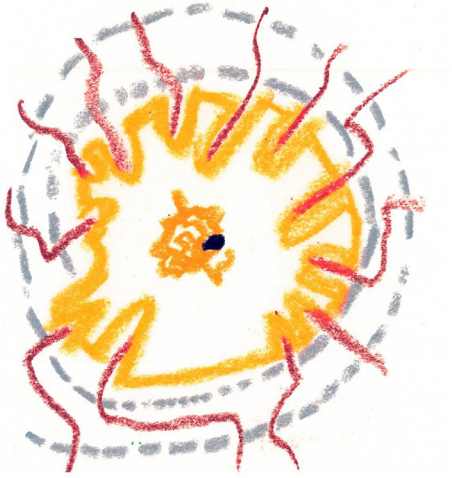
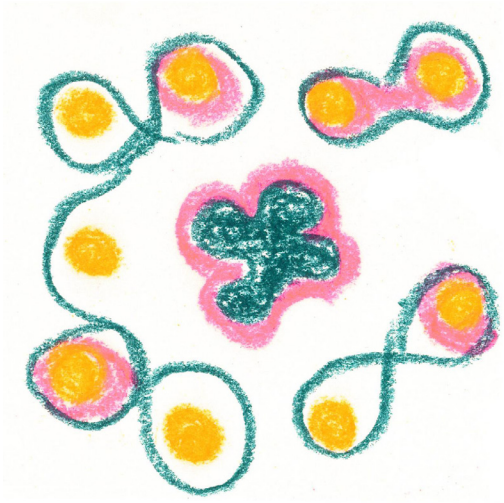


Figure 17. A slightly less defined, but nonetheless distinct and active fit.

Figure 18. The journey of exploration surrounds a central topic and black insight the black dot). The central orange squiggle denotes a bigger context in which the insight sits. The red lines were facts seeping through the journey, which seem to lock into the orange insight shape.

Connecting the dots



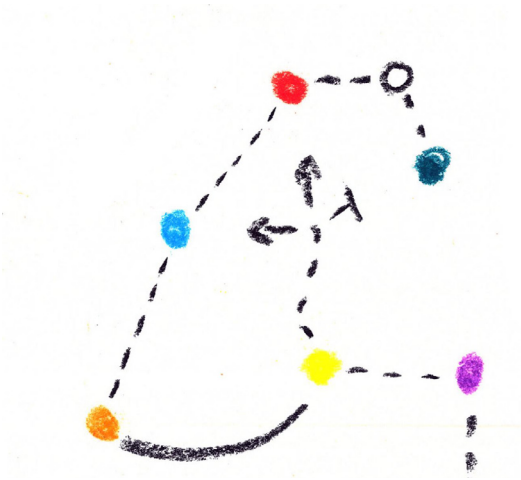


Figure 19. Relationships between facts and fact groups surround a central insight.

Figure 20. Various kinds of relationships between facts constitute an insight.

2.4.3. Emotional metaphors

Some drew more distant metaphorical representations of an aspect of the feeling of an insight (see figs. 21–24). I was especially surprised by the aspect of calmness or relief (fig. 22), and a unique perspective on realising self-deception through an explicit awareness of object permanence (fig. 23).

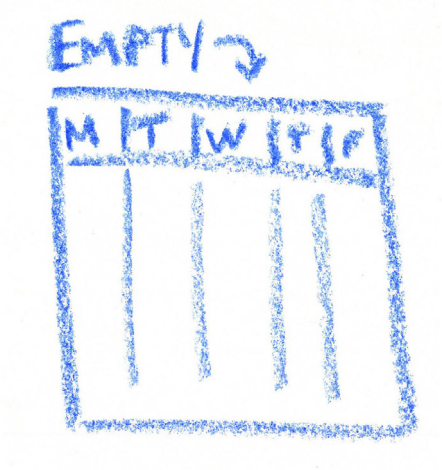


Figure 21. Distinctiveness of size, colour, position and spread as analogous for the distinctiveness of the insight feeling (orange) against the feeling of "struggling with the problem", like in the impasse (blue and green).

Figure 22. The feeling of having an empty schedule as an aspect of the feeling of an insight. "Relieved" (no longer anxious), an accompanying peacefulness and/or joy perhaps.

Figure 23. "Sometimes you think the circle isn't round, but then you realise that it is round, and then you feel like a yellow line ["*geel streepje*"] for the rest of the day." I interpreted this as a representation of realising a self-deception, realising that the frame you were looking through at something was unhelpful—and perhaps counterproductive. The feeling of "a yellow line", also being horizontal, may represent lightness, calmness and simplicity.

Figure 24. The "bubbles" are like "the facts of the insight", but it's more about the "cloud-like" feeling of all of them together. The colour palette was supposed to represent the emotional content of the insight. This suggests to me the 'cloud' of relationships between facts that change in the representational change theory of insight, which is covered in the literature review (ch. 3).

2.4.4. Discussion

In the analysis of the drawings of design students, I found three main categories of which some were distinguishable into subcategories: light: explosions and light bulbs, diagrams: puzzle pieces and connecting the dots, and emotional metaphors.

The centrality of awareness and inner illumination

A main feature in many of the pictures was a centrality of a location, with either radial or axial movement from a centre point. Though this may have been an effect caused by the squareness of the paper cards, it could also stem from the feeling of an insight as *central* to awareness, or even all-encompassing awareness at that time: from the inside, outwards. Figure 5 exemplifies an *inner* illumination like this.

A hypothesis of introspective skill

One would expect differences in the quality of the depictions based on a variation in introspective skill, in resolution and depth let's say, which may be a consequence of variations in personality: perhaps openness for experience and introversion in the Big Five model. It could also be affected by the degree of competence as a designer (students being at different stages in their study programs), and generally of (developmental) age. In any case, the variation in introspective skill might be exemplified by the difference of approach between the light bulb and diagram groups, for example, in the sense that better introspection would result in a clearer perception of the insight phenomenon as it occurred in past experiences.

The student who made figure 19 told me that their first thought was also to draw a light bulb, but decided to reject that idea because they thought it would be too simple, and then designed a kind of diagram, arguably more original or authentic than the use of a cultural symbol. They noted that it was possible that they were in a further stage as a designer, which would have caused this iterative approach to become an implicit part of any creative task. While a clear explanation remains lacking, a variation in depth and resolution between design students is a potential framing to explain differences in depictions and was taken into consideration during product development, especially in communicating about insight as such, and in understanding individual differences in testing the effectiveness of a mindfulness practice.

2.5. Creative synthesis

The purpose of this chapter is to attempt to convey the structure of the essential experience, that which is shared across people, of designers becoming more insightful with the adoption of habitual mindfulness practice.

It seemed to me that the feeling of an insight is a key component to the essence of the experience of becoming more insightful as a person. Insight seems to permeate all facets of everyday experience. I tried to amplify this feeling by doing some preliminary drawings. They are purposely rough and quick. This was to allow unconscious, intuitive processes to occur before I became conscious of what was happening. In my experience with drawing and painting, this often causes insights afterwards, about understanding what my intuition, the implicit learning system, has picked up unconsciously. The final painting I did to capture the essential experiential structure was not done in this way, instead relying on slow changes and deliberate thought in that process. I used external sketches to try out ideas for this, which can be seen in appendix D.

2.5.1. Explorations in visualising the insight experience

Before the students' insight drawings, I produced two drawings myself. I used crayons on paper. The first one (fig. 25) is a first attempt at capturing the whole essential experience. The second is focused only on representing the feeling of an insight, which led me to ask design students to do the same. I made more than two drawings and these can be found in appendix D, with short descriptions.

The first attempt at visualising the essence of the experience of becoming more insight with mindfulness resulted in figure 25. This drawing was supposed to capture several aspects at once. The 'flash' of awareness, a felt 'aliveness' is represented by the red surrounding 'background'. The 'point' of the insight, its singular purpose, is central and connects to the red background awareness. This structure suggests to me the basic structure of a mandala, as described by Jung (Jacobi, 1963, p. 136). The white space represents light (related to the flash). The yellow circle, in retrospect, seems to represent a division of space: a metaphorical instantaneous separation of relevant and irrelevant information. The central blue gradient represents calm. At the time I didn't realise the importance of this feeling, but this became a big aspect of the final work.

In this second drawing (fig. 26), I intended the two circles to contain representations of 'general relational structures', or *framings*, context *constructions*, and the pair of circles or framings is supposed to suggest a successive complexification as this insight progresses in time. For me, it hints at the starting of a ("hot") *flow state*, which has been described as an insight cascade (Csikszentmihalyi, 2009).

Both of these drawings primed me for several aspects of the experience of insight, and I think it helped me find patterns in the students' drawings that I might not have seen otherwise. Looking back at their pictures, I saw a lot of warm colours, which felt right to me too. They seemed to strike a chord about

the vibrance of the world during an insight, the improved clarity, let's say, like colours on a sunny day. I also found figure 22, the empty calendar, particularly inspiring. The supposed feeling of not having to do anything seemed to me like freedom. I tried to scale this feeling up and it started to make sense with the feeling of meditation, even transitioning into a kind of peacefulness. Boundless possibility and nothing to do right now but be. I was also inspired by the quirky representation of self-deception in figure 23, which portrayed only a representation of reality and the feeling of becoming aware of its structure. I thought of the process of learning a mental map of a new neighbourhood after moving house.

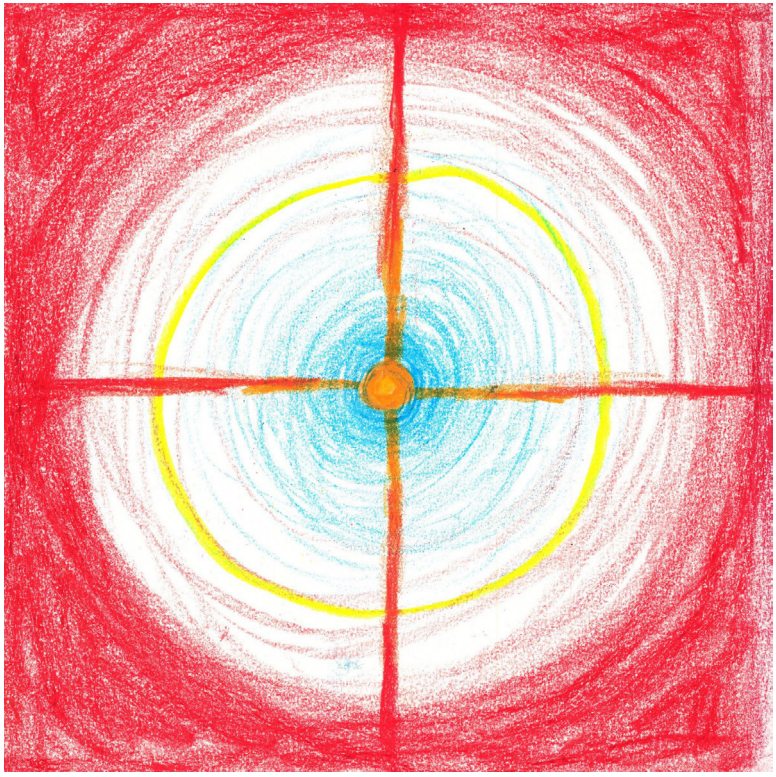


Figure 25. No. 1: the essence of becoming more insightful through mindfulness practice. June 2022. Crayons on paper, 28 cm x 28 cm.

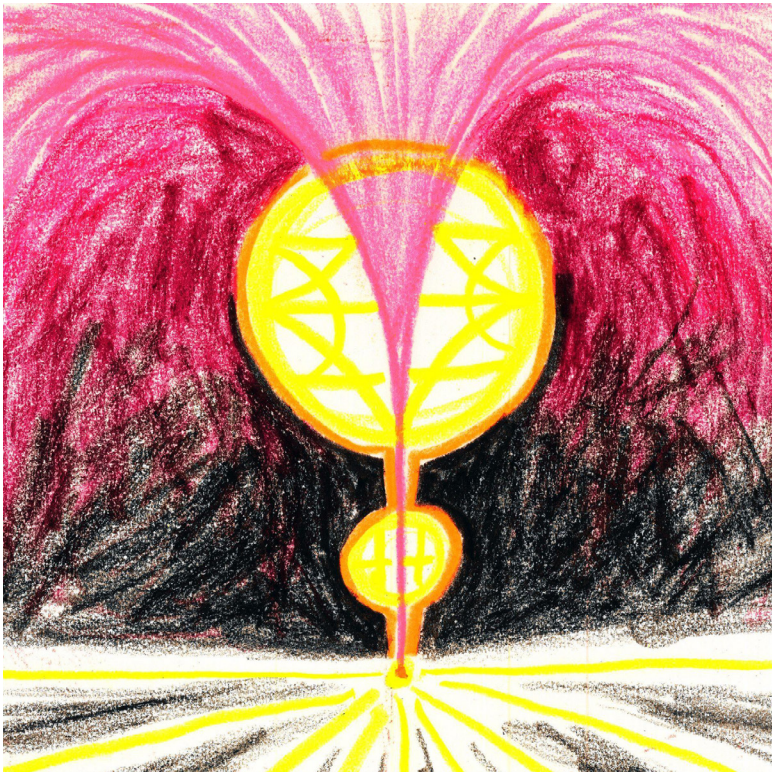


Figure 26. No. 2: the feeling of an insight. June 2022. Crayons on paper, 28 cm x 28 cm. Note a sort of 3-dimensional cardioid shape of the suggested space, originating in the point.

2.5.2. Final work

The outcome of the creative synthesis, figure 27, is intended to be an artistic representation of the structure of the collective experience. I chose to create a non-figurative painting that represents a type of *gestalt*. This is the experience of something in its entirety, as its whole pattern at once, its structural and functional organisation, its form. The painting was supposed to capture something unified that cannot be captured in words but can be suggested through symbolic language. It is non-figurative in the sense that it isn't a picture of a lotus flower and clouds, but an abstract composite of symbolic metaphors, more like an idea or

feeling. I like to think of it as a combination of an abstract expressionist perspective—seeing the abstract emotional gestalt, and mythological and religious symbolic depictions that form an abstract narrative.

Figure 27. "Mindfulness and Insight." October 2022. 140 cm x 140 cm, oils on canvas.

2.5.3. Symbols vs. words

I understand symbols as metaphorical objects: simple patterns that represent higher-order cognitive processes. Work by Montague (2007) suggests that the use of metaphor can engage a neural process of cross-modal integration, similar to what happens in synaesthesia, and lets disparate neural processes communicate in new ways. In this way, the eye may symbolise consciousness, as could the sun, through the experience of light. I'll present a parallel list of symbols I intended to represent in the painting and some of my associations with them. The gestalt of the painting seems to be difficult, if not, impossible to describe in words.

- Background: implies a foreground, the no-thing to surround the things, Rothko's infinite vistas
- Red and orange: warmth, heat, vibrance of the world, coming alive
- Eyes: awareness, consciousness, attention, perception (see appendix E for a note on eye symbolism and its relevance to insight)
- Lotus flower: enlightenment or awakening (*bodhi*), the Buddha and Buddhism, other Indian religions
- Use of perspective: 3D-ness, spaciousness, emptiness
- Horizon: the infinitely far, the infinitesimally small, infinitely diluted consciousness in empty space
- Clouds: a unified ongoing physical process, the sky, up-ness, spaciousness
- Dark purple, triangular voids: chaos, feeling around in the dark, mystery, confusion, absurdity, the vale of the unconscious
- Visual repetition or rhythm: rhythms of daily–weekly mindfulness practice
- Water droplets: changed sense of time, stillness, an eternal now, *'all-at-once-ness'*
- Stacking of lotus flowers, decreasing exponentially in size: reduplication, fractality, recursion, orders of magnitude, continuity (as opposed to a singularity), boundlessness

2.6. Conclusions

The question I set out to answer in this heuristic inquiry was to find out what the essence was of the collective experience of becoming more insightful through habitual mindfulness practice. I attempted to answer this question by recalling my own experiences, by conducting and analysing interviews with ten people who had similar experiences and by analysing pictorial representations of the insight experience made by twenty-two design students. The insights from this process were synthesised into an oil painting to represent the structure of the collective experience of becoming more insightful through habitual mindfulness practice. Insights from this heuristic inquiry are combined and compared to findings from the literature review (ch. 3) in the synthesis of findings (ch. 4), to justify decisions in product development (ch. 5), which attempts to achieve the design goal.

Chapter 3

Literature review

3.1. Introduction

In contrast to heuristic inquiry, which is focused centrally on subjective and intersubjective experience, this literature review is focused on obtaining an understanding of more objective phenomena that surround the main research question of how to develop the toolkit. The sub-questions for this literature review were the following four: 'What is insight?', 'How does insight relate to creative problem-solving in design processes?', 'What is mindfulness and how does it relate to insight?' and 'What knowledge is necessary to keep the functionality of mindfulness, when its aspects are modified?' First, I will cover the meaning and theories of insight, then, design and creativity research, the meaning and theories of mindfulness, then its relationship to insight and then mindfulness and its relationship to design practice. Finally, I will synthesise the findings, covering agreements and conflicts, as well as current knowledge gaps. I will conclude with the most important knowledge concerning product development.

3.2. Insight

3.2.1. What is insight?

The aha moment, the feeling of epiphany, Archimedes' naked "Eureka!" and Newton's falling apple, insight is a universal experience. The quote in the introduction of the design project in which you realise that helping people with dementia by focusing on their relationships with their family members is a core example of how its importance surfaces in the context of design. There seem to be two main theories in the cognitive science literature that describe the mechanisms behind insight: representational change theory and progress monitoring theory.

Beaty et al. (2014) note that insight problem-solving is often used as a psychological metric for creativity: "Researchers often cite subjective reports of eminent historical figures when framing the longstanding mystery surrounding unconscious problem solving [...] and a large literature has sought to demystify the phenomenon of insight [...] The notion that creative ideas arise from such unconscious, associative processes was proposed a half-century ago by Mednick (1962) and remains influential in modern creativity research". This explains the similarity Beaty et al. (2014) however "found no evidence for a relationship between insight problem solving and creative behaviour and achievement", and stresses the phenomenon of voluntary creative cognition. They were also able to support others' findings of positive correlations of the personality measures of fluid intelligence (g_f) and openness to experience with creative behaviour and achievement, but this doesn't yet imply a causal relationship.

It seems that the relationship between insight and creativity is yet to be understood. One reason for their apparent similarity is the necessity of insight to creatively generate alternative problem frames that may 'fit' context in varying degrees of utility. I was unaware of this research until late in the project, so I ended up equivocating these words, using 'insight' and 'creativity' interchangeably, since much other literature also seemed to conflate the two. This might not be as big a problem as it seems (for this project), since a part of the sources might equally conflate the terms. Again, I will be loosely equivocating these two terms throughout this report, but more attention should be paid to this distinction in further research.

3.2.2. The representational change theory

In the representational change theory of insight (Knoblich et al., 1999), the problem solver is initially applying unhelpful knowledge to the problem, because they are projecting unnecessary constraints. These constraints may be heuristics that have helped in past experiences, but in a novel context, they should be considered neutral biases instead. This 'thinking inside the box' is the impasse. Once the problem solver 'relaxes' their constraints (dissolves the box), they can bring in other, previously unavailable knowledge into working memory that may solve the problem. The solver also uses 'chunk decomposition', where any meaningful gestalt—the experiential quality of a 'whole', 'form', 'pattern', or 'configuration'—is broken up into its primary features. This can happen recursively, as any feature becomes its own gestalt. Both constraint relaxation and chunk decomposition afford a change in the representation of the problem, which, at the neuronal level, means a change in the distribution of activity in working memory. This representational change (see fig. 28) is proposed to produce the concluding 'Aha!'. As I understand it, it is the change in the whole gestalt of the problem (the whole pattern) that makes the solution obvious: one feature of the new gestalt becomes the lack of the solution.

3.2.3. The progress monitoring theory

In the progress monitoring theory of insight (MacGregor et al., 2001), heuristics, neural 'rules of thumb', are used to evaluate the number of steps to take to get from the current state to the goal state, which is the criteria of the problem, not a particular solution. This analysis of the distance to the goal then determines if they think it's unrealistic to get to the end goal, and then causes the generation of alternate solutions. The generation of this heuristic and the minimisation of steps "are the source of problem difficulty, but also create the conditions necessary for insightful moves to be sought" (MacGregor et al., 2001).

3.2.4. Comparison of theories

According to Jones (2003), representational change theory provides a better account for single-step problems while progress monitoring is more fit for multistep problems. Overall, however, representational change theory is "the better indicator of performance". Since the insight problems in creative practice are often multistep problems, but representational change is still a better indicator, there is a dilemma of choosing between largely incompatible theories. Other important sources I refer to use representational

change (e.g., Ostafin and Kassman, 2012; Ovington et al., 2018; Ren et al., 2011; Vervaeke, 2022; Vervaeke et al., 2012; Vervaeke and Ferraro, 2016), so I also joined in. In retrospect, representational change does indeed appear to explain mindfulness quite elegantly and conforms to my own experiences.

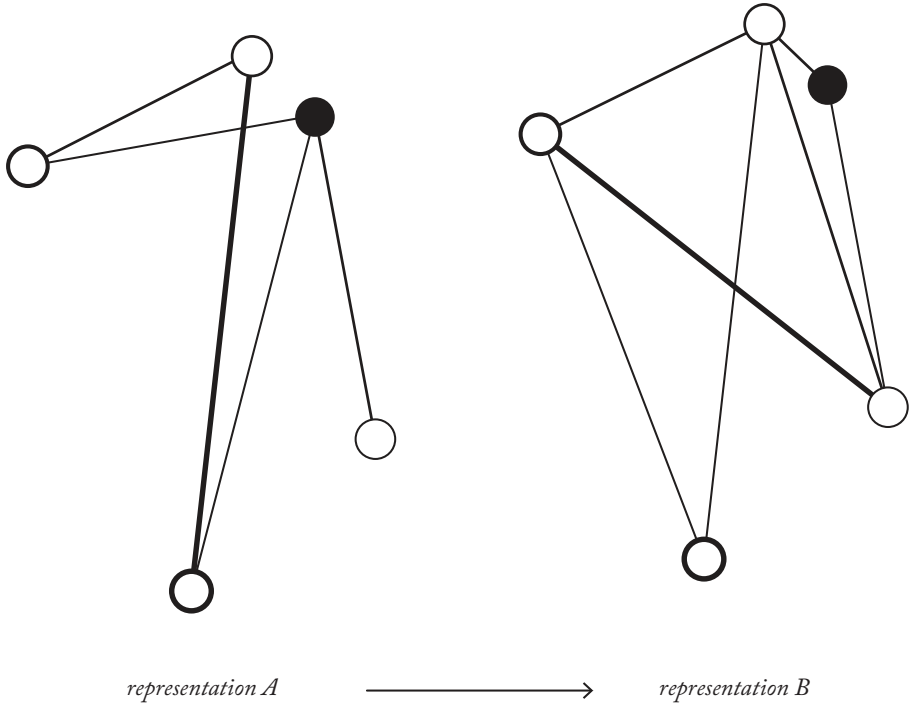


Figure 28. Visualisation of representational change. The gestalt (whole) changes by how its features (facts) are interrelated. New connections between existing facts can be made.

3.3. Design and insight

3.3.1. Positive mood and decreased stressors

A meta-analysis (Davis, 2009) concludes that positive mood has a positive effect on creativity. This is corroborated by a theoretical meta-analysis showing that stressors decrease creativity (Byron et al., 2010). In the past years in design education, my fellow students and I have repeatedly heard from our educators to take breaks, go for walks and take care of our mental well-being to foster creativity. Though I couldn't find a causal link in the literature, it seems to me that increased positive mood caused by mindfulness practice also contributes to increased creativity. This further strengthens the aim of this project to use mindfulness to afford increased creativity.

3.3.2. Incubation periods and sleep

Designers are often advised to take breaks and to allow "their unconscious mind to do its work". There is evidence to support the utility of incubation periods (Ritter and Dijksterhuis, 2014). Counter evidence from REM research (Cai et al., 2009) suggests, however, that the active phenomenon in incubation periods might not be the time, but the number of REM sleep cycles that happened in that period and the authors advise taking naps during creative work. I see a possible connection here to mindfulness in that it is common to get theta wave patterns during meditation, a state between waking and sleeping, where (visual) imagination can be increased. Austin (1999) speculates that mediation 'freezes' a state between waking and sleeping, which progresses towards sleep with repeated practice, from alpha to theta pattern activity.

3.3.3. Design methods

Design methods are schemas, often procedures created from theoretical frameworks that are intended to help a design student or professional to perform better in the discipline. Often a goal is to induce creative insights. For example, SCAMPER (Eberle, 1996)—Substitute, Combine, Amplify, Modify, Put to another use, Eliminate, Reverse—works by encouraging divergent thinking, just like brainstorming sessions, explicitly aiding the process of projecting new alternative framings onto the problem that may snap into

a more relevant configuration. Another method, Vision in Design ("ViP"; Hekkert and van Dijk, 2017), seems to me to rely on insight as a main mechanism of moving through its process structure. Insight defines the ends of most of the described stages, including "domain" definition, "clustering", "statement" generation, creation of an analogy and definitions of "interaction" and "product qualities". For a collection of summarised design methods, see *Delft design guide: design methods* by Boeijen and Daalhuizen (2014).

3.4. Effects of mindfulness

3.4.1. An operational definition

Mindfulness is often described as something like: "to pay attention to the present moment without judgement" (e.g., Kabat-Zinn, 1994, p. 4; Marlatt and Kristeller, 1999, p. 68). Variations exist, but this is usually the gist. You can see reflections of this in meditation classes and news articles, but also in much scientific literature. It is an operational definition: it describes what happens when acted out: it helps you perform mindfulness. There is a presupposition in this definition that you do mindfulness while doing something else as well. This could be anything, from a focus on breathing in formal meditation practice, to a deliberate non-focusing to becoming mindful of an activity in daily life.

3.4.2. Beneficial effects

In order to get a grip on mindfulness, an overview of its effects is a necessity. The benefits of mindfulness are numerous and attractive. These exist on both state and trait levels: short-term experienced conditions and long-term personality aspects, respectively. Sharma (2015) reports "stress reduction, decreased anxiety and depression, reduction in pain (both physical and psychological), improved memory and increased efficiency. There are also many physiological benefits mentioned such as reduced blood pressure, heart rate, decreased metabolism, breathing patterns and oxygen utilization". There is also evidence for the increase in: attention, focus, emotional regulation and creativity (Zenner et al., 2014), dispositional flow and insight (Ovington et al., 2018), empathy ("mindsight"; Siegel, 2011), self-regulated behaviour, positive emotional states, enhanced self-awareness, positive correlation with "a variety of well-being constructs" (Brown and Ryan, 2003) and wisdom (Vervaeke and Ferraro, 2013, p. 17). Less research has been done for the state level, but there is empirical evidence for increased state insight, becoming temporarily more insightful, by

counting insight problems solved (Ren et al., 2011).

Vervaeke and Ferraro (2013) theorise that mindfulness practices cause these changes, in part, because they optimise a central cognitive process that allows you to generally *realise* what is *relevant*, by intelligently excluding irrelevant patterns. Slagter et al. (2011) might provide empirical support for this claim, as they found that meditation causes "process-specific learning", which in turn "enhances core cognitive processes". This would mean that *cognition is altered at all levels*, confirming some of the evidence from the heuristic inquiry (ch. 2), the suggested "generalised effect" of mindfulness. If Vervaeke and Ferraro are right, cognition *generally* improves in how relevance is realised: from recognising a simple colour, to becoming aware of the location of your pen you were looking for, to realising solutions to wicked insight problems, like those often found in design.

3.4.3. Adverse effects

I could find only a small body of literature on the adverse effects of mindfulness, mainly centred around the same themes. Anālayo (2019) provides an overview and proposes that potential effects include difficult emotions and mental states, which are an integral part of the practice, and induction of psychosis, which seems to be an anomalous phenomenon. It is to be noted that the risks of these effects "are exacerbated by trauma and mental illness". Hirshberg et al. (2020) conducted a study evaluating numerous measures of harm for Kabat-Zinn's (Kabat-Zinn, 1994) "Mindfulness-Based Stress Reduction" program and found no evidence for higher rates of harm with respect to a control group and that "on many indices of harm across multiple outcomes, community MBSR was significantly preventative of harm".

3.5. Mindfulness is for insight

3.5.1. A theoretical definition

In order to work with principles of mindfulness, an explanation of the phenomenon is required to predict outcomes of changes in the practices. The operational definition of mindfulness, as discussed in 3.4, however, is problematic in several ways as an explanation. If I want to do creative work with elements that make mindfulness effective, I need a clear understanding of the working features of mindfulness, as well as

the functional relations between them. From the operational definition, problems arise immediately. What does it mean to pay attention? And what is 'the present moment'? Now-now? The past 5 seconds, or the past hour? And isn't paying attention to the present moment itself a form of judgement—against the past or the future? The features aren't clear, and neither are their relationships with each other. All this doesn't mean that that definition can't be a useful instruction for teaching mindfulness, but an explanation of any phenomenon requires definitions of its properties as well as their functional interrelationships.

I'll use the theoretical definition of mindfulness here according to the work of Vervaeke (2019). "Mindfulness is the performance of the set of practices that optimise cognition for insight". Vervaeke and Ferraro (2016) add to this (emphasis in original text):

> mindfulness is *the cognitive appropriation of the attentional machinery of construal, so as to enhance the awareness of framing, both in breaking frame and making frame.* To the degree in which one maintains an awareness of framing, one can be said to be present, and hence mindful, in whatever activity one is performing.

This appropriation of the attentional machinery is what defines practices to optimise cognition for insight. Mindfulness here is an umbrella term for any type of activity or exercise that changes the functioning of the brain and nervous system in a way that makes having insights more likely. In order to see how this can work, I need to explain two mechanisms of how attention functions. These aspects are *scaling* in attention and *opponent processing* in attention. After this, I'll cover how insight works and why mindfulness optimises cognition for insight.

3.5.2. Attention as a general optimisation

Mole (2011) argues that paying attention is not like any other skill. You can't just do it, just pay attention: you have to do it in synchrony with some other process, e.g. to pay attention to reading. He proposes that attention is a general optimisation of the application of a skill, to the goal of achieving the most meaning from it. Furthermore, we coordinate multiple skills to share that same goal, Mole calls this "cognitive unison". This would be why you can pay attention while engaged in vastly disparate types of activities, e.g. learning, exercising, creative production, eating, thinking, etc. Notice that if you should become better able to pay attention in general, you should be able to apply that augmented 'meta-skill' to all particular skills. It will turn out that practising mindfulness does exactly this.

3.5.3. Attentional scaling

The first mechanism of attention as proposed by Vervaeke's (2022) synthesis, is *attentional scaling*, a combination of theoretical constructs from the representational change theory of insight (Knoblich et al., 1999), from seminal work by Michael Polanyi (Polanyi, 1962; Polanyi and Sen, 1966/2009) and the 'context effect'.

Chunk decomposition and constraint relaxation

Representational change theory relies on a continual process of both chunk decomposition and constraint relaxation (Knoblich et al., 1999). These aspects work like polar opposites: chunk decomposition causes gestalts to break into their constituent features, and constraint relaxation affords the projection of new alternate gestalts (framings of 'the big picture'). This 'breaking down' and 'allowing up' are opposed in direction.

Opacity–transparency shifting

Polanyi (1962) proposes that attention has the ability to make functional parts in the perceptual system opaque and to make objects of perception transparent. An example of making a 'transparent' functional part of the perceptual system opaque would be to become aware of dirt on one's (sun)glasses, shifting attention from the visual world facilitated by the glasses, to the glasses themselves. An example of the opposite process, making an opaque object in awareness a transparent part of perception, could be using a screwdriver to drive a screw. You might 'incorporate' the screwdriver into your perceptual system: you can feel how the screw fits in the screwdriver through the screwdriver: it has become transparent to your attention. Polanyi argues that the direction of the flow of attention is always through 'transparent' awareness to 'opaque' awareness of something. Not only manual tools but also *psycho-technologies*, like numeracy and even design methods can also be integrated in this way of opacity-to-transparency. Being aware of the meaning of this paragraph *through* literacy. Meditation and contemplation turn out to be powerful ways of playing with this aspect of attention.

Up and down

Both of these theoretical approaches match each other and form a greater gestalt, that of attentional scaling: in *scaling down*, you break up gestalts into chunks, making the original gestalt transparent and making the chunks each their own opaque gestalts in awareness. In *scaling up*, you relax constraints, allow another whole to be projected, and the whole becomes an opaque gestalt, through the transparency of its features.

The aspect of scaling down being a causal factor in the affordance of insight may be supported by a correlation between open monitoring awareness and creativity (Lebuda et al., 2016), as well as by the effectiveness of meditation for state insight (Ren et al., 2011).

3.5.4. Opponent processing

Next to the scaling aspect, the other aspect of attention that's important in how mindfulness causes insight is opponent processing. The word 'opponent' suggests an adversarial relationship between scaling down and scaling up: they have opposite goals. People are constantly trying to find the right level of analysis of anything or situation that they encounter. This phenomenon was called *optimal grip* by philosopher Merleau-Ponty (Merleau-Ponty and Landes, 1944/2012). At the moment, you're probably not paying much attention to *these individual dark marks on a light background,* but probably more to the phrase, sentence, paragraph and chapter levels of meaning. You scale down and scale up, and eventually find the level of analysis that makes the most sense: the most relevant framing. This is a continual process that creates small kinds of insights.

While solving a complex problem, you're also constantly doing this, but the insight takes a much longer time to come because the problem is usually both complex and new. The way you approach the problem, its framing, how you literally *see* it, is determined by earlier experiences and those framings often prove inadequate for these new and complex situations (Jones, 2003).

These opposing processes might be compared to an 'inner physicist' and an 'inner philosopher', trying to argue about what reality is, in a constant dialogue of reduction and integration. In psychology, the 'context-effect' describes a related phenomenon, where meaning can be constructed without clear features and without a clear whole (see fig. 29). In mindfulness, you're trying to speed up the processes that produce insights by practising these two directions of scaling separately.

Figure 29. How can you read this as 'THE CAT'? An example of the context effect.

3.5.5. In traditional practices

In mindfulness, you're trying to speed up the processes that produce insights by practising these two directions of scaling separately. Religious traditions have been doing this for centuries. In Buddhist traditions, for example, meditation is a strategy for practising scaling down. You're breaking up your experience into individual sensations and sometimes even further into the field of empty awareness that lies below those. In contemplative practices, like forms of loving-kindness contemplation, you're practising integrating your identity into greater wholes by cultivating various loving relationships with successively larger levels of being: first with others around you, then humanity, all sentient beings, and all beings, onwards and upwards into greater and greater wholes, which can end in a sense of unity. This hopefully demonstrates the extent of the continuum of attentional scales that is described by the theory of mindfulness.

3.5.6. A theory of mindfulness

So, to summarise this theoretical approach to mindfulness laid out by Vervaeke and Ferraro (2016): *mindfulness* is the performance of the set of practices that optimise cognition for insight, by means of explicitly developing two mechanisms in attention, namely attentional scaling and opponent processing, which are built up from the work on the representational change theory of insight, transparency-opacity shifting and the context effect. This theory of mindfulness predicts the effectiveness of a practice for

cultivating insight by the extent to which the practice functionally conforms with its two mechanisms: attentional scaling and opponent processing.

3.6. Mindfulness and design

3.6.1. Mindfulness for expertise through self-regulation

A good reason to focus on mindfulness for creative professionals is to aid them in building their expertise. Fridland and Stichter (2021) argue that expertise, in general, boils down to self-regulation. This happens to be found as a prime effect of practising mindfulness (Brown and Ryan, 2003; Zenner et al., 2014), supporting the goal in this project of improvement in professional effectiveness.

3.6.2. Theoretical convergence of mindfulness for creativity

Furthermore, Shamas and Maker (2018) argue that *thoughtfulness* and *sensationality*, described as aspects of mindfulness, are "often ignored" as aspects of creativity and learning. These aspects seem to converge strongly with Vervaeke's (2022) constructs of scaling up and scaling down, respectively. The proposed roles of thoughtfulness and sensationality in creativity and learning also overlap with the functions of attentional scaling in producing insight (Knoblich et al., 1999; Vervaeke, 2022; Vervaeke and Ferraro, 2016). Additionally, Lebuda et al. (2016) found 'open monitoring'—which is practised in types of "open awareness meditation"—to increase creativity.

3.6.3. Phases in the design process

The effectiveness of targeting a specific phase in the design process for a mindfulness intervention is still unclear. This can be seen in the results of focusing on the design phases of decision-making (Pahl, 2005), ideation phases (Simpson-Little and Long, 2010), or even the overall mindset (Langer, 2005).

3.6.4. Stillness for stress resilience and creativity

The cultivation of stillness can develop a design skill that allows designers to cope with moments of uncertainty or stress throughout the process (Rojas et al., 2012). This may also be supported by the meta-analysis (Byron et al., 2010) concluding on the negative effect of stressors on creativity.

3.7. Summary of the review

In this literature review, I tried to answer the following four questions: 'What is insight?', 'What is mindfulness and how does it relate to insight?', and 'What knowledge is necessary to keep the functionality of mindfulness, when its aspects are modified?' Below are summarised answers to these questions. In the next chapter, insights from this literature review are fused and differentiated to create a more encompassing understanding of the design context, in order to work towards satisfying the design goal.

3.7.1. Insight

For practical purposes, insight was found to be best captured by representational change theory (Knoblich et al., 1999), as it is built upon the theoretical framework around mindfulness. Insight in this theory is a change in the representation of facts, which is facilitated by the two processes of chunk decomposition and constraint relaxation.

3.7.2. Mindfulness and insight

An operational definition of mindfulness (e.g., Kabat-Zinn, 1994), was found to be imprecise and vague in the context of understanding its mechanisms. A theoretical definition of mindfulness (Vervaeke, 2019; Vervaeke and Ferraro, 2016) showed a framework for understanding its mechanisms and provided criteria for the modification and evaluation of existing practices. Mindfulness in this theory was defined as "the performance of a set of practices that optimise cognition for insight" (Vervaeke, 2019). This answers how mindfulness is related to insight.

3.7.3. A theoretical definition of mindfulness

The criteria for modification and evaluation of mindfulness practices within this framework are two aspects of the attentional mechanism. Attentional scaling and opponent processing are the most important functional aspects of mindfulness. Attentional scaling, scaling up and scaling down, is the skill of forming greater wholes (gestalts) and breaking up wholes into successively smaller parts (features). The mechanisms underlying this process are proposed to be constraint relaxation (up) and chunk decomposition (down) from the representational change theory (Knoblich et al., 1999), in congruence with opacity–transparency shifting (up) and transparency–opacity shifting (down) (Polanyi, 1962; Polanyi and Sen, 1966/2009). These aspects of mindfulness provide handles to change variables of practices to adapt and develop new mindfulness exercises.

Chapter 4

Synthesis of findings

4.1. Introduction

The purpose of this chapter is to review the insights of the heuristic inquiry (ch. 2) and those of the literature review (ch. 3) and to present agreement, conflict and knowledge gaps. By doing this, multiple scales of analysis are synthesised into a more relevant set of insights that is to be used in the following product development phase of this project (ch. 5). The heuristic inquiry provided knowledge, both about the first-person subjective perspective, and the intrasubjective, or collective perspective of a small group. This information is very rich but lacks generalisability. The literature review provides insight into larger groups and generalised patterns but sacrifices the richness of data. This synthesis is an attempt to navigate this richness–generalisability trade-off to create a compressed overview of a greater context that offers criteria, at relevant sides of the trade-off, for an effective design outcome, i.e. to adapt mindfulness techniques to design practice for the benefit of increased insight.

4.2. Agreement

There is much convergence between the LR and the HI. Both the thematic analysis of the interviews in the heuristic inquiry and the abundant evidence and theory found in the literature point to increased insight as a consequence of mindfulness practice (i.e., Lebuda et al., 2016; Lippelt et al., 2014; Ostafin and Kassman, 2012; Ovington et al., 2018; Ren et al., 2011; Shamas and Maker, 2018; Vervaeke, 2022; Vervaeke and Ferraro, 2016; Zenner et al., 2014). There is evidence for both short-term (Ren et al., 2011) and long-term effects (Lebuda et al., 2016; Lippelt et al., 2014; Ostafin and Kassman, 2012; Ovington et al., 2018) for improvement in metrics of insight, as well as theory to support and predict this (Shamas and Maker, 2018; Vervaeke, 2019; Vervaeke and Ferraro, 2016). This backs up the central goal of designing an intervention that increases creative insight.

There is also convergence on the effect of stress reduction, from the HI interview theme of the same title and evidence from various studies and meta-analyses (Brown and Ryan, 2003; Hirshberg et al., 2020; Rojas et al., 2012; Sharma, 2015). Kabat-Zinn (1994) developed the aptly-named and now widely spread "Mindfulness-Based Stress Reduction" therapeutic program, which has this effect as its main aim. This effect must contribute to increased well-being, which is a factor in increased creativity (Byron et al., 2010; Davis, 2009).

The development of attentional range that came up as a theoretical foundation in the LR (Vervaeke, 2022; Vervaeke and Ferraro, 2016), seemed to me to rhyme well with the HI theme of *zooming out*, the ability to step back and see the big picture. This is congruent with one direction that attention can change into, that of scaling up. This contemplative ability was key in insight problem-solving, in projecting novel, alternate frames after the relaxation of the constraints of the initial framing. This ability was prized by both co-researchers and myself. It seems to be a desirable effect.

Mindfulness enhances self-regulated behaviour (Brown and Ryan, 2003), which is equated by Fridland and Stichter (2021) to expertise. The deduction that mindfulness causes enhanced expertise is reflected in the HI interviews. These showed increases in self-control, through increased self-awareness and predictability of future mental states. They also found a sense of professional improvement. This sits well with my personal experiences too.

4.3. Conflict

One conflict I found was that the literature was mostly focused on meditation (both traditional and MBSR), while on the other hand, the HI interviews showed the predominant use of guided meditation recordings by designers, especially by beginners. This indicates that a mindfulness-based intervention for design practitioners that is suited for beginners might be best designed as an audio track.

Other than the opposing methodologies of the two research phases of the HI and LR, only one conflicting finding was found between the two. It is possible that the papers I reviewed were highly accurate in their generalisations and apply readily to design practitioners as they did to their respective test subjects. It is also possible that the methodological paradigms effectively excluded possibilities for conflicts since the qualities of their data differ, to begin with. Another likelihood is that I've overlooked or even excluded contradictory evidence through confirmation bias.

4.4. Knowledge gaps

Knowledge gaps are the empty categories of information that were not covered by either of the two research paradigms, realms that remain unexplored. One such knowledge gap validates the main design goal, as it is centred around novel variations of mindfulness techniques that are specifically used by designers for the activity of designing. Both the HI and LR revealed no specific adaptations for design practice.

Another knowledge gap might exist around the use of 'compound' techniques that integrate opponent processing, i.e. the opposites of meditation and contemplation, e.g. Tai Chi and Chi Kung practices, and the *Prajna* practice (Vervaeke, 2020). This knowledge gap overlaps with the previous one.

4.5. Conclusions

In this chapter, the heuristic inquiry (ch. 2) and literature review (ch. 3) were combined and compared to prepare for product development. I found much agreement between the two research phases, which indicates that the more general scientific literature may also be applicable to design practitioners. This convergence only strengthens the presuppositions behind the design goal. No obvious conflicts in insights

were found between the HI and LR, which may have been due either to the high standards of the reviewed papers, the differences in methodologies, or confirmation bias on my part. Two main knowledge gaps that I found, areas for further investigation, are about mindfulness practices that were specifically adapted for design practice, and 'compound' mindfulness practices that integrate both meditative and contemplative aspects. These knowledge gaps suggest the validity of the design goal of this project and provide a starting point for ideation.

Chapter 5

Product development

5.1. Introduction

In this chapter, I show the development of an artefact in an attempt to achieve the design goal. Through an initial ideation phase and four design iteration steps, I developed a mindfulness toolkit for designers. An overview of the iterations is shown in figure 30. The main focus at the start of development was on the adaptation of a mindfulness method for design practitioners (iterations 1 and 2). Later, the focus shifted to communicating, packaging and branding the method, ultimately developing guided audio exercises structures as a course in a podcast format (sect. 5.6).

Throughout the development process, I did not use any specific creativity methods, other than the intermediate mindfulness exercises that were being developed themselves. This helped analyse their effectiveness without having to do a separate design project for evaluation. This was probably acting strongly on the availability heuristic, but testing with other people and their projects was done later on. In retrospect, there was also much potential for confirmation bias, which could have caused belief perseverance, especially in the value of mindfulness, which I do perceive in myself, but which I also yet deem justified, in light of the synthesis of findings (ch. 4).

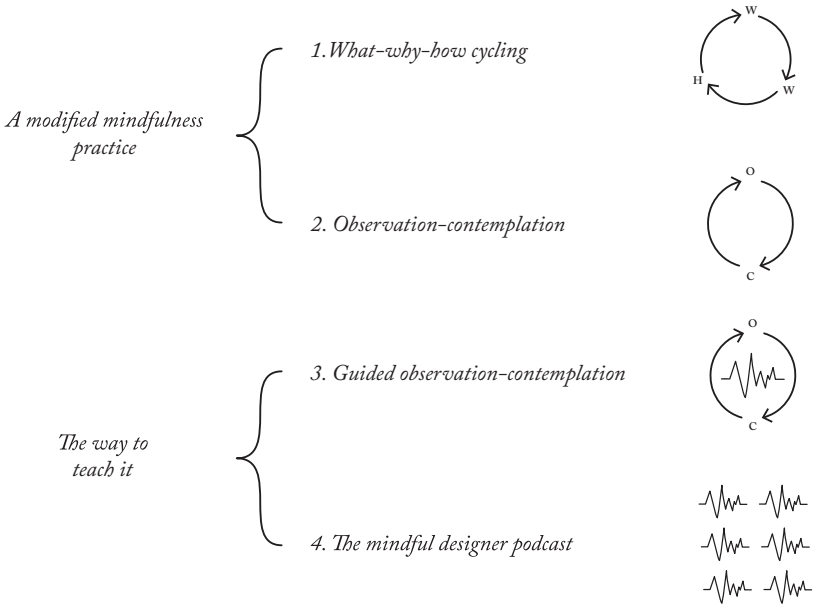


Figure 30. Overview of the four design iterations.

5.2. Initial ideation

5.2.1. Prajna practice

The "Prajna" practice that was a part of my three-daily practice cycle, as described in the self-experience (sect. 2.2), served as a starting point for development. Vervaeke recommends and teaches it (see his mindfulness lesson series: Vervaeke, 2020) because it embodies the principles of explicitly practising attentional scaling and opponent processing, making it a suitable single practice that captures all of the features of the theoretical mindfulness construct of sect. 3.5. British Theravada Buddhist monk Ñānamoli Bhikkhu translated the Pāli word *paññā* (or *prajñā* in Sanskrit) as "understanding" in the sense of the "state of understanding" and notes that Pāli makes a distinction between this "state of understanding" and the "act of understanding" (*pajānana*), which English does not. This is suggestive of the state of nondual

awareness that can result from this Prajna practice, which I describe below.

Prajna practice is a combination of Vipassana meditation (which scales down) and loving-kindness contemplation (which scales up). It works by cycling between the two with the rhythm of breathing: you meditate as 'lowly' as possible during every exhalation, as close as possible to the realisation of Emptiness, which is something like an awareness of only itself. On every inhalation, you do loving-kindness as 'highly' as possible, in which trying to identify with the largest scales of humanity, life, or being that you can manage. You do this by cultivating a kind of loving relationship with these scales, and ultimately trying to reach the point of identification with the entirety of being. With every natural breath, you're trying to move between these meditative and contemplative modes. The upper portion of figure 31 tries to show this. Needless to say, this is difficult to perform and it is necessarily reliant on your ability to perform the meditation and contemplation exercises independently, which implies that a beginner won't get anywhere starting with this practice. The whole point is to become more "flexible" in this transition of attentional scaling—which is identical to opponent processing—so that it will happen naturally more often and more easily in daily life, which makes one more insightful.

With repeated practice, this type of cycling can collapse, from two different paradigms into a *single* gestalt, representing a full 'view' or identification with the continuum between opposites, resulting in something called nondual awareness ('nondual' as in without opposites). The lower half of figure 31 attempts to clarify this experience. You can think of this collapse of opposites as becoming aware of their mutual dependence. To use a slightly different mathematical analogy, it may be like initially being only aware inside *cos(t)*, moving up and down along the axis of attentional scaling, as described above. You might then realise that this 'movement' is only one *real* part of the larger *complex* set described by Euler's formula: $cos(t) + i\ sin(t) = e^{i\,t}$, in which the up-down switching movement is transformed into a smooth helical movement with a constant rotation. A transition from the experience of moving up and down through time, to a 'curving into' time at a constant rate, without a difference between up and down. It's like realising a new dimension to a phenomenon, which in this example is represented by the new space of complex numbers. This is just like any other insight when you realise that something was possible all along that you hadn't been previously aware of, as in, a new 'dimension' of action possibility suddenly opens up which encapsulated your previous framing of the situation. This might be a way to put nondual awareness into words that is closest to my previous experiences of it in this Prajna practice. I refer to this type of awareness later in a discussion (in section 5.4) with an experienced practitioner who noted a similar experience arising from one of the practices I tested with him.

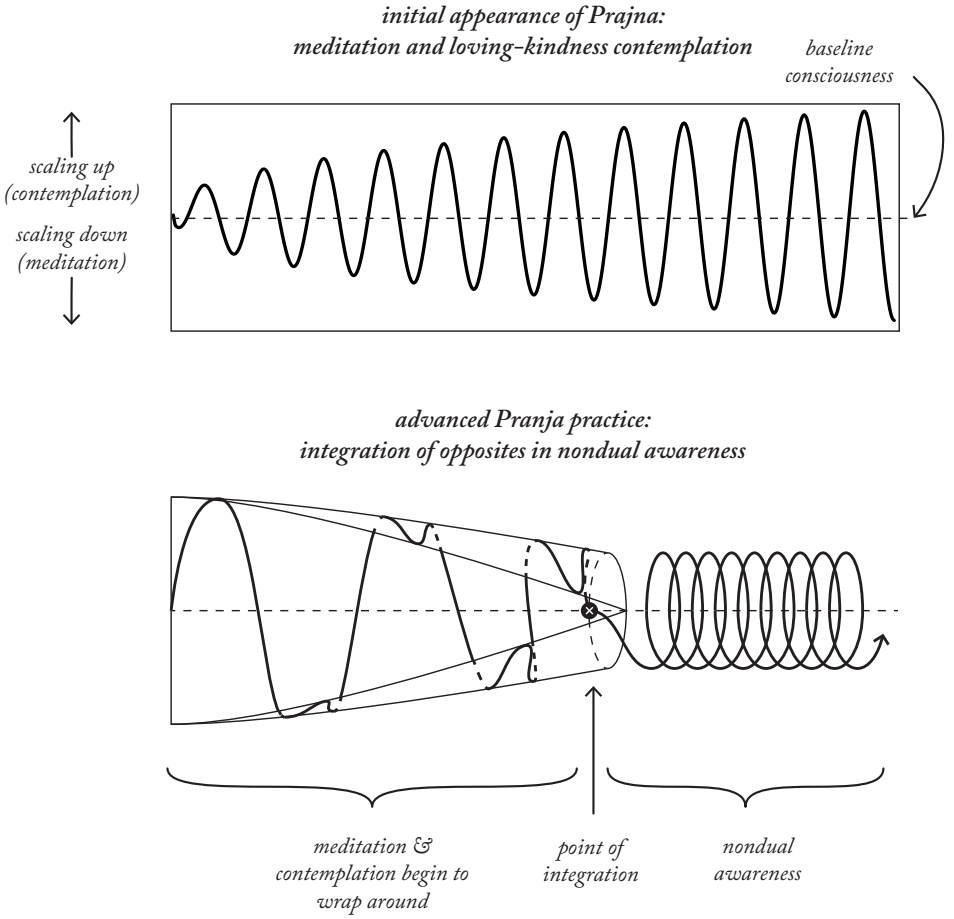


Figure 31. A visual metaphor for Prajna practice and its affordance of nondual awareness.

5.2.2. A trade-off between depth and frequency

The high frequency of switching 'directions' of scaling in the Prajna exercise puts strong limitations on the depth of states, especially for beginners. It is common to not even get near a state that resembles either meditation or loving-kindness, and confusion between them inhibits this even more. It seemed to me that by slowing down the exercise, by allowing multiple breathing cycles per sub-exercise (meditating or contemplating), the depth of state might be increased. An immediate drawback, however, from this operation is a decreased frequency of switching directions. This suggests a direct trade-off for gains in the range of attentional scaling vs. gains in the frequency of opponent processing.

This proposes a question: in design practice, is the extent of the range of attentional scaling more important than cognitive flexibility from opponent processing? It seems to me that an extension of the range is better than increased opponent processing frequency when *deeper* insights are desired. The reverse should hold when *faster* insights are desired. Now, it turns out that this trade-off, while still centrally applicable, is significantly diminished in the context of beginning mindfulness practitioners, which most designers will be when they encounter the toolkit.

5.2.3. Limiting Prajna

I thought that a decrease in both attentional scaling range and frequency of opponent processing would be necessary to make beginner-level entry possible. I chose to limit the attentional range by keeping the two scales tied relevantly to the project situation at hand, instead of generalising out of the context. I decreased opponent processing by decreasing the frequency of explicit moments of switching scales. I extended the durations of the temporary meditation and contemplation sub-exercises, effectively converting the smooth flow (of up-to, down-to, up-to, etc.) of Prajna into a more staccato, blocky rhythm of successive 'time chunks', remaining at meditative and contemplative scales for longer periods. I decided to refer to these chunks as *phases*, making use of the association with phases of a design process. Figure 32 visualises these differences.

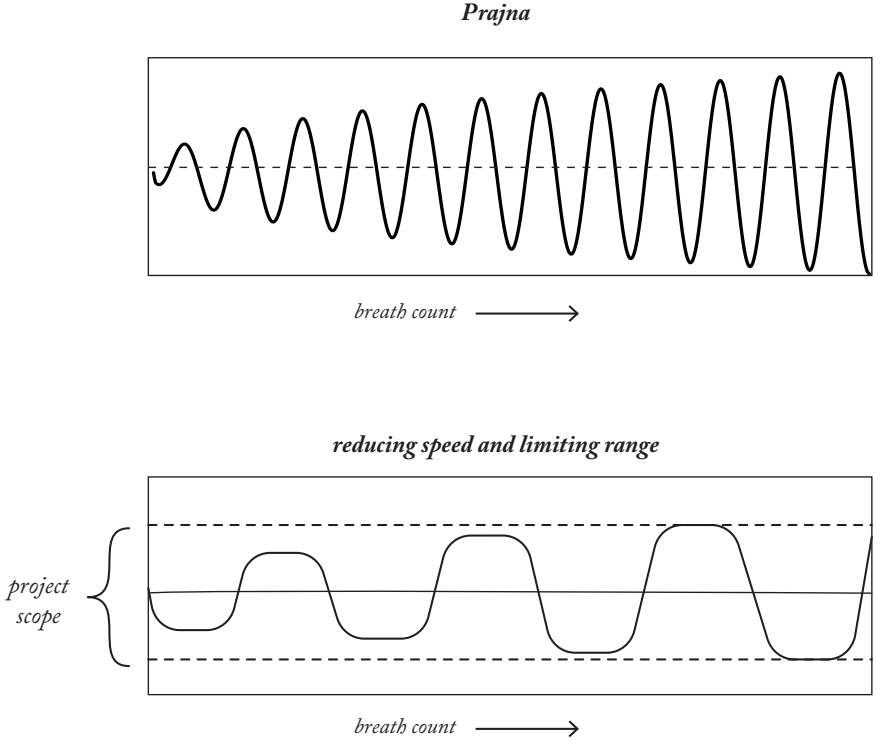


Figure 32. Attentional effects of Prajna vs. the desired effect.

5.3. Iteration 1: 'what-why-how cycling'

With the idea of starting from a limited version of Prajna practice, I started designing a first mindfulness practice that I called *what-why-how cycling*, intended to enhance insight on a given creative problem. Below I describe the process.

5.3.1. What, why and how phases

During this part of the project I was doing Tai Chi and thinking a lot about movement and its role in learning, alongside the two opposing processes in insight. I was especially intrigued by the idea that habits are weakly abstracted movements, unconscious, routine behaviours, and that morals might be the social equivalents of habits: higher-order abstractions of movement. How does the abstraction of movement relate to the abstraction of perceptions? I was thinking about this as a triangular relationship, and I was wondering what would happen if I added a new phase to Prajna practice that was dedicated to movement, even if it was abstract (like habits or morals).

I decided to implement three phases, rather than the two meditation and loving-kindness phases of the Prajna exercise. The 'what' phase of what-why-how cycling focuses on the limited version of meditation, in relation to the project at hand as described above. I decided to implement the limited contemplation strategy as two separate phases. By dividing the contemplation phase into 'why' and 'how' stages, I thought that understanding the context and thinking about action could independently augment each other. Focusing contemplation on understanding the context during 'why' would relieve the pressure of finding a solution, while focusing contemplation on 'how' would similarly relieve the burden of trying to understand the situation. This strategy seemed likely to succeed since I thought that coming up with new solutions would inevitably also create understanding. Figure 33 shows a conceptual representation of the practice. The instructions for the practice were as follows:

1. **What** do I observe? Try to get into the experience, the feeling of it.
2. **Why** does what I observe happen? Think about the real processes behind the observations. What is my desired result?
3. **How** can I make the experience and the result better? Think about actions you can do.
4. **Repeat** this cycle as long as you like or deem it useful. You can also re-order on the fly if you feel the necessity, but keep in mind that it's all about iteration.

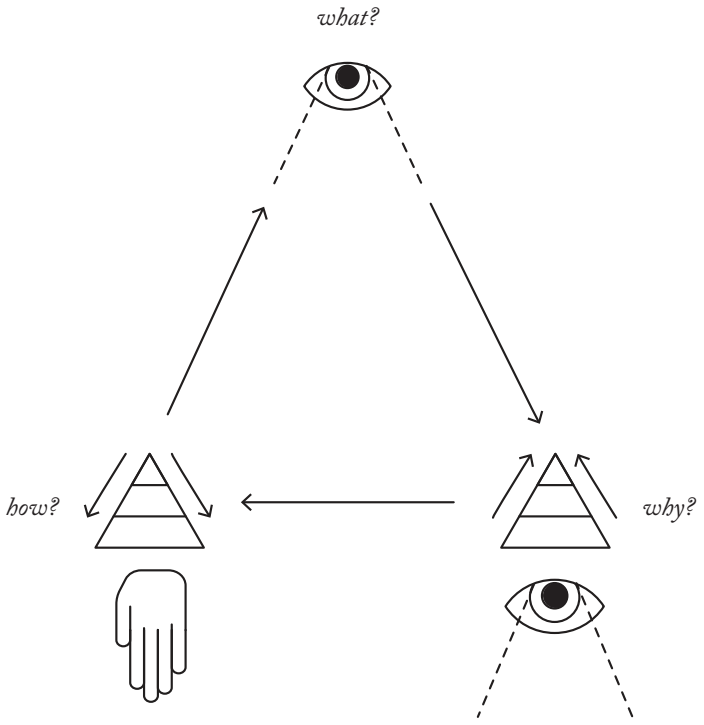


Figure 33. Conceptual representation of what-why-how cycling: sensory attention, abstracting sensory attention and concretising abstractions into movement.

5.3.2. A counting device

To implement the extension of the phases, I decided to use breathing as a way of keeping time. I thought I could hold something in my hand and measure the passing of every inhalation or exhalation by moving it a discrete distance with a finger movement. I made a mock-up for a prototype (see fig. 34) that featured three bouts of seven bumps in a circular formation. After moving along the seven crests of the bumps, you would feel a trough, which would indicate the transition to the next phase of the exercise.

I measured the frequency of my breathing a few times in different situations when meditating. It turns out I inhale and exhale about once every five seconds on average. This meant that the duration of each whole cycle of what-why-how contemplation would be around one minute and forty-five seconds on average and thirty-five seconds per phase. In the following 3D-printed prototype (fig. 35), I decided to extend the phase durations, because it seemed that they would have still been too short for beginners. It featured twelve bumps per phase and resulted in three minutes per entire cycle and one minute per phase.

During this time, I was trying to come up with a physical solution to counting exhalations, but I hadn't realised yet that people had solved this exact problem centuries and possibly millennia ago by inventing the bead. I was looking for a band or ring, something with a circular or toroidal topology, and with bumps or tactile features on it to convey information on the progression of the exercise. This is extremely similar to the shared functions of the rosary, tasbih and mala. I address this in the next iteration.

Figure 34. Mockup for testing what-why-how cycling.

Figure 35. 3D-printed prototype for what-why-how cycling (PLA on a Fused Deposition Modelling machine).

5.3.3. Reflection on use

I tried the technique out myself several times, in different design contexts. Most notably, I did one session while sitting in the tram for 30 minutes, continually doing the exercise. The problem I took upon myself was the improvement of public transport in Rotterdam. This was the perspective that I adopted in the exercise.

Initially, for the first two or three cycles, not many interesting ideas came to mind. After this, I started taking notes in a note-taking app on my smartphone, on things and people I saw in the tram, on reasons for taking the tram and on manufacturing techniques that came up. Eventually, I felt as though I wasn't only in the tram anymore, but that I was just one moving part in a large system that is designed to distribute and redistribute people throughout the city to very specific locations in extremely complex ways, both in space and in time. The main value of transport became clearer to me, and more *transparent*, as though I was living it directly. It became clear that the tram was a small element in that system, but that it was an embodiment of it. I was going somewhere too and felt like I was driving its reason for being. It became quite reflective, and I started wondering about my reasons for using public transport, and all the different places I have been for different reasons. I didn't come up with any good ideas for improvements in public transport, but I saw that it was much more than only the vehicles that are provided by the state and municipality. Solutions could be anywhere, like on the pavement. Constraints of the problem relaxed, at least and some high-level directions to solutions surfaced that I hadn't been aware of before. I would say that this was a desirable result.

I noticed in this experience that the how phase was often fused in character with the why phase. How and why are both thinking questions, and abstraction is involved in both. It also seemed that thinking about abstract actions (like production technologies) was irrelevant to the situation, as the context had not yet been defined. The why phase was more relevant to understanding the context at that time, so the how phase as such might even be removed.

Additionally, there is an existential argument to back this up. A designer's profession presumes, to its core, the goal of finding solutions to problems that are both effective and practicable. This basic aspect of the job description and maybe even of an underlying personal vocation is so deeply ingrained in day-to-day activities, that the 'how' feature of what-why-how cycling could be considered superfluous.

Going back to representational change theory (Knoblich et al., 1999), another argument against a how phase is that the solution to an insight problem is a *consequence* of projecting a better alternative framing. If the 'what' are the facts of the framing, and the 'why' is the rationale of the framing (the relations of the facts), 'how' could be considered a direct implication of those.

The 'what' of the what phase turned out to be an unclear instruction. It easily allows abstract answers: 'the number two', 'a mess', and 'love' are all answers to 'what?', that have varying degrees of abstraction and so are all directed away from the 'sensory' attention that characterises meditation. A different type of instruction is needed for this phase.

Furthermore, on a practical note, the cardboard mockup (fig. 34) was uncomfortable to hold and run past my thumb. The 3D printed version (fig. 35) was more comfortable but turned out to be too bulky in its portability. This makes for a new criterion.

5.3.4. Conclusions for next iteration

What-why-how cycling was the first experiential indication of the success of applying mindfulness to design processes. Constraint relaxation and alternate frame generation seemed to occur as a consequence of the guiding structure of the practice. Takeaways for the following prototype were: abandoning the how phase completely, altering the 'what' and 'why' phase names and altering the physical artefact to increase portability while maintaining comfort in use.

5.4. Iteration 2: 'observation-contemplation'

I proposed going back to two key components of the Prajna exercise: meditation and contemplation. In this second practice I called 'observation-contemplation', observation is supposed to be meditative, about being here and now: the concrete, sensory direction of attention, but less deep than in meditation. Contemplation is about thinking and the abstract direction of attention, like in reflecting on the meaning in a work of art, but is meant to go less deep than traditional forms, like loving-kindness contemplation (Metta), Tonglen, or Lojong. Importantly, a relevant connection to the context of the design project is maintained throughout each phase.

5.4.1. Traditional prayer beads

In search of a better form for a physical artefact to guide the counting of exhalations, I remembered the rosary, which opened up a whole world of traditional techniques that were used for this same purpose. It appears that the word 'bead' itself has the same origin as the Dutch word '*gebed*', which means 'prayer' and the German '*bitte*', 'please', a request (Harper, n.d.). Beads are used in many religious traditions as counting devices in rituals. Similar to counting on an abacus, one usually holds the stringed beads in one or two hands and moves the chain along after every elementary action of the ritual, e.g. saying a particular prayer, the repetition of a mantra, or an exhalation. Examples include the Catholic rosary, the misbaha or tasbih in Islam, and the mala or japamala associated with the Indian religions of Hinduism, Buddhism, Jainism and Sikhism. Figures 36–43 show examples. I also included some design variants—note the practical limitations of the design space.

The mala

As with many other forms of prayer bead, the origins of the mala are unclear. Some early Buddhist texts don't mention them. Traditionally, they are used either in the counting of mantras (*japa*) and breathing or for other spiritual practices (*sadhana*). They usually have 108 beads, or factors of 108, like 54 and 27 (see fig. 36). There is often a 'guru bead', an extra bead that is not counted and denotes the start or end of the ritual cycle. The beads are often made from sandalwood or lotus seeds.

Figure 36. A Tibetan Buddhist mala in use. This style has forked cords that rigidly hold additional beads in place that can be moved to count the number of cycles past the guru bead. It forms a numeral system like binary or decimal that cascades to count up to 10,000 recitations.

The rosary

The Catholic Holy Rosary refers to both a type of prayer beads and to the set of prayers that are counted with them, like the Hail Mary, the Lord's Prayer and Glory Be. Figure 37 shows the structure of the Rosary. Aside from prayer beads, it also exists in different forms. The use of knots (fig. 38) seems to have been a very early development and would have been a cheap way to participate in the ritual. The rosary ring (figs. 39 & 40) is a compact object that serves the same purpose, but has fewer 'beads' or nodes, and is commonly used to recite ten Hail Marys and an Our Father when the larger node is reached (Victoria & Albert Museum, 2006). Figure 41 shows a contemporary design for a simple disposable rosary.

Figure 37. Diagram of the Rosary and the structure of its prayers (Catholic Diocese of Dallas, 2019, via https://www.cathdal.org/rosary.gif)

Figure 38. Construction of a knotted rosary (*bnewman19*, n.d., via https://www.instructables.com/Making-a-Knotted-Rosary/).

Figure 39. A traditional Basque ring rosary or “finger rosary”.

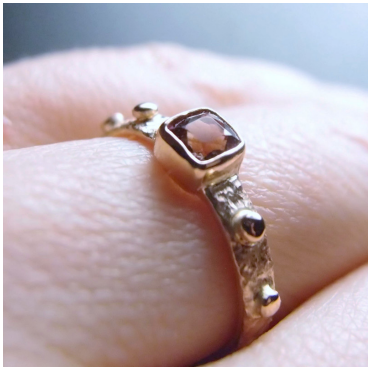


Figure 40. A compact rosary ring.

Figure 41. ‘RosAria’, a disposable rosary by Joe Velluto studio (2002, via https://www.joevelluto.it/rosaria/)

The misbaha

Tasbih is a form of Islamic prayer meditation called dhikr that involves the glorification of Allah by saying "Subhan Allah" ("Glory be to God"). While this can be done by counting the phalanges of the right hand (the individual bones), often prayer beads are used that are called misbaha, subha, or just tasbih (see fig. 42). 99 beads are grouped in 33s for the recitation of three prayers: Tasbeeh, Tahmeed and Takbeer. There may be tassels or beads to denote these transitions. Misbahas are also used as fidgeting devices to reduce stress or as a way of signalling social status. Electronic misbahas have also been invented and can feature Adhan 'sound reminders' (call to public prayer) and prayer alarms at set times.

Figure 42. Tasbih in use.

Figure 43. Electronic tasbih in use.

5.4.2. Beads for observation-contemplation

Figure 44 shows my initial explorations with beads, for keeping track of the observation and contemplation phases. The smallest one with twelve beads was the least noticeable for me, which is important for keeping attention on the tasks of the phases. It also covered a suitable period, which was around one minute per phase. The right-most band includes a tassel (the brush-like feature) and a 'guru bead', forked from the main loop, which is a marker in malas that represents the start and end of a meditation ritual. Figure 45 shows further variation in bead type, which influences grip, texture, ease of

advancement, temperature and associations. The wooden beads felt most 'natural' and obvious to me and had a pleasant texture that wasn't distracting. I ended up using the second band from the right the most throughout the project.

5.4.3. A knotted variant

The traditional knotted rosary in figure 38 above inspired me to try a simple prototype with twine and knots. This resulted in the knotted band of figure 46. It features the same twelve knots and one-minute phases as the best prototypes with beads but is simple to construct and needs only one piece of material to make, which made this design advantageous for distribution and testing.

5.4.4. Evaluation

Introspective observations

When trying the new observation-contemplation method myself, I noticed I wasn't getting fewer 'how ideas', supporting the decision to remove the how phase of the previous exercise. I noticed a couple of other things about the exercise that were noteworthy: consciously engaging in a cognitive flow state, a catalyst for engagement with the project, as a method for inspiration and as for prioritisation.

Engaging flow

Throughout the project I have found that starting this type of mindfulness exercise can reliably get me into flow states, as described by Csikszentmihalyi (2009) as optimisations of skills. The skill in which I am 'flowing' in these experiences, I suspect, is the skill of problem-solving itself. Careful and effortless observation of surroundings, breaking up and scaling down, spontaneous generation of ideas and patterns in contemplation, forming new alternative wholes in scaling up. It is hard to describe, but it feels intrinsically good and worthwhile, and I often experience time passing slowly in observation and more quickly in contemplation.

Figure 44. The first beaded prototypes over various design parameters.

Figure 45. Later prototypes with varying kinds of beads. Materials from left to right (in mm): 6 Ø glossy acrylic, 10 Ø volcanic glass, 10 × 5 Ø varnished softwood and 12 Ø untreated softwood.

Figure 46. The knotted band. Twelve knots on a string of approx. 30 cm.

As a catalyst for initial engagement

Observation-contemplation with the bracelet seems to also function as a useful way to get into a project, especially when I'm feeling more apathetic or lethargic when my mind is occupied with other things, or generally when I'm lacking motivation. It seems to me that the mental barrier associated with cognitively demanding tasks is lowered when the appearance of the anticipated cognitive demand lowers. The observation phase appears to me to be an easy task, so I can easily engage with it. Because I often get into a flow state during it, I build anticipation of the following contemplation phase, as it is a predetermined pathway in the exercise, which I can use to start thinking about my projects with more fluency and focus. I think this works because I don't experience any pressure to come up with anything useful in the contemplation phase: it's just loose associative, explorative thinking at a high abstraction level, but it does usually cause a cascade of association that 'load' the project into working memory easily.

As a method for inspiration, interest, and quasi-insights

I've also used observation-contemplation in moments of boredom, or just at 'random' times when I didn't think I needed to do it. This often, at least, brought me inklings, small semi-ideas, or just interesting associations. Sometimes, a viable, full alternative framing would form, which I would take note of for the future. I think I've even had big insights about my project at these moments, but I can't remember what happened where and when anymore, but there's a feeling about that there.

As a method for prioritisation

I noticed that doing observation-contemplation would often result in action points: clear priorities. Explicitly weighing up tasks during the contemplation phases also worked well. This may seem identical to normal thinking, but I find there is less pressure to come up with a good answer, and the observation phase helps make tasks concrete. This observation seems to fit in with aspects of the theory. Vervaeke et al. (2012) argue that the mechanisms of insight go down into lower-order processes, including prioritisation—they're like small insights. They also argue that mindfulness trains the lower-order process that underlies insight, so it would make sense that prioritisation is also enhanced during mindfulness practices.

Testing & interviews

To put this mindfulness practice to the test, I provided some of the co-researchers and other participants with written instructions for how to perform the technique (see appendix F). Some were given a knotted band that I had prepared, others received instructions to make one themselves (fig. 47). Participants were four design students, three professional designers, one design researcher, one architect and one singing student (n = 10). Most of them were told to try it out on their own accord, on their projects when they felt like it, after which I interviewed them on a separate occasion. Others did the exercise during an interview while I was present and gave immediate feedback.

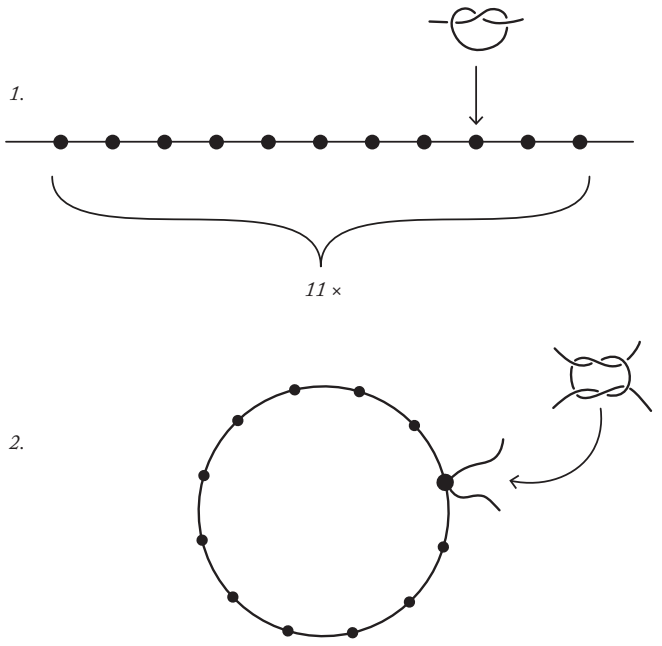


Figure 47. Instructions for tying a knotted bracelet.

Photos of homemade bracelets

Some of the participants made their bracelets according to my instructions (fig. 47 and appendix F). Photographs of the homemade bracelets are shown below in figure 48. Notice the variation in design decisions that were made. There is an opportunity here for personalisation, potentially increasing the perceived value of the 'object'. One participant added aluminium beads, enclosed with knots without my suggestion.

Figure 48. Homemade knotted bracelets by participants.

Notes and quotes

One design student said: "it was a relief to observe," and on transitioning from observation to contemplation said it was like "throwing a door open that I had closed [... and] like digging". Transitioning from contemplation to observation was like "sprinting and afterwards panting, then breathing calmly, [...] as though you're carrying a backpack, and you don't realise how heavy it is." They had trouble with the exercise at the time, though they did generate some ideas in the process.

A professional architect noticed a hesitation about using the technique with the work ethic in their office: "everything has to be finished quickly [... and you're] unsure if it'll bring you something," and also said: "it was a bit awkward [doing the exercise] in the office garden [with others around]." They did have insights, during the process, even if it wasn't a completely smooth one: "Insights were about what I was doing at the moment [... but] by writing them down I got out of the flow." They also remarked: "After one circle a sort of to-do list appeared in my head," which corroborates my reflection on using this for prioritisation.

Another design student had difficulty transitioning, was stressed to let go of the current phase while transitioning and expressed the desire to be alone.

A professional designer said: "I was a bit embarrassed doing it in front of my colleagues, even though we are apart from each other at our own desks [...] they wouldn't understand. [... I feel like] being on a different wavelength." The technique didn't work well for the detailed technical problems he was working on, probably because they were too well-defined, relying on existing solutions, so they didn't need out-of-the-box thinking, but the opposite: the correct application of particular existing knowledge.

A design researcher provided feedback via email:

> I found it quite insightful and interesting as a daily practice. For me, the time was important. I tried it for 10 minutes, and it did not do much to me. I did it yesterday for 25, and I completely forgot about it. I kept moving my hand, but my mind was somewhere else. It helped to solve a complicated puzzle (writing puzzle) that I had in my head.

This suggests that the positive effect of a helpful insight coincided with a lack of perceived value of the practice.

The last participant, a design student and experienced meditator said about learning the technique: "First I was floating in a vague sea. The more cycles I did, the better I was able to separate the cycles better [observation from contemplation]." When working on a writing assignment, at some point "a synthesis" happened: "I felt like I found the essence of what I wanted to say and what to do next." They noted that "after a few cycles I felt more free to float around," suggesting that the pressure of the goal of obtaining an insight had lessened and made the practice easier.

A conversation with a proficient meditator and designer

Gijs Spierings, an alumnus of the IPD Masters track, did his graduation project on a lamp for meditation guidance (see Spierings, 2021). He has at least hundreds of hours of experience meditating and also has some expertise in performing design processes. He gave me much valuable feedback and good suggestions for improvement throughout the project. One full conversation can be found in appendix G. A part of it is presented here. This was his response after trying the observation-contemplation exercise with a knotted bracelet.

> I just did the exercise. [… On] different subjects. [...] I really liked meditating with that thing in my hands. It kind of feels like when you normally meditate with a timer, you don't necessarily lose track of time or anything, but you're just kind of in the middle of nowhere or something. I don't know, I can't explain it very well, but now [with the bracelet] you just have some "houvast".

This Dutch word *houvast* means grip, hold, or support, a metaphor, which in this context to me strongly suggests Aristotelian contact epistemology, which is a supposed *conformity* relationship between consciousness and the reality that exists before consciousness (the "outside" world). To put this differently: during the practice, the bracelet seems to act as a link to the reality that is beyond awareness, appearances and knowledge itself, as an anchor to this reality. It gives the sense of knowing by participating. In the future, I refer to this aspect of the bracelet as its 'physicality'.

Gijs continues and explains how he thinks he attains a distinct state during observation-contemplation, as opposed to meditative practices:

> [...] I really feel that, because you have that focused meditation, you really get out of that train of thought and kind of reset again or something and then dive back into the vagueness again, […] it really triggers a different [mental] state.

I responded to this notion of a unique state, reflecting on the experience of my practice, and falling back to my experiences with the original Prajna exercise (Vervaeke, 2020). Remember that the Prajna exercise is a combination of doing a 'minimal' meditation on every exhalation and doing a 'maximal' loving-kindness contemplation on every exhalation, which can break through into nondual awareness.

5.4.5. Discussion of insights

From these interviews, I extracted a list of insights (see appendix H). Below I show ten of the twenty-seven. The suffixed numbers indicate the number of participants that contributed to the insight or idea.

1. Effective for producing insights or ideas (7)
2. Helped "zooming out" on the project (4)
3. Participants expressed a desire to do it in the future (4)
4. Guiding audio may be desirable (4)
5. A dedicated space at work (4)
6. Desire to be alone (4)
7. Repetition causes increased ease of performance (3)
8. Positive reaction from all of the proficient meditators (3)
9. Experienced as "unnatural" by some non-meditators (2)
10. Difficulty transitioning attentional modes (3)

Effectiveness

I was both happy and cautious to conclude #1 that observation-contemplation was effective for producing insight, but it seems that seven out of ten participants reported getting insights and ideas during the practice. Four also explicitly said they wanted to do it again in the future. I heard back from two that they had already used it for another project.

Guided audio

During the period of conducting interviews, the idea of recording a guided meditation-style audio track going through the practice in real time surfaced again. I suggested this in some of the interviews with experienced meditators and got positive responses on the idea. I wanted to try approaching from this angle too.

Social factors

It seems from #5 and #6 that there are social factors present during the performance of the exercise. Some people seemingly felt uneasy about changing their mental state. One said that they felt that they became "on a different wavelength" than their coworkers and others were concerned about their outward appearances during this time. The suggestion to have a dedicated space in the work environment seems fruitful and should be pursued, but this design problem lies beyond the scope of this project.

Effect of mindfulness proficiency

Note that #7 and #8 together suggest that the more experience you have as a meditator, the better observation-contemplation might work for you, and the less "unnatural" it may feel. It seemed that mindfulness-naive participants were the least prepared to perform the practice. It was also harder to explain it to them. Feedback from them was generally more negative too. The proficient meditators were generally very positive about the exercise and gave detailed feedback on their experiences with it. They were able to extract the most benefit from the exercise, it seems to me.

5.4.6. Making observation-contemplation into a guided audio exercise

Observation-contemplation was generally well received, but more so by experienced meditators and less by beginners. This probably means there is a steep learning curve at play. This suggests adopting a strategy to make it easier for beginners. I had the desire to try to make a guided meditation-like recording for observation-contemplation and it seemed that this could also satisfy some of the other criteria. Social factors will be excluded from development, as they threaten to widen the project scope too much.

Gijs remarked on the "physicality" of the bracelet and suggested that it was important. During this time, I considered this physicality to also be present in audio, as a different sensory domain. Sound files and speakers or earphones are physically real too, I thought, so I decided to let the bracelet go temporarily. It returned in the last product iteration.

5.5. Iteration 3: guided observation-contemplation

5.5.1. Principles of guided meditations

To make a guided mindfulness practice recording, I listened to several guided meditations and extrapolated several principles. Firstly, it is important to be in the state that you're trying to communicate while recording to convey the intonations, inflexions and timing usefully. Secondly, guided meditations often have long bouts of silence, in which the listener performs the instructions given before. In this period, it seems like the single last word spoken stays most vivid in memory, the second to last a bit less, but the first words are long forgotten. So, it is important to make the meaning more concentrated towards the end of the instructions, in an increasingly summarising fashion. Thirdly, suggestions are often employed to create a state of mind, often through metaphorical language. Other than these principles, it seems that there is substantial variation between different recordings, so I thought I'd just give it a try.

5.5.2. The design process

Musical demarcations

Using musical chords—harmonic combinations of notes—to demarcate the phase transitions enables a listener to perform an audio practice session with only musical demarcations in the absence of narration. This is supposed to facilitate the development of independence in closure practice. The harmonic relationship of the chords denoting the two phases was I*Vadd9* (a major-four-add-nine chord), representing observation, against *viadd9* (a minor-six-add-nine chord), for contemplation. The chords are expressed as stacked sine waves with a high attack (extended swelling) and high release (reverberating tails), around 20 seconds or so, to make them obvious, but not startling and sudden, easing the transitions (see fig. 49). The harmonic relationship was based on the feeling of brightness for the clarity of observation and darkness for the vagueness of deep contemplation of abstractions. The two *add9* notes make the chords more similar and give a feeling of unity throughout the exercise.

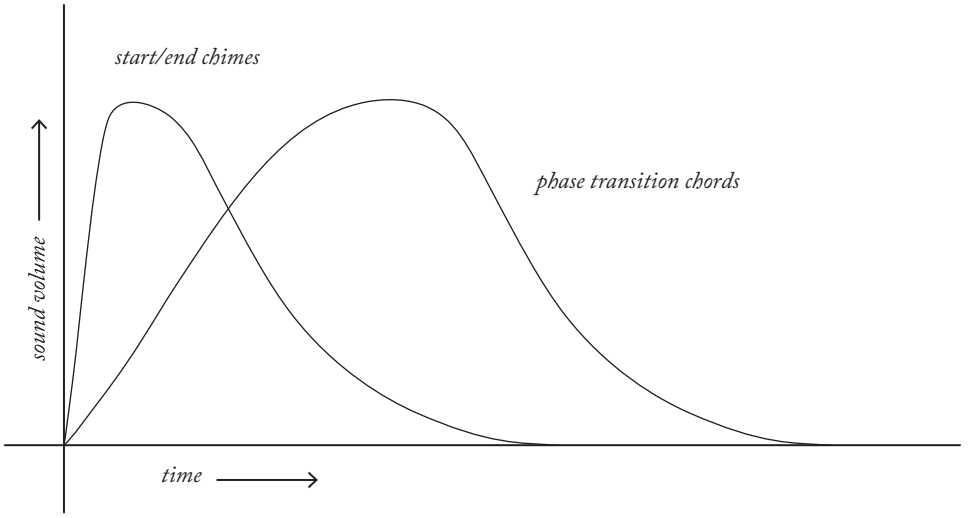


Figure 49. Representation of the volume envelopes of the musical markers.

Writing the script

The script for the recording was written with the principles of guided meditations in mind: recursive summarising towards the end of each instruction block, use of metaphoric suggestions and leaving room for inflexion. The full transcript is included in appendix I.1. I started with a metaphor to convey the importance of context in the situation in which the exercise is performed:

> A baker is only a baker within a bakery.
> Isn't a designer only a designer within the context of a problem?
> Be in an environment that makes both your role and your project make sense.

The following excerpt shows an example of guidance in the contemplation phase:

> Remind yourself: what is the bigger picture of the project?
> Try zooming out.
> Solving problems is not important right now.
> Be in the mode you're in when staring out of a window, loosely considering something without an explicit goal, allowing your mind to wander, to explore your associations.

[60s silence]

Transitioning back to observing, letting go of any thoughts you're having.
[2nd observation chord]

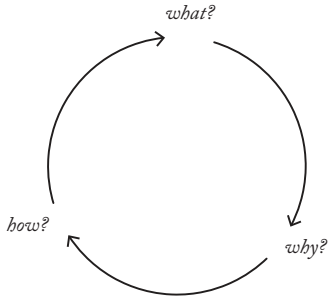
I recorded the script in two takes, which I compiled into a single better version, choosing the best parts of both tracks.

5.5.3. Reflection

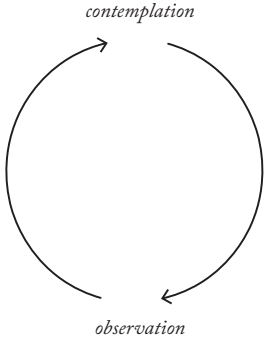
I was surprised to find that I could perform the exercise with my guidance. This seemed like a stretch while recording since my attention was mostly focused on pronunciation and inflexion. I soon found I wanted to make a few minor changes in wording and timing for the whole to be smoother. In comparison to the earlier exercises that are performed with a physical product, namely what-why-how cycling and observation-contemplation, which felt very circular, rotating from phase to phase, the guided audio track felt more linear. This may have to do with the finite time of the audio track and its automatic and involuntary ending. The visual cues from audio players support this linear frame. Figure 50 demonstrates the difference in feelings.

Furthermore, after weeks of practice, I felt that the physicality of the bracelet was indeed lacking in this alternative form of practice. The bracelet often lay around my working space and was easily spontaneously noticeable, unlike the audio file, which was hidden in a file system or online. This noticeability of the physical artefact seemed important to keep the possibility of performing the practice during a working day in the working memory of the designer: a type of self-suggestion, perhaps. For this reason, the bracelet was reintroduced in the next iteration.

what–why–how cycling



contemplatio–observation with the bracelet



observation–contemplation with an audio guide

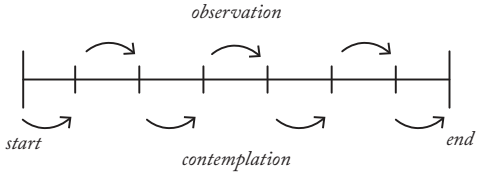


Figure 50. Visualisation of different iterations of practices.

5.5.4. Feedback

I received feedback on this audio prototype from Gijs again. He gave some practical tips for improvement, like: “Introduce your project a little bit first. Or have a separate explainer audio to understand the concepts”. The full feedback can be found in appendix I.2.

5.5.5. Conclusions for the development of a toolkit

The third iteration of product development produced an audio track with a narration guiding a session of observation-contemplation practice in real-time. Principles of guided meditations were used to make a script and record a narration to guide the listener through the cyclical phases of observation and contemplation. The audio tracks worked well and the pedagogical aspect was beneficial. The amount of information was too cramped, however, for one session it seemed. Additional auxiliary audio tracks are desirable. The next iteration should also include the bracelet in some way.

5.6. Iteration 4: The mindful designer

5.6.1. A podcast-course

During one observation-contemplation session, I had a realisation to bundle a bunch of audio tracks together in the form of a podcast, to move more towards the idea of a 'toolkit' that I had specified at the start of the project. The different tracks would highlight different aspects of the practice. This eventually led to the idea of doing a full course to teach observation-contemplation in stages. This would also give the designer-user more time to acclimatise to the practice and build understanding and skills more gradually, making for a smoother experience.

5.6.2. Observation-contemplation to 'closure practice'

Throughout the process of testing observation-contemplation, I was frequently annoyed with the bulky and frankly ugly compound word. I had originally chosen it for its clarity but kept seeking a more apt and concise name to contain the new practice. I stumbled on a strikingly relevant idea while reading a book on evolution by philosopher of biology Jagers op Akkerhuis (2016), given to me by his son, a friend of mine. The author proposes a way to generalise the contemporary equivalent of Darwinian evolution, modern synthesis, from a description of the evolution of living organisms, to a description of the evolution of matter in general, if I understood correctly. Central to this claim is the concept of *closure* as a natural system of categorisation. When 'loose' dynamical systems 'close' or become 'circular', it can systematically be observed that they change in their behaviour. Feedback becomes a possibility. The example he gives is of several children holding hands, and running around in a circle. They are able to pull on each other since there is a feedback cycle of force distribution. When one lets go, the behaviour of the system radically changes. Another example might be the closed spherical organisation of a cell membrane, causing a distinction between outside and inside. Of course, this domain is outside of my field of expertise and I couldn't credibly argue for or against this claim, but the idea of closure stuck with me.

I like to think of the phenomenon of human insight as right at the top of the *scala naturae*, the Great Chain of being, of physics through biology, into sociology, philosophy, theology and beyond. The human capacity for insight might be the most influential force of life that life has ever brought about. Ideas have shaped our planet in big ways: the wheel, the steam engine, nuclear energy, ideological warfare and so on.

It made sense to me that closure might apply here too if the theory holds. Even if this is false or deceptive, as a metaphor, it makes sense to me: 'closure' of a problem space causes insight. It is as though a neural manifold becomes congruent with the abstract, but real manifold of the "physical" context. So, I decided to rename the exercise of joint observation and contemplation, from the plain 'observation-contemplation' to the more obscure, but hopefully more enticing and intriguing 'closure practice'. I had probably thought about this problem for four months, so it was an extremely satisfying discovery. So far, I've received positive feedback on the metaphor. I describe it in the introductory episode of the podcast (see appendix J.0 for its transcript):

> Here I'm using closure to try to suggest to you a feeling that I have had during insights: a closedness, or a circularity. A type of relationship that wasn't there before the insight. Earlier I spoke of insight as a representational change. A metaphor I use to think about this is that you initially see the context of a problem as a line segment on paper. The line has a position and angle, but isn't able to capture much information about the white space of the paper. If you close the line segment into a circle, you have created a boundary, an inside and an outside, separating the white space of the paper into two parts. To me, this feels like what happens during an insight: you are able to suddenly see a clear boundary of the problem and that boundary simultaneously drastically limits the possibilities for solutions, so that a general direction of a solution becomes obvious. You have closed the design space and created a direction to a solution at the same time.

It later occurred to me that the phrase 'to wrap your head around something', which is a synonym for understanding that thing, seems to suggest exactly this idea of closure: to zero in on the exact type of finitude of one's perception of any given context, by linking facts about it in a circular manner, very much like understanding the rotation of one's body in an environment as a point on a circle, which has finite bounds.

5.6.3. Visual appearance

Name and logo

I wanted the name of the podcast-course to be as simple as possible, while at the same time conveying the essence of the project. "The mindful designer" seemed to capture this while also sounding like a podcast title. The light bulb symbol, as discussed in the heuristic inquiry (ch. 2), provides a low entry-level association to the value of the podcast, namely one of insight or insightfulness. Figure 51 shows the podcast logo.

Figure 51. Logo for "The mindful designer".

Connotations with green

A study by Heller (2009, p. 90) shows respondents associate green with: "nature and natural" (47%), "vivacity" or liveliness (32%). These all seemed to correspond with a feeling I wanted to suggest, so I chose green as a colour to support the suggestions of the symbols in the logo.

Eye symbolism

I chose to include an eye in the presentation of *The mindful designer*, because the eye has a connotation with consciousness, light and insight. I expand on this reasoning in appendix E. I placed one in the light bulb, the pupil's colour being identical to the white of light, indicating that 'flash' of the insight, as seen in the *Heuristic inquiry* (ch. 2).

5.6.4. Overview of the podcast

The podcast consists of seven episodes, separate audio tracks, that form a course intended to teach a listener how to perform closure practice on their own, from scratch. Figure 52 shows a visual overview of their relationships. The introductory episode gives an overview of relevant information for an understanding of the course. I dissected closure practice into its observation and contemplation phases and gave them their own guided practice episodes, so that the listener may familiarise themselves more thoroughly with the two different approaches, especially before combining both of them. I thought this would be especially difficult for people with no previous experience with mindfulness. After these episodes, the listener practises the full combined exercise with narrated guidance. Episodes 4A and B exist to enable practice without narrated guidance, once the practitioner has internalised the right attitudes and intentions. These contain only musical time markers. The last episode is for explaining how to make a knotted bracelet learning and how to perform closure practice without the aid of an audio track, to make the practitioner fully independent from the course. They could now continue to use and improve their practice on their own terms. I used Spreaker as a free hosting platform for *The mindful designer*. Figure 53 shows how it is presented on Spotify. Today, in September 2022, it is also available on Google podcasts. It can be found with the following links:

- Spreaker (the hosting platform): https://www.spreaker.com/show/the-mindful-designer
- Spotify (may require a subscription): https://open.spotify.com/show/7vRJ4WW3IFBy4yfmqX32Nv?si=dca5842e3c974086
- Google Podcasts: https://podcasts.google.com/feed/aHRocHM6Ly93d3cuc3ByZWFrZXIuY29tL3Nob3cvNTYxMjc1Ny9lcGlzb2Rlcy9mZWVk

This QR-code links to Spreaker (the hosting platform)

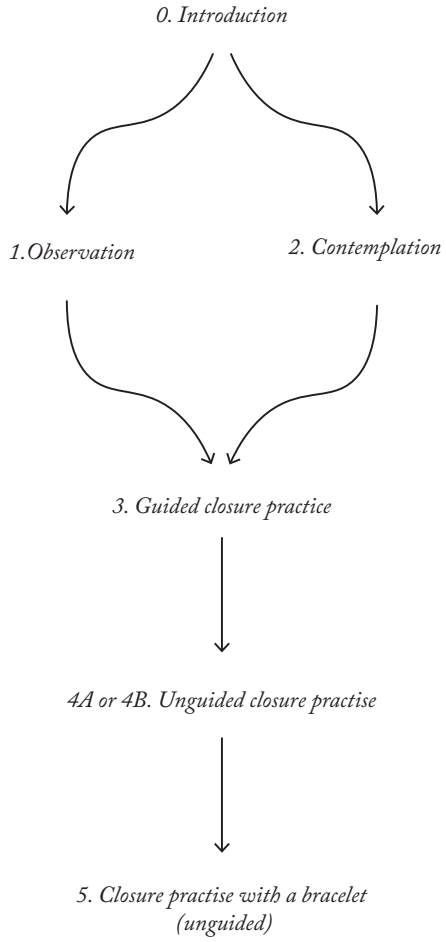


Figure 52. Overview of the listener's journey through the podcsast.

Figure 53. The mindful designer as presented on Spotify.

5.6.5. Description of episodes

Below are descriptions of the different episodes of *The mindful designer*. I describe the intention of the episode, and its structure, and give an exemplary quotation of the transcript. Full transcripts and the metadata of the actual episodes can be seen in appendix J. Images of the audio waveforms are included to give an overview of the periods of silence for the listener.

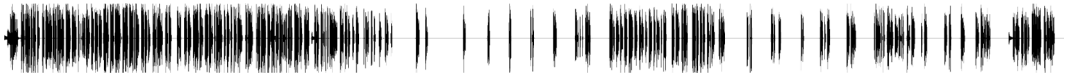
Throughout the guided episodes, i.e. observation, contemplation and guided closure practice, I suggest having an object around that somehow relates to a current project the listener is working on at that time. I suggest using it as a symbol for the project: in observation, its sensory qualities become apparent and in contemplation, its relation to the project on a larger scale is conjured up. I use this as an educational tool to show the continuity of attentional scales.

"0. Introduction" (17:47)

The introductory episode is meant to propose the purpose of the course and provide a background to validate claims of the expected beneficial effects. It also gives an overview of the structure of the course and suggests the right attitude towards the later episodes. I first state the purpose of the podcast and explain its nature as a course. I then cover relevant background information, based on the literature (from ch. 3), which gives credibility to my claims of becoming more insightful through practice. I then show how I designed a mindfulness exercise tailored to design practice and why it works and end with an overview of the course structure.

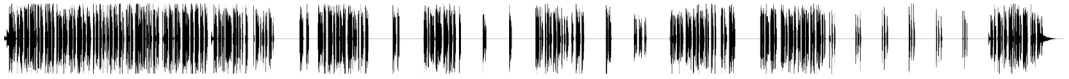
"1. Observation" (11:20)

This episode is about learning the observation phase of closure practice in isolation. In order to close a problem space, you need to break up your perception of objects and concepts into parts to find out what they really are. This episode teaches isolation scaling down. In the beginning, the listener is invited to prepare the symbolic object. Instructions are given to break down sensations from this object.



"2. Contemplation" (13:58)

This exercise is about learning the contemplation phase of closure practice in isolation. In order to close the design space, to constrain the infinite possibilities for action, you need to do be to integrate parts of the context into new wholes, you need to be able to project those new wholes as potential framings onto your context, fabricate new lenses, obtain new ways of seeing the context. This episode teaches isolation scaling up. The listener is asked to have the same symbolic object ready as in the observation episode. This time, questions are asked about it to induce a contemplative scaling up on the project context.

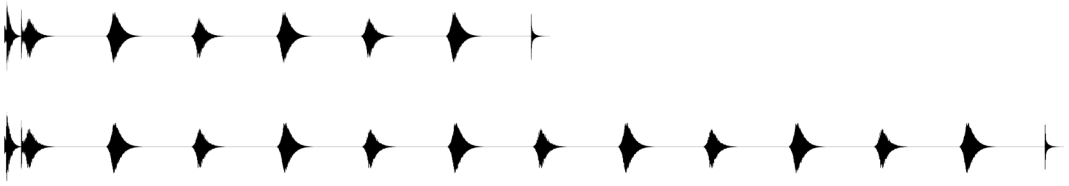


"3. Closure practice" (18:18)

This episode is the first to guide a full closure practice session. It is about learning to perform an alternating combination of the previously learned observation and contemplation phases. In the introduction, I explained the importance of opponent processing, the dialogue between scaling down and scaling up, which helps you reject unhelpful framings and build up to a critical point where your representation of the context you're working on can change, which makes an insight occur. That is what this exercise is for. I build on the use of a symbolic object from the previous observation and contemplation episodes and ask the listener to have the same object present during the exercise.

"4A & 4B. Closure practice on your own" (8:02 & 15:32)

These two episodes are identical in structure, but differ in length to offer a choice for a shorter or longer practice session. These audio tracks are not narrated and only contain musical content: the start and end chimes, and the phase transition chords. Again, a major chord (*IVadd9*) denotes observation and a minor chord contemplation (*viadd9*).



"5. Closure practice with a bracelet" (6:09)

In this final episode, I reintroduced the bracelet. It would have been good for the listener to become acquainted with the bracelet earlier in the course, but the reason I didn't combine audio exercises was because of the asynchrony of two time keeping methods. The 'clocks' of breathing and the audio would need to be exactly in sync to follow the narrated phase transitions comfortably. This could be seen as a new design problem, though.

In any case, in the last episode I explain how to construct and use a bracelet. In this way, the user is ultimately not dependent on a digital device and an audio track to perform closure practice. There were many benefits in earlier testing with the bracelet, of which the most noticeable for me was its aspect of 'physicality', which I described in section 5.4 as a connection to the transcendent reality that lies beyond the practitioner during the exercise: it has a symbolic function. Importantly, it seemed to me that for the full emancipation of the learner, they would have to let go of the podcast, to fully internalise the practice and feel that it was their own.

5.7. Conclusions for evaluation

In this chapter, a product was developed to satisfy the design goal. This was to enable design practitioners to enhance their capacity for insight by practising mindfulness techniques adapted for design processes. I presented a mindfulness course in the form of a podcast, called The mindful designer, which focuses on teaching a novel mindfulness exercise, 'closure practice', which can be employed in day-to-day design work to facilitate insight. In the following chapter, I set up a study to collect feedback from participants to evaluate the efficacy of The mindful designer for enhancing insight, and to explore new possibilities, for improvements of the practice, and for further research.

Chapter 6

Product evaluation

In this chapter, I describe an evaluation of podcast-course *The mindful designer* which was the outcome of the design process of chapter 5. I describe the setup of a study in its various aims and methods and present results and analyses. A discussion of the findings is a topic of chapter 7.

6.1. Aims

There are two main goals for the evaluation of The mindful designer. Firstly, I want to assess the intended effects of the intervention. Secondly, I want to explore possibilities, for the immediate improvement of the practice, as well as for alternative solutions to the design goal, to enable designers to enhance their capacity for insight by practising mindfulness.

6.1.1. Quantitative assessment

To evaluate the intended effects of the design, I asked: what is the difference between participants' beliefs about the efficacy of mindfulness for their creative practices, before and after completing the course? I hypothesised that the participants who spent more time practising mindfulness beforehand would have been more positive about the practice. This has been a theme throughout earlier feedback (see sects.

2.3, 5.4 and 5.5). I think this is due to a steep learning curve for acquiring skills of practice, like the skill of effortlessly letting go of thoughts. These skills make practice easier, more fluent and generally more pleasant.

6.1.2. Qualitative exploration

As for exploring possible directions for improvement of the design and future strategies for applying mindfulness to design contexts. To find out new leads, I wanted to know how designers would implement the suggested exercises into their design practices, how they felt about performing them and what value they produced if any. Since these questions are open-ended and pertain to unknown unknowns, I used various techniques to get different data.

6.2. Methods

6.2.1. Methodology

Since the research aim has both evaluative and exploratory aspects, I decided to use a mixed-methods approach, combining quantitative and qualitative methods. Up to this point in the project, I have made use of mostly explorative methods (heuristic inquiry, literature review, prototypes, interviews), but the development of the podcast is only an embodied hypothesis intended to achieve the design goal. This elicited a more thorough assessment of the collection of design choices than the intermediary tests I did throughout its development.

6.2.2. Participants

Participants were selected on two criteria: they are design practitioners, either design students or professionals, and they are willing to spend a maximum of almost three hours performing the study. A convenience sampling strategy was used for practical considerations. I gauged potential participants' interest in conversations before inviting them formally.

6.2.3. Data collection with questionnaires

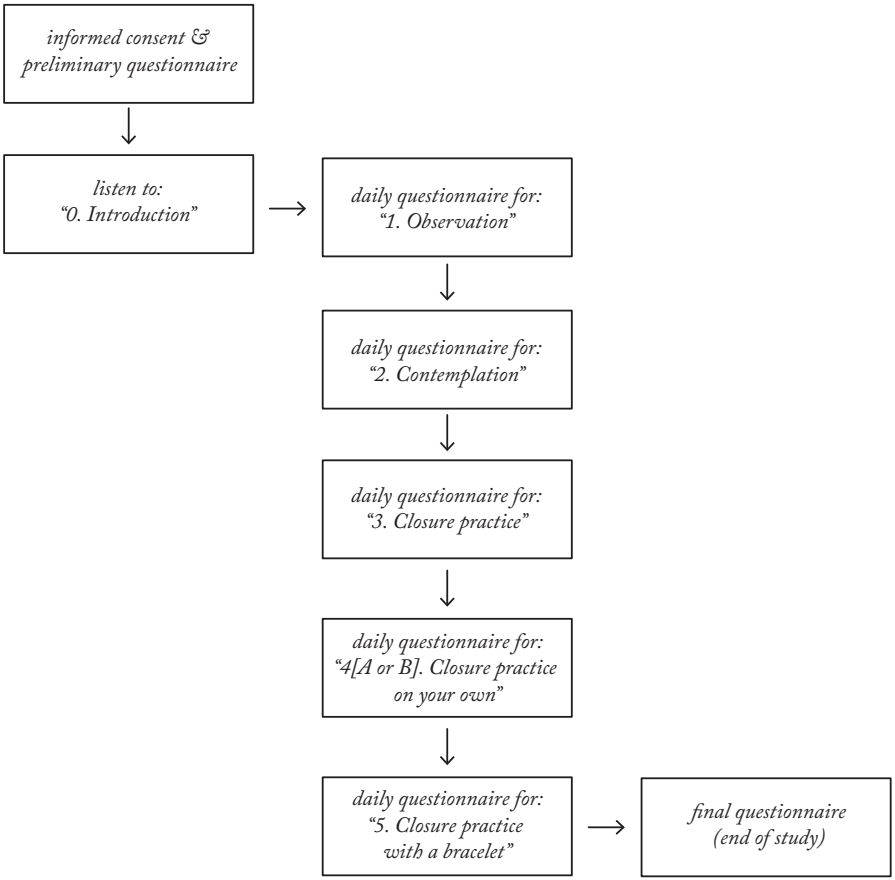


Figure 54. Structure of the study from the point of view of a participant.

Online questionnaires were used to collect data on the experience of performing the course. An overview of the participation procedure is shown in figure 54. The first questionnaire, "Informed consent and preliminary questionnaire", covers informed consent, and asks for information on a job description, and previous experience with mindfulness. It also measures two beliefs (with a 7-point Likert scale, strongly disagree–strongly agree), namely: 'I believe that there are mindfulness practices that can help me during

the process of creative problem solving,' and 'I believe that there are mindfulness practices that can help me become better at creative problem solving, in general.' The measurement of these two beliefs is also a part of the final questionnaire, to assess a potential difference in belief as an effect of the information and skills learned in the course.

The second questionnaire, the "daily questionnaire", is supposed to be filled in for every successive episode of the podcast. It asks for situational details at the moment of listening and the event preceding it and requests a reflection on how the participant felt about their experience, from three different perspectives: how they felt during the performance of the exercise, how they felt afterwards and how they feel in the present, reflecting on it again.

The last, "final" questionnaire mainly asks for a reflection on the podcast-course as a whole similar to the daily reflections. It also asks participants to estimate the likelihood of exercises from the podcast enhancing their effectiveness at their job. The three questionnaires are presented in appendix K.

6.3.4. Thematic analysis

The responses were informally analysed on recurring themes. Responses were grouped and labelled. These gave hints to important infrmatino.

6.3.5. Exploration with LIWC

Linguistic Inquiry and Word Count (LIWC) is a software tool for analysing word use. It has databases of words that correspond to certain patterns of cognition. It counts words in a text or array of texts that are found in those databases and so a scalar numerical score is assigned to the category of words, which suggests the type of cognitive processes that were occurring in the person when speaking or writing. Many correlations have been found with psychological phenomena (Boyd et al., 2022). The metrics I used to evaluate the responses from the available database were: "Emotional tone", "Perception" and "Cognition". Below in table 2 are some of the words in these LIWC dictionaries and their intended purposes.

Metric ("dictionary")	**"Description/Most frequently used exemplars" (Boyd et al., 2022)**	**Purpose**
Emotional tone	"Degree of positive (negative) tone". This is a compound metric built from positive ("good, well, new, love") and negative tone ("bad, wrong, too much, hate")	To evaluate the general emotional state (affective valence) and its change during the course
Perception	"in, out, up, there" (and: look, see, sound, feel)	To suggest the degree of effect from the *observation* practice
Cognition	"is, was, but, are" (and: all, know, how would, if, really)	To suggest the degree of effect from the *contemplation* practice

Table 2. Chosen LIWC metrics and their intended purposes.

6.4. Results

6.3.1. Participants

I found a total of seven people (n = 7) that met the aforementioned criteria and who agreed to take part in the study (see table 3). They were assigned letters for the sake of anonymity while filling out the questionnaires (A–H). Four of those people, however, signed the consent form and filled in the preliminary questionnaire. Three of those completed the five daily questionnaires and the final questionnaire.

One other participant D, a professional designer and design educator, completed the podcast but did not fill out the questionnaires and supplied some feedback over email (appendix L). One main point was that they were opposed to the imposition of a rigid procedure on the creative process and that mindfulness for them was more about attention being free from structure as such. I reflect on this in the discussion (ch. 7).

Assigned participant identifier letter	Pseudonym	Reported job title	Reported mindfulness proficiency level
F	Foxtail	Social designer, Entrepreneur, Healthcare Design Consultant	Beginner: 0–10 hours
G	Gardenrose	Design Researcher/Biodesigner	Beginner: 0–10 hours
H	Hawthorn	Design researcher	Intermediate: 10–100 hours

Table 3. Overview of participants who completed the study.

6.3.2. Beliefs about mindfulness

The following figures show participant ratings on their beliefs of certain statements concerning mindfulness. Figures 55 and 56 show the differences in the self-reported extent of two beliefs. Though differences were no more than two points on the 7-point scale, the belief that "there are mindfulness practices that can help me become better at problem-solving in general" declined for two participants and stayed the same for one other. Note that Gardenrose's "strongly agree" rating in figure 55 in the final questionnaire, having increased their belief even further. The slight increase in figure 55 is contrasted with a slight decrease in figure 56. This might be accounted for by the period over which the study was conducted (a total of 6 days), which had probably not caused any noticeable long-term personality changes. The difficulty of the exercise may then have reduced confidence in long-term adherence to a mindfulness practice.

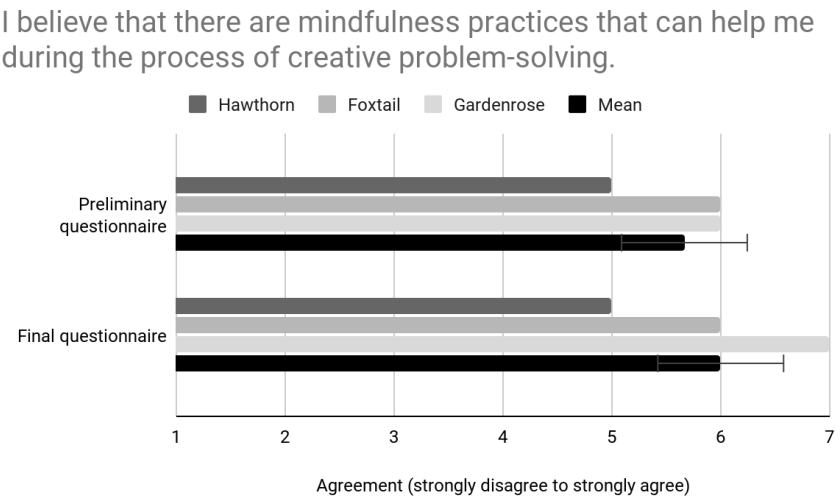


Figure 55. Rating of agreement with mindfulness being useful *during* creative problem solving, before and after doing the exercises from the podcast.

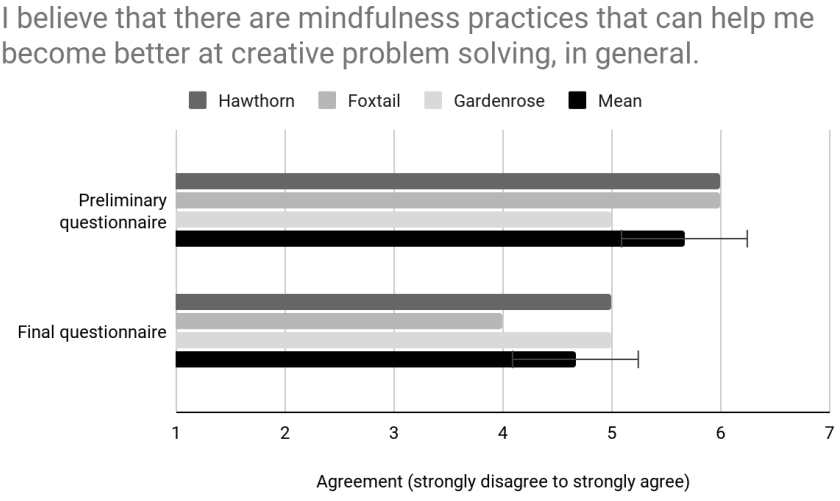


Figure 56. Rating of agreement with mindfulness being useful for creative problem solving *in general*, hinting at trait effects, before and after doing the exercises from the podcast.

Figure 57 below shows ratings of the likelihood of exercises from *The mindful designer* enhancing job performance, from the final questionnaire. The mean rating of 4.7 (σ = 1.5), lies closest to response 5 (slightly agree), which may indicate a weak general tendency towards the expectation of positive future utility. The high variance can be explained by the participant account responses in the next section.

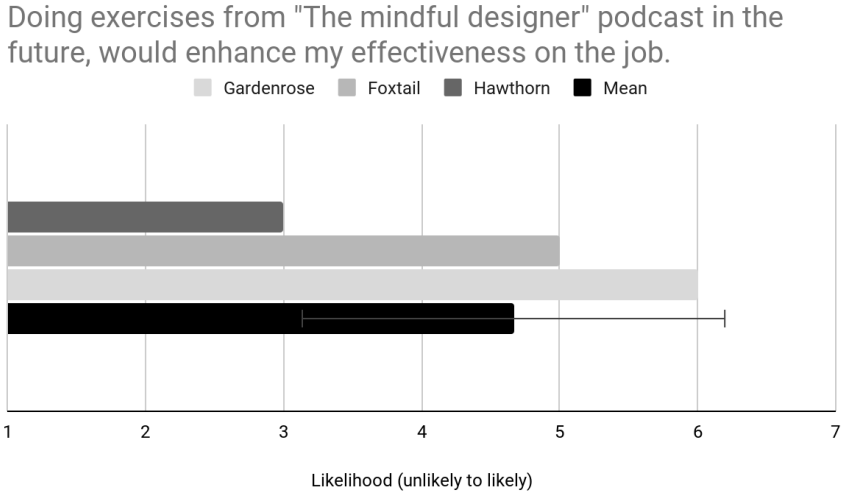


Figure 57. Beliefs about the efficacy of *The mindful designer*.

6.3.3. Quotes and recurring themes

I extracted several recurring themes from the verbal responses. Links to all response data can be found in appendix K. The variance of figure 57 may be explained by differences in predisposition between participants, at least in vocabulary, beliefs and aptitudes. It seems some participants had different understandings of certain words used in the voiceover which caused them to approach the exercises leading to varying results. Several clusters of responses are labelled and described below.

Ideation

Both Gardenrose and Hawthorn noted that they got ideas from the practice. Gardenrose: "[I felt…] satisfied due with the amount of progress I have already made today. Also some interesting thoughts occurring during the contemplation phase of the exercise, wouldn't go as far as calling them insights yet but interesting thoughts nonetheless". After episode 1, Hawthorn said: "I got one aha moment during this exercise". While an "idea" may be different from an "aha moment", it seems that some ideation happened during the exercises.

Excessive guidance

At least four different responses suggest being overwhelmed by the narrated instructions. Hawthorn, during episode 1, felt "guided but sometimes confused. My mind kept wandering and I couldn't help answering the guiding questions which led me away from experiencing itself." To me, this points to the power of suggestion and perhaps varying trait suggestibility. After episode 2, Foxtail questioned the relevance of the suggestions in the narration:

> [After completing the exercise, I felt…] contemplative. Curious about the mechanism behind it and thinking about how I can ask myself questions to better scale up. (Because I actually found most questions in the audio seemed not that relevant to my project/directly helpful to generate insights.) The virtues were interesting provocations but I was also kind of lost when listening to them. I'm also wondering what makes the contemplation process proposed in this audio different from the usual thinking/analyzing process. Is it only the concentrated breathing part?

Hawthorn was distracted by thoughts about the guidance during episode 3 (narrated closure practice):

> Reflecting on the whole process, I found myself kept on being 'distracted' by the practice itself. It means that instead of engaging in contemplating and observing for my project, I cannot help thinking about the guidance I followed. It's like I am observing a box containing another box of my project.

Note that it seems they did a transparency–opacity shift, observing the quality of the narration instead of its intended meaning. This points to a mismatch between design intent and actual context. When asked about how they felt about closure practice in the final questionnaire, Hawthorn said they felt they were "a bit perplexed and not sure I got the hang of it", which they said was the reason for their rating of the unlikeliness of future efficacy for them (fig. 57).

Furthermore, Gardenrose performed the observation exercise, framing it in a contemplative manner automatically and alluded to a possible irrelevance of practising the contemplation exercise for them at all:

> [Looking back at the whole experience now, I feel...] that contemplation is something I do naturally. Also with the previous exercise (#1) I now realise I was doing a lot of contemplation mixed in with the observation. With the exercise today I felt like my attention was ahead of the guidance, eg. I was already contemplating the significance of the object representing creativity and how this relates to my values before the instructor told me to do this. I don't know how other people experience this and maybe it's arrogant of me to think myself a natural contemplater, maybe I still have a lot to learn here, something to ponder.

Lack of concrete goals

After episode 5, Foxtail said that, in retrospect, "I should do this exercize when I have a clear creative question in my mind. Not just random overall for the project." This corresponded to the experience of Hawthorn, who after doing the unguided closure practice of episode 4A, said: "Reflecting on my state, I contribute my wandering mind to the lack of effective 'questions' to ask myself to generate insights. The contemplation/observation cycle still seems vague to me. So I listened to the second episode again to review the contemplation part." This is a part of the following recurring theme, lack of instruction or guidance.

Lack of guidance

Foxtail said that during unnarrated exercise 4A they felt "that once I start contemplating, I often stay in it. I ignored the sounds of the podcast when I was in a thought. But this also meant that I skipped observation some times." This suggests a lack of clear guidance or signposts for the phase transitions. The musical chords that had been enough for me in personal tests failed to help the practitioner let go of thoughts at the end of the contemplation phases. Hawthorn also said they lacked guidance in episode 4A:

> Reflecting on my state, I contribute my wandering mind to the lack of effective 'questions' to ask myself to generate insights. The contemplation/observation cycle still seems vague to me. So I listened to the second episode again to review the contemplation part.

They also experienced a lack of guidance after episode 5, while using the bracelet:

> Sometimes I felt disconcerted because I didn't know what to do when it should be contemplation/observation phase. I found it really hard for me to self-generate appropriate guidance to contemplate/observe while paying attention to my breathing pace and moving the bead accordingly. There are too many things to do at one time. I compromised the practice by starting with simple breathing practice and then gently phasing into the contemplation/observation.

This points to revisions of the episodes and better explanations of what observation and contemplation are and how one can self-generate the right state of mind, with or without fitting content, since the exercises are supposedly about practising scaling itself, rather than focussing on the content in awareness that arises during these processes.

Suggestions of the importance of reflection

The way I interpreted their responses, Foxtail mentioned an appreciation of reflective sentiment three times. Namely, after episodes 1: "[I feel] thankful for a moment of silence and concentrating on the experiences of my senses"; 2: "[I feel] that reflection is important. I should think about values more often"; and 3: "I should spent more time on creative thinking for my project and on selecting relevant values. [... R]andom inputs can lead to surprising outputs in the context of your project." Note the word "random", which suggests to me that they understood the intended way to approach closure practice. There may be confusion, however, in practitioner Foxtail, or in me, on whether these new random connections cause the insight, or that the content of the scaling process is somewhat arbitrary to the increased ease with which insights can happen during the practising of this scaling. I suspect it would be a combination. In any case, it seems that the course was able to suggest the importance of reflection in this person.

Preference for a tight feedback cycle

Gardenrose ("Design Researcher/Biodesigner") performed closure practice with a bracelet (episode 5) twice. The first time was while working on their PhD project, and the second was while working on a painting. They responded as follows:

> ["Looking back at the whole experience now, I feel…"] that the projects I am doing now are not that suitable for this technique. I think the technique is very suitable for design and artistic projects (I intend to try it out whilst working on one of my paintings). But as I am at the beginning of my Ph.D. research, I feel like I do not have anything physical to focus on in the observation phase, so I just ended up observing clouds and trees [...]

> ["Looking back at the whole experience now, I feel…"] that this technique is very suitable for artistic painting, due to the interplay between observing the details and contemplating the overall feeling/story of a painting. To me it became much more evident, through this exercise, that this interplay is paramount to creating (what I hold to be) good art that works on both levels.

They note the connection between the two attentional scaling directions that closure practice focuses on become obvious in the process of artistic production. This is something I also found to be true in my experiments and final work for the creative synthesis of the heuristic inquiry (sect. 2.5). It seems to me that this is caused by a tight feedback cycle between observation, contemplation and action. This reminds me of the what-why-*how* cycling exercise (sect. 5.3).

6.3.4. Participant suggestions for improvements

For specific exercises

Foxtail suggested: "have a video on how to make the bracelet or other visual material of how to make it and how it could look", which implies a change of medium for delivery of the course, other than a podcast. I also felt slightly awkward pronouncing measurements and visual details so this makes sense to me.

Hawthorn zeroed in on ineffective guidance in the contemplation phases: "for contemplation, at least for me and for my project I really need more questions that are more related to my project. Sometimes I just think the questions in the audio guide [are] less helpful to spark insights and this feeling will, in turn, discourage me to think about them."

On a practical note, Gardenrose stated that they made a bracelet from thicker "4-5 mm" rope, because "the thicker knots made it much easier to track, costing me less attention". This may imply further prototyping or opening up the design constraints for the bracelet.

For the course as a whole

Hawthorn expressed confusion in their evaluation of closure practice as such:

> I think maybe show the opposing process by using a imaginary project as an example might help illustrate how exactly to observe/contemplate. Besides, I am confused that if the point of doing the exercise is to gain insights, then why do we still need to pay close attention to the breath and are asked to guide the attention back to the breath while the mind is wandering? Does the wandering mind stands for an active thinking state that might lead to insights generation?

Foxtail seemingly found closure practice with the bracelet uncomfortable and suggested the ideas of an integrated app and a preliminary workshop. They also seem to allude to the 'physicality' of the bracelet, as discussed in section 5.4:

> I found it difficult to use the bracelet in my fingers, count my breaths, think and take notes at the same time. This was easier during the podcast when you did not have to keep track of the time yourself and had your hand free to write. I think the bracelet is a great physical reminder to take the time to be mindfull and zoom out and it does work for the observation phase, but during contemplation it does not work for me. Perhaps the physical bracelet should be used in combination with an app. The app can keep the time for you and provide contemplation & observation suggestive questions, like you did during the podcast. It can also include the podcast lessons. Furthermore perhaps a workshop or example could help to put closure practice correctly into use for your projects and understand how others use it.

All these suggestions for improvements seem like valid claims to me and should be considered if a new iteration of *The mindful designer* is done in the future. Implications for broader contexts are discussed in the main discussion (ch. 7).

6.3.5. LIWC analysis

To gain more understanding of the participant responses, I used Linguistic Inquiry and Word Count (LIWC) to look at the data from a more quantitative perspective. LIWC is a tool to analyse patterns in people's cognition by counting specific words in their speech or writing. Counting pronouns, words relating to emotion, or punctuation use is a way to approach what types of cognition are happening in the moment of speaking or writing. Response text was grouped per submission and fed into the LIWC-22 application. The output file was converted to a spreadsheet which can be seen here: https://docs.google.com/spreadsheets/d/1gTwhsPN8rh1mgUdIbF9Ro1fb4KofIL2Xbt9_1bJfRRk/edit?usp=sharing.
The following graphs (fig.s 58–60) represent several measures of the LIWC output data. The grouped participant responses were ordered according to the study structure from the perspective of each participant and the responses were consequently assigned 'days' (see table 4). Note that the periods between responses may be differentiated, even though they are in chronological order. Figure 58 shows the word count per grouped response per day. The total number of words was 2407.

Day	**Questionnaire**
0*	Informed consent, preliminary questionnaire and the 0. *Introduction* episode
1	Daily questionnaire for *1. Observation*
2	Daily questionnaire for *2. Contemplation* (idem)
3	Daily questionnaire for *3. Closure practice*
4	Daily questionnaire for *4A or 4B. Closure practice on your own*
5	Daily questionnaire for *5. Closure practice with a bracelet*
6	Final questionnaire

Table 4. The procedure of the study from the perspective of each participant. *Was not included in the LIWC input data as no textual responses were given.

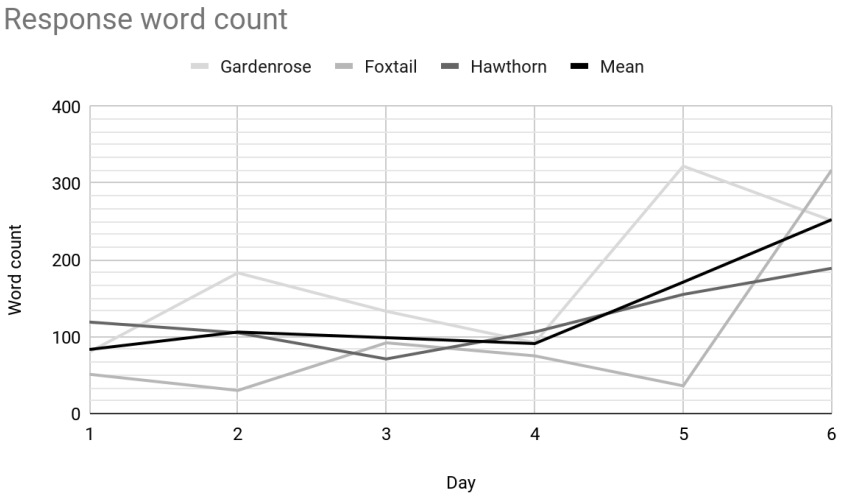


Figure 58. The number of words in the total of each participant's response per day. The day numbers correspond to those in table 4.

Figure 59. Most frequently used words in the responses, generated by LIWC-22.

Emotional tone

LIWC's "emotional tone" is a "standardised composite variable" or "summary variable" (Boyd et al., 2022) that was taken from work by Cohn et al. (2004), who states that it is "calculated as the difference between the LIWC scores for positive emotion words (e.g., happy, good, nice) and negative emotion words (e.g., kill, ugly, guilty)". It was transformed to a -50–50 range to show the emotional valence more clearly. Scores per grouped response are shown in figure 60. It shows that, although there is a high total variance (σ = 48), the average emotional tone started positive (+25/50) and dropped steadily over the course of the study (-23/50 after episode 5), while the average tone of the final reflections was more positive than negative (+16/50). Figure 61 presents the mean scores per participant. Note that Gardenrose has a mean positive tone, while Hawthorn has a mean negative tone. This variability in affect seems to be also reflected in participant quotes from the previous sections.

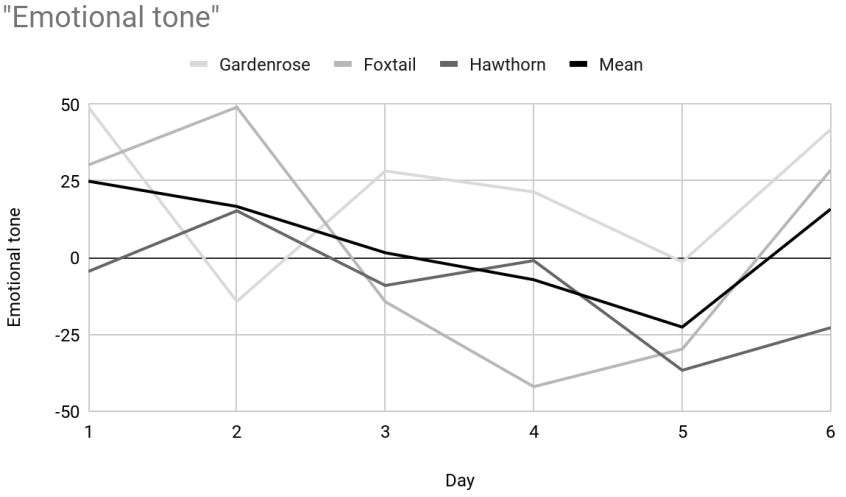


Figure 60. Emotional tone per grouped response. Note the steady decline for the exercises, and then an increase in the final evaluation.

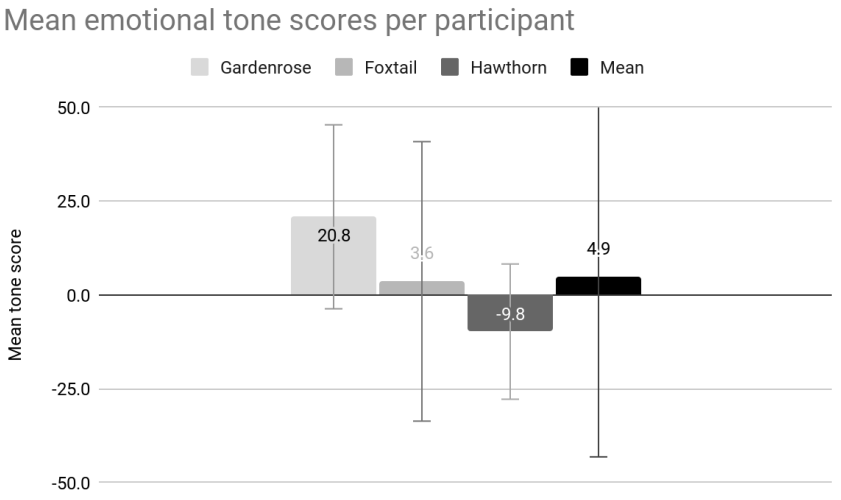


Figure 61. Mean emotional tone scores for participants and the second-order mean. The error bars denote the standard deviation in response scores (68% of responses have tone scores in these ranges).

Opponent processing in cognition and perception scores

The LIWC cognition scores (is, was, are, but, etc.), are described as "a general category that reflects different ways people think or refer to their thinking" (Boyd et al., 2022) and perception scores (in, out, up, there, etc.) initially intrigued me for their resemblance to contemplation and observation, respectively. In their graphs, which are in appendix N, I noticed that the contemplation score had increased substantially from day 1 (the observation exercise) to day 2 (the contemplation exercise). Table 5 demonstrates this increase to be a factor of 5.0, although the combined standard deviation was $\sigma = 16$. This indicates at least that the contemplation exercise is associated more with thinking than the observation exercise, reflecting the purposes of both exercises.

	Mean perception score	**Perception score std. deviation**	**Mean cognition score**	**Cognition score std. deviation**
Day 1: observation	13.8	8.4	14.3	7.6
Day 2: contemplation	15.5	6.8	22.7	4.4
Difference	**1.7**	11	**8.4**	8.8

Table 5. Differences between average perception and cognition scores suggest a correspondence to the goals of the separated phase exercises.

Chapter 7

Discussion

This graduation project aims to address an opportunity to enable designers to become more insightful by providing a new mindfulness toolkit that is adapted to the context of design practice. So far, I have described the research, development and evaluation of an attempt at satisfying this goal. In this chapter, I discuss key findings, limitations, and opportunities for future research and conclude the project.

7.1. Key findings

In this document, I've attempted to satisfy the design goal of providing an opportunity for designers to receive more creative insights through the development of a mindfulness toolkit, specifically adapted to the context of design practice. The main research question to this aim was to find out how to adapt existing mindfulness techniques to the context of practitioners' design processes in a way that enables them to engage in an enhanced capacity for insight. I will show how this goal was satisfied and how the main research question was answered.

7.1.1. Two research perspectives

The heuristic inquiry (ch. 2) and the literature review (ch. 3) approached the research topic from two

different perspectives. In the heuristic inquiry, insights were gained into the collective experience of becoming more insightful through mindfulness practice. Some aspects of this collective experience were: regular daily–weekly practice, increased self-control, increased ability to 'zoom out' to see the bigger picture and a generalised effect in awareness. The creative synthesis helped integrate my personal understanding of this collective experience, which I hope I was able to communicate to some extent. The literature review focused on different topics, but the main insight here was from work by Vervaeke and Ferraro (2016) on a theoretical definition of mindfulness, which formed a basis for the development of closure practice. Between these two research perspectives, there was extensive agreement and little to no disagreement to be found. This convergence strengthened the presuppositions behind the design goal. Two knowledge gaps were found: a lack of existing mindfulness practices tailored to designing and a lack of 'compound' mindfulness practices integrating meditative and contemplative aspects. These provided a starting point for ideation.

7.1.2. Product development

The development to satisfy the design goal. Four iterations of product concepts and prototypes constitute the development of a podcast, *The mindful designer*, containing a course for designers to progress in stages towards the skilful practice of a novel mindfulness exercise. It was designed to shift accessibility towards beginners rather than experienced practitioners, while still maintaining the effect of enhancing insight. Throughout the process of development, it became clear that this was more difficult than expected. The more experienced a test subject was, the more positive they were about the practice.

7.1.3. Product evaluation

The podcast *The mindful designer* was evaluated with a mixed-methods approach with respect to the design goals. Participating design practitioners agreed that mindfulness is useful during creative problem-solving, to a greater degree post-study, than they did pre-study. This increase in confidence in mindfulness is suggestive of the efficacy of the general approach of applying mindfulness to design practice. Participant feedback suggested that ideas and insights occurred as an effect of the exercises, although the guidance of the narrations was problematic at times should be improved to suit design projects better. Linguistic Inquiry and Word Count (LIWC) analysis on the response texts also indicated that the practice had cognitive effects in line with the design intent.

7.2. Limitations

7.2.1. Participant number in the evaluation

Only three out of seven participants that agreed to participate in the study actually completed the study, resulting in less data than expected. A fourth person signed the consent form but didn't continue with the daily questionnaires. It might be that the work and time that was asked for (a maximum of almost three hours), was only later realised. Difficulty planning the exercises into a schedule, or even just forgetfulness could have been factors at play. One participant told me they had listened to the podcast but hadn't "taken the time yet to fill in the forms". I didn't find the reasons for the two others.

Several people told me that I could organise a preliminary workshop. I opted not to do this because it would have interfered with the scalability aspect that the podcast medium affords, but it might have given participants a more pleasant and engaging experience while noticing others' dedication as well. Hawthorn also mentioned visual aids or an instruction video, which could add to participant engagement.

The convenience sampling method could also have interfered. Participants might have had fewer scruples about abandoning the study, since participants had a personal relationship with me and they already had some reputation stored up in their relationship with me. An alternate sampling strategy may be advisable. This issue should be addressed before recruiting participants in future research and development.

7.2.2. An insufficient learning period

Due to time constraints no prolonged studies were possible. It seems that several skills need to be in place for an overall positive experience of closure practice. Spending a full week, say, practising one episode each day may make a large difference in the acquisition of the disposition to enjoy closure practice more and gain more from it, i.e. the belief that thoughts occur automatically in awareness, the virtue of constantly forgiving yourself for being caught up in these thoughts and the increased inner stillness from this automatic thinking.

7.2.3. Imposing a structure on creativity

Participant D's email response (appendix L) criticised both closure practice with its structured switching of phases, and a general Delft-Design-Guide-attitude towards creativity: "while I'm designing something I find myself switching from one (observation) to the other (contemplation) with no rules, I could [*sic*] it going in and out when I describe it to my students. I know at TU Delft they tend to be "scientific" about methodologies and creativity but to me, it's a little bit of a paradox." It seems to me that they are right in that creativity can ultimately not be contained in structure because it is that which affords the creation of new structures. This is mistaken though since imposing structure on a process of learning, however, is different from imposing structure on creativity, even if the skill that is learnt is associated with creativity. Learning can be guided by goals, which also judge, and these are always ordered, and structured by their definitions, even though they were once new.

7.2.4. Contributing to the commodification of awareness and the overemphasis on materialism?

From the start of the project I had been wondering if the primary focus on insight for professional effectiveness wasn't too shallow a goal, let's say, compared to the secondary goal of affording personal development. Wasn't I ultimately overemphasising material achievement, while neglecting being and becoming, the exact type of trap that mindfulness practice tends to illuminate?

In *McMindfulness: How Mindfulness Became the New Capitalist Spirituality*, Ronald Purser (2019) argues that mindfulness is becoming commoditised by capitalist economies and government organisations today. Mindfulness would start to cause problems because it's becoming divorced from the traditional moral framework of Buddhism, in which it originated. Mindfulness can be used to do bad things: to keep calm while ripping people off or to make soldiers better shots.

Buddhist scholar Stephen Batchelor (One Mindful Breath, 2019) refutes this argument on a traditional ethical ground, saying that world-renowned Buddhist leaders often do bad things on the basis of this exact moral framework of the traditions in which mindfulness originated.

Furthermore, Psychiatrist, neuroscientist and philosopher Iain McGilchrist (2009), in his seminal work *The Master and His Emissary: The Divided Brain and the Making of the Western World,* shows

how society today is left-brain dominant, focused on a blind having, acquiring, achieving and asserting theoretical action onto the world. He argues to reestablish the right hemisphere as dominant, which is focused on awareness, perception and being, pointing to mindfulness as an example of a pathway to this goal. Batchelor (1983) supports this claim in *Alone With Others* in terms of his opposition of having and being. Importantly, they both argue for a version of mindfulness as a solution to this problem: awareness is key to noticing a change in the environment and realising that you need to change along with it, in an evolutionary manner.

For these reasons, I see no problems in fully committing to the increase of insight, even if it were solely for purposes of professional effectiveness. Ethical problems are present at any scale of analysis and mindfulness is all about becoming aware of the environment and learning how to act, with a minimum of impulsivity, but with a maximum of skill.

7.2.5. Process vs. content: a critique of the theory

I realised that the theoretical framework of mindfulness, formulated by Vervaeke and Ferraro (2016), that I've made extensive use of in the development of closure practice and the podcast, is mechanistic in a sense and is process-oriented. It proposes that the processes active in attention are the cause of insight and that the content just cycles around and around with changes in the environment until a critically unbalanced structure is reached that collapses and reorganises itself from the bottom up, which would be the experience of the insight.

I may not have understood correctly, as a lot of the literature is quite dense, but it seems to me, however, that the role of content in awareness, elementary qualities like colours or pitches ("qualia") and higher-order qualities like the meanings of words and books and paintings, have unique effects on the current degree of partial understanding, so that an arbitrary duration of 'cycling' potential problem frames seems to not be able to capture the richness, peculiarity, specificity, and/or particularity of insight.

This rhymes with participants' demand for relevant suggestions during the audio exercises. A precise and scientifically informed definition of abstraction would be of exceptional use to further this discussion.

7.3. Opportunities

7.3.1. Better guiding suggestions

Participant responses showed both an excess and a lack of guidance in various stages of the exercises. It seems that most of the problems came from the contemplation phases throughout the podcast. My intent was to teach the skill of scaling up without narrated guidance, without the suggestions in the podcast exercises to learn how to suggest this process to yourself. Feedback from Foxtail and Hawthorn showed that this intent didn't carry through: they felt that they needed external suggestions. This may mean that the process of learning these techniques may take much longer than a single session, or that the explanation at the start could change so that suggestions may be done away with entirely in the exercises. In any case, the approach to designing the suggestions was problematic and would need more consideration in future developments. I've recently seen that there is a wealth of knowledge about this in existing hypnosis literature.

7.3.2. A better course

The theme of the preference for a tightly coupled feedback cycle may suggest a desire for the flow state, which has been linked to Vygotsky's zone of proximal development and implicit learning (Vervaeke et al., 2018). Tightly coupled feedback has been characterised as one of the conditions for the flow state; the two main others are having clear goals and being at the limit of one's ability (Csikszentmihalyi, 2009). Gardenrose noted meaninglessness during the contemplation exercise, from which it seems that being at the limit of skill was not applicable for them at that time, but there wasn't any other data on this condition. Feedback from Hawthorn and Foxtail criticised the lack of clear goals in the podcast, which is the third condition for flow.

If these three conditions—of having a tight feedback cycle with one's environment, being at the limit of one's ability, and having clear goals—can be met, it might put the practitioner in the zone of proximal development, which should accelerate implicit learning of this skill (Vervaeke et al., 2018), accompanied by the positive feeling of intrinsic meaning that is reported in flow (Csikszentmihalyi, 2009).

One way of going about this would be to redesign the course to extend over a much longer period, like a university quarter or semester, or even as a monthly session for a company or design studio. Leland (2015) recommends in a review of mindfulness in education that "mindfulness instruction probably should be incorporated into the curriculum at all levels of education", as it "appears to have a positive impact on academic performance by helping students – even those with learning disabilities – focus, be more organized, plan ahead, perform better on exams, and think critically". One idea might be to develop this first prototype of *The mindful designer* into a full-fledged university course that could be taught to any type of design student.

7.3.3. Group practices

In the literature review (sect. 3.7.3) I mentioned a knowledge gap in group mindfulness practices for creativity. Further down the line (sect. 5.4), an insight from testing observation-contemplation was that 'its use may be desirable in a group context' (from appendix H). I've mentioned the popular hatha yoga and the new proprietary Circling (Sengstock, 2022) as examples of group mindfulness. Circling does seem to be constructive, although the protocol seems to be intentionally kept vague so that it isn't copied. Vervaeke and Mastropietro (2021) promote a practice, "dialectic into dialogos, as adapted from the Socratic tradition", as a psychological tool for distributed cognition and meaning-making. They argue that:

> dialectic equips the self for the confrontation with nihilism, and is best suited to transforming the privative experience of nothingness into a superlative, collective experience of no-thingness. The practice of dialectic into dialogos exapts [*uses*] the nature of the self as a synthesis of being and non-being, and possibility and necessity, in and through its relationship to others, and to its own otherness within self-transcendence.

This practice and Circling are both psychological and philosophical in nature, but these or other group techniques might be constrained in a similar way that the Prajna exercise was constrained to the context of a design problem (sect. 5.2.3). Other moving parts might be modified too to create a new mindfulness practice fit for design teams to perform together.

7.3.4. A perceptual problem: affording a 'sacred' home away from the potential horror of insight

One of the considerations that kept coming up throughout the project was the perception of the bracelet. Gibson (1979/2015) famously argued that we don't see *objects* in our environments at all, but that our visual perception is characterised by a landscape of "affordances". He writes: "I mean by it something that refers to both the environment and the animal in a way that no existing term does. It implies the complementarity of the animal and the environment" (Gibson, 1979/2015, p. 127). Affordances are the potential actions that open up for an organism in a particular environment.

In the case of the bracelet, what I feel I see when I look at it, is at least form and colour, but this doesn't result in a physical, material substrate or just the pattern of twelve beads in a loop, but a complex emotional gestalt. This must be due to my prolonged exposure to it and having a stake in its development, but what I see is much more complex than the "object". Particularly, I feel that what I see in this emotional pattern is a view into the complexity of reality itself, the world of transcendent truth, as a kind of symbolic "portal", perhaps. The complex emotions seem to arise from the value of the practice: it *affords* insight, which, as it seems to me, is the coming into conformity of the organism's internal state with reality—the Aristotelian conformity theory. There were times when the bracelet produced predominantly negative associations. This was partly due to the struggle of developing observation-contemplation at the time, but I think it also brought up a fear in me of actually achieving steps towards my personal goals for the project and of developing myself to conform to this goal, almost shading into a vague existential horror. I saw this come up a few times, only from noticing the bracelet on my desk in passing, in a self-suggesting way I discuss in the following reflection (ch. 8).

If this happens to me, it could surely happen to someone else, so this Gibsonian framing of the bracelet provides a potential constraint or new design problem: how to modify the affordance to become more reliably positive, so that people are more attracted to using the bracelet when they see it, hopefully encouraging a more stable positive feedback cycle of cognitive development.

Furthermore, this might be achieved by looking at the bracelet—or at mindfulness as such for that matter—through the framing of *sacredness*. Geertz (1973, p. 99) sees sacredness as the aspect of cultures that protects people from the existential horror that can be found in life: when "under mental stress, even perfectly familiar things may become suddenly disorganized". I think Sartre's *Nausea* (1938) exemplifies this almost as a kind of overwhelming domination of a nihilistic aesthetic: too much to bear, even though

there really is too much meaning rather than none at all.

Since mindfulness could and does cause existential uprooting through *this* kind of insight (I've tried to experience this voluntarily), how can a grounding sense of 'home' be continually realised? How can mindfulness provide a home against horror? Can a "physical" artefact embody this *affordance*? Can Kansas be captured in the yellow brick road to make the journey feel like home? This seems to me to be a point of serious concern and should be addressed in the process of the cultural adoption of mindfulness. The discourse around mindfulness is largely positive and promising, but there will be negative consequences to increased social insightfulness and we should also become aware of this darker side.

7.4. Conclusion

In this chapter, the key findings were discussed in relation to the main research question and design goal, limitations to the process were addressed and opportunities for further research and development were suggested.

Feedback throughout the project strongly suggested that experienced mindfulness practitioners found utility in closure practice, but that less experienced or naive practitioners found less or no utility in it. It seems they lacked the disposition— attitude and skills—necessary to enjoy the practice and derive the benefits from it. Ultimately, I have shown it is possible to help some designers become more insightful in their design practices, even though they were predisposed towards mindfulness practices. This strongly suggests that there is merit to be found in the pursuit of this topic.

In further research and development, one should pay attention to the potential pitfalls of convenience sampling and long learning periods for participants. Additionally, it seems justifiable to focus solely on measuring outcomes when it comes to mindfulness, as the trait effects will emerge hand in hand with them. It might be productive to research the science of abstraction to get a better grip on how the content of awareness influences insight.

Furthermore, I recommend the development of a mindfulness course to teach design students or professionals the basics, spanning several months, and which may include something like closure practice at its end. I also recommend researching the science of suggestion when constructing it. Another avenue to go into is group mindfulness practices for designers. Lastly, one must be aware of the dark side of insight and may venture into the design of an affordance of a home away from horror, as an integral part of the practice. In the next and last chapter, I present my personal reflections on the project. Thank you for your time and attention.

NB: If you are interested in this topic, I urge you to take up a mindfulness practice like meditation, which is easy to do for periods of minutes to start with. You can experience these effects yourself. Anyone can do this. You're already doing it, right now.

References

Anālayo, B. (2019). The Insight Knowledge of Fear and Adverse Effects of Mindfulness Practices. *Mindfulness*, *10*(10), 2172–2185. https://doi.org/10.1007/s12671-019-01198-4

Austin, J. H. (1999). *Zen and the brain: Toward an understanding of meditation and consciousness*. the MIT press. ISBN: 978-0-262-51109-4

Batchelor, S. (1983). *Alone with others: An existential approach to Buddhism* (1st Evergreen ed). Grove Press. ISBN: 978-0-394-62457-0

Beaty, R. E., Nusbaum, E. C., and Silvia, P. J. (2014). Does insight problem solving predict real-world creativity? *Psychology of Aesthetics, Creativity, and the Arts*, *8*, 287–292. https://doi.org/10.1037/a0035727

Boeijen, A. van, and Daalhuizen, J. (2014). *Delft design guide: Design methods* (Rev., 2. ed). BIS Publishers BV. ISBN: 978-90-6369-327-5

Boyd, R. L., Ashokkumar, S., and Pennebaker, J. W. (2022). *The Development and Psychometric Properties of LIWC-22*. The University of Texas at Austin. https://www.liwc.app/help/psychometrics-manuals

Brown, K. W., and Ryan, R. M. (2003). The benefits of being present: Mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology*, *84*(4), 822–848. https://doi.org/10.1037/0022-3514.84.4.822

Byron, K., Khazanchi, S., and Nazarian, D. (2010). The relationship between stressors and creativity: A

meta-analysis examining competing theoretical models. *Journal of Applied Psychology*, *95*(1), 201–212. https://doi.org/10.1037/a0017868

Cai, D. J., Mednick, S. A., Harrison, E. M., Kanady, J. C., and Mednick, S. C. (2009). REM, not incubation, improves creativity by priming associative networks. *Proceedings of the National Academy of Sciences*, *106*(25), 10130–10134. https://doi.org/10.1073/pnas.0900271106

Cohn, M. A., Mehl, M. R., and Pennebaker, J. W. (2004). Linguistic Markers of Psychological Change Surrounding September 11, 2001. *Psychological Science*, *15*(10), 687–693. https://doi.org/10.1111/j.0956-7976.2004.00741.x

Csikszentmihalyi, M. (2009). *Flow: The psychology of optimal experience* (Nachdr.). Harper [and] Row. ISBN: 978-0-06-133920-2

Davis, M. A. (2009). Understanding the relationship between mood and creativity: A meta-analysis. *Organizational Behavior and Human Decision Processes*, *108*(1), 25–38. https://doi.org/10.1016/j.obhdp.2008.04.001

Eberle, B. (1996). *Scamper: Games for Imagination Development*. Prufrock Press, 100 North 6th Street, Suite 400, Waco, TX 76701-2032; phone: 800-998-2208. ISBN: 978-1-882664-24-5

Fridland, E., and Stichter, M. (2021). It just feels right: An account of expert intuition. *Synthese*, *199*(1), 1327–1346. https://doi.org/10.1007/s11229-020-02796-9

Geertz, C. (1973). *The interpretation of cultures: Selected essays*. Basic Books. ISBN: 978-0-465-09719-7

Gibson, J. J. (2015). *The ecological approach to visual perception: Classic edition*. Psychology Press, Taylor & Francis Group. ISBN: 978-1-84872-578-2 (Original work published 1979)

Harper, D. (n.d.). Etymology of bead. In *Online Etymology Dictionary*. https://www.etymonline.com/word/bead

Headspace. (n.d.). *Meditation and Sleep Made Simple—Headspace*. Retrieved 23 October 2022, from https://www.headspace.com/

Hekkert, P., and van Dijk, M. (2017). *Vision in design: A guidebook for innovators* (2nd printing). BIS. ISBN: 978-90-6369-371-8

Heller, E. (2009). *Psychologie de la couleur effets et symboliques*. ISBN: 978-2-35017-156-2

Hirshberg, M. J., Goldberg, S. B., Rosenkranz, M., and Davidson, R. J. (2020). Prevalence of harm in mindfulness-based stress reduction. *Psychological Medicine*, 1–9. https://doi.org/10.1017/S0033291720002834

Jacobi, J. (1963). *De psychologie van C. G. Jung: Een inleiding tot zijn werk: Vol. Grote Phoenix Pocket* (M. Drukker, Trans.). W. de Haan. ISBN: 978-90-5637-664-2

Jagers op Akkerhuis, G. A. J. M. (Ed.). (2016). *Evolution and transitions in complexity: The science of hierarchical organization in nature*. Springer Science+Business Media. ISBN: 978-3-319-43801-6

James, W. (1982). *The varieties of religious experience: A study in human nature* (M. E. Marty, Ed.). Penguin Books. ISBN: 978-0-14-039034-6 (Original work published 1902)

Jones, G. (2003). Testing two cognitive theories of insight. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *29*(5), 1017–1027. https://doi.org/10.1037/0278-7393.29.5.1017

Jung, C. G. (1980). *Psychology and alchemy* (H. Read, Ed.; R. F. C. Hull, Trans.; 2.). Routledge. ISBN: 978-0-415-03452-4 (Original work published 1968)

Kabat-Zinn, J. (1994). *Wherever you go, there you are: Mindfulness meditation in everyday life*. Hyperion. ISBN: 978-0-7868-8070-6

Knoblich, G., Ohlsson, S., Haider, H., and Rhenius, D. (1999). Constraint relaxation and chunk decomposition in insight problem solving. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *25*(6), 1534–1555. https://doi.org/10.1037/0278-7393.25.6.1534

Langer, E. J. (2005). *On becoming an artist: Reinventing yourself through mindful creativity* (1st ed). Ballantine Books. ISBN: 978-0-345-45629-8

Lebuda, I., Zabelina, D. L., and Karwowski, M. (2016). Mind full of ideas: A meta-analysis of the mindfulness–creativity link. *Personality and Individual Differences*, *93*, 22–26. https://doi.org/10.1016/j.paid.2015.09.040

Leland, M. (2015). Mindfulness and Student Success. *Journal of Adult Education*, *44*(1), 19–24. https://eric.ed.gov/?id=EJ1072925

Lippelt, D. P., Hommel, B., and Colzato, L. S. (2014). Focused attention, open monitoring and loving kindness meditation: Effects on attention, conflict monitoring, and creativity: a review. *Frontiers in Psychology*, *5*. https://doi.org/10.3389/fpsyg.2014.01083

MacGregor, J. N., Ormerod, T. C., and Chronicle, E. P. (2001). Information processing and insight: A process model of performance on the nine-dot and related problems. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *27*(1), 176–201. https://doi.org/10.1037/0278-7393.27.1.176

Mah, K., Loke, L., and Hespanhol, L. (2021). Towards a Contemplative Research Framework for Training Self-Observation in HCI: A Study of Compassion Cultivation. *ACM Transactions on Computer-Human Interaction*, *28*(6), 1–27. https://doi.org/10.1145/3471932

Marlatt, G. A., and Kristeller, J. L. (1999). Mindfulness and meditation. In W. R. Miller (Ed.), *Integrating spirituality into treatment: Resources for practitioners.* (pp. 67–84). American Psychological Association. ISBN: 978-1-55798-581-1

Mastropietro, C., and Vervaeke, J. (2020, May 15). Diagnosing the Current Age. *The Side View*. https://thesideview.co/journal/diagnosing-the-current-age/

McGilchrist, I. (2009). *The master and his emissary: The divided brain and the making of the Western world*. Yale University Press. ISBN: 978-0-300-14878-7

Merleau-Ponty, M., and Landes, D. A. (2012). *Phenomenology of perception*. Routledge. ISBN: 978-0-415-55869-3 (Original work published 1944)

Mole, C. (2011). *Attention is cognitive unison: An essay in philosophical psychology*. Oxford University Press.

ISBN: 978-0-19-538452-9

Montague, R. (2007). *Your brain is (almost) perfect: How we make decisions*. Plume Book. ISBN: 978-1-101-66561-9

Moustakas, C. E. (1990). *Heuristic research: Design, methodology, and applications*. Sage Publications. ISBN: 978-0-8039-3881-6

Newell, A., and Simon, H. A. (2019). *Human problem solving*. Echo Point Books & Media. ISBN: 978-1-63561-792-4 (Original work published 1972)

One Mindful Breath (Director). (2019, September 18). *Stephen Batchelor on Nirvana, McMindfulness & Ethics*. YouTube. https://www.youtube.com/watch?v=iHGVDLI_620&ab_channel=OneMindfulBreath

Ostafin, B. D., and Kassman, K. T. (2012). Stepping out of history: Mindfulness improves insight problem solving. *Consciousness and Cognition*, *21*(2), 1031–1036. https://doi.org/10.1016/j.concog.2012.02.014

Ovington, L. A., Saliba, A. J., and Goldring, J. (2018). Dispositions Toward Flow and Mindfulness Predict Dispositional Insight. *Mindfulness*, *9*(2), 585–596. https://doi.org/10.1007/s12671-017-0800-4

Pahl, A.-K. (2005). A preliminary report investigating team creativity using meditation as a template for co-evolutionary design process. *Proceedings ICED 05, the 15th International Conference on Engineering Design*.

Polanyi, M. (1962). Tacit Knowing: Its Bearing on Some Problems of Philosophy. *Reviews of Modern Physics*, *34*(4), 601–616. https://doi.org/10.1103/RevModPhys.34.601

Polanyi, M., and Sen, A. (2009). *The tacit dimension*. University of Chicago Press. ISBN: 978-0-226-67298-4 (Original work published 1966)

Purser, R. E. (2019). *McMindfulness: How mindfulness became the new capitalist spirituality*. Repeater. ISBN: 978-1-912248-31-5

Quach, D., Gibler, R. C., and Jastrowski Mano, K. E. (2017). Does Home Practice Compliance Make a Difference in the Effectiveness of Mindfulness Interventions for Adolescents? *Mindfulness*, *8*(2), 495–504. https://doi.org/10.1007/s12671-016-0624-7

Ren, J., Huang, Z., Luo, J., Wei, G., Ying, X., Ding, Z., Wu, Y., and Luo, F. (2011). Meditation promotes insightful problem-solving by keeping people in a mindful and alert conscious state. *Science China Life Sciences*, *54*(10), 961–965. https://doi.org/10.1007/s11427-011-4233-3

Ritter, S. M., and Dijksterhuis, A. (2014). Creativity—The unconscious foundations of the incubation period. *Frontiers in Human Neuroscience*, *8*. https://www.frontiersin.org/articles/10.3389/fnhum.2014.00215

Rojas, F., Spencer, N., and English, S. (2012). Stillness as a Competence of Design Intelligence. *DRS Biennial Conference Series*. https://dl.designresearchsociety.org/drs-conference-papers/drs2012/researchpapers/117

Sengstock, G. (2022). What is Circling™ Method—The Circling Insititute. *Circling™ Institute*. https://circlinginstitute.com/what-is-circling-method/

Sewell, F. (2019, December 6). For Designers, Mindfulness Doesn't Have to be Meaningless. *WA We Are One*. https://freyjasewellwa.wordpress.com/2019/12/06/for-designers-mindfulness-doesnt-have-to-be-meaningless/

Shamas, V., and Maker, J. (2018). Mindfulness, learning, and the creative process. *Gifted Education International*, *34*(2), 129–143. https://doi.org/10.1177/0261429418763386

Sharma, H. (2015). Meditation: Process and effects. *AYU (An International Quarterly Journal of Research in Ayurveda)*, *36*(3), 233. https://doi.org/10.4103/0974-8520.182756

Siegel, D. J. (2011). *Mindsight: The new science of personal transformation*. Bantam Books. ISBN: 978-0-553-38639-4

Simpson-Little, D., and Long, C. (2010). Find The Gap–developing abilities in space consciousness for enhanced learning. *DS 62: Proceedings of E&PDE 2010*, 6.

Slagter, H., Davidson, R., and Lutz, A. (2011). Mental Training as a Tool in the Neuroscientific Study of Brain and Cognitive Plasticity. *Frontiers in Human Neuroscience*, *5*. https://www.frontiersin.org/article/10.3389/fnhum.2011.00017

Sounds True (Director). (2014). *Jon Kabat-Zinn—Guided Mindfulness Meditation (Audio)*. https://www.youtube.com/watch?v=-5uaDoOCMb4

Spierings, G. (2021). *Prana: Your luminous meditation assistant* [Master's thesis]. Delft University of Technology. http://resolver.tudelft.nl/uuid:3f75908e-5120-4e5f-ad40-4d00f85d3ecc

Sultan, N. (2019). *Heuristic inquiry: Researching human experience holistically* (First Edition). SAGE Publications. ISBN: 978-1-5063-5548-1

Sultan, N. (2020). Heuristic Inquiry: Bridging Humanistic Research and Counseling Practice. *The Journal of Humanistic Counseling*, *59*(3), 158–172. https://doi.org/10.1002/johc.12142

Vervaeke, J. (Director). (2019, March 15). *Ep. 9—Awakening from the Meaning Crisis—Insight*. YouTube. https://youtu.be/jkWNBdBDyoE?t=1884

Vervaeke, J. (Director). (2020, May 11). *Meditating with John Vervaeke—Lesson 10: Prajna—Day 36—Live Stream Mon-Fri 09:30 EST*. YouTube. https://www.youtube.com/watch?v=O8rZNEohVyA&ab_channel=JohnVervaeke

Vervaeke, J. (2022). How a philosophy of meditation can explore the deep connections between mindfulness and contemplative wisdom. In *Routledge Handbook on the Philosophy of Meditation*. Routledge. ISBN: 978-1-00-312725-3

Vervaeke, J., and Ferraro, L. (2013). Relevance, Meaning and the Cognitive Science of Wisdom. In M. Ferrari and N. M. Weststrate (Eds.), *The Scientific Study of Personal Wisdom* (pp. 21–51). Springer Netherlands. ISBN: 978-94-007-7986-0

Vervaeke, J., and Ferraro, L. (2016). Reformulating the mindfulness construct: The cognitive processes at work in mindfulness, hypnosis, and mystical states. In *Hypnosis and meditation: Towards an integrative science of conscious planes* (1st ed., pp. 241–268). Oxford University Press. ISBN: 978-0-

19-875910-2

Vervaeke, J., Ferraro, L., and Herrera-Bennett, A. (2018). Flow as spontaneous thought: Insight and implicit learning. In *The Oxford Handbook of Spontaneous Thought: Mind-Wandering, Creativity, and Dreaming* (pp. 309–326). https://doi.org/10.1093/oxfordhb/9780190464745.013.8

Vervaeke, J., Lillicrap, T. P., and Richards, B. A. (2012). Relevance Realization and the Emerging Framework in Cognitive Science. *Journal of Logic and Computation*, *22*(1), 79–99. https://doi.org/10.1093/logcom/exp067

Vervaeke, J., and Mastropietro, C. (2021). Dialectic into Dialogos and the Pragmatics of No-thingness in a Time of Crisis. *Eidos. A Journal for Philosophy of Culture*, *5*(2), 58–77. https://doi.org/10.14394/eidos.jpc.2021.0017

VGZ. (n.d.). *VGZ | Mindfulness app voor meer rust | VGZ Zorgeverzekering*. Retrieved 23 October 2022, from https://www.vgz.nlhttps://www.vgz.nl/mindfulness-coach-app

Victoria & Albert Museum, U. (2006). *Ring* [Gold, engraved]. Victoria & Albert Museum Metalwork Collection. http://collections.vam.ac.uk/item/O121196/ring-unknown/

Waking Up. (n.d.). *Waking Up—A New Operating System for Your Mind*. Wakingup.Com. Retrieved 23 October 2022, from https://www.wakingup.com/

Wilber, K. (2017). *A brief history of everything*. Shambhala. ISBN: 978-1-61180-452-2

Zenner, C., Herrnleben-Kurz, S., and Walach, H. (2014). Mindfulness-based interventions in schools: A systematic review and meta-analysis. *Frontiers in Psychology*, *5*. https://doi.org/10.3389/fpsyg.2014.00603

Reflections

Intent

Throughout the bachelor curriculum it was obvious to me that my talents had always lied in the practical side of industrial design: prototyping and manufacturing. This hands-on, immanent and active side of creating was always the most appealing part of every project to me, the most real part even. I used to detest writing about designing and this is principally why I chose to pursue the Integrated Product Design master track, although I had my doubts for other reasons and didn't have any better ideas. I decided that it would be worth it in any case if I could do a graduation project which allowed me to take time to explore what my interests were and to develop my ideas on those topics before venturing into the busy, busy world of being a professional designer, which is what I thought I wanted to become.

I discovered, however, that what I do best is to make music and for this reason I see myself foremost as a musician; also, and especially, in the context of this project. Making music to me is nothing else than creating new discernable hierarchies of patterns, by allowing the processes in creativity to internalise and modify the material world. I hope that I have been successful in playing the strings of my abilities to produce new patterns in being to benefit their own own sustenance, thriving and development, which is what I think *goodness* might ultimately mean.

Project management

I was never the best of my group at project management in design projects throughout the bachelor and master projects. I know I'm creative and I like discussions (this may already be apparent to you) and defining and solving problems, but I'm easily steered by my interests, which often don't correspond with the task at hand. I often call this distraction, but that word for me implies that this is counterproductive, which it often is, but I also find that this tendency can be a huge source of inspiration as well. I think that these positive and negative sides of interest and distractibility, respectively, played a central role for the structure of the project. The start of the project was characterised by a constant flow of diverging interests and information seeking, while the last part was characterised mainly by distraction when completing more boring tasks was necessary and I often ended up still seeking new information.

Procrastination, distractibility and anxiety

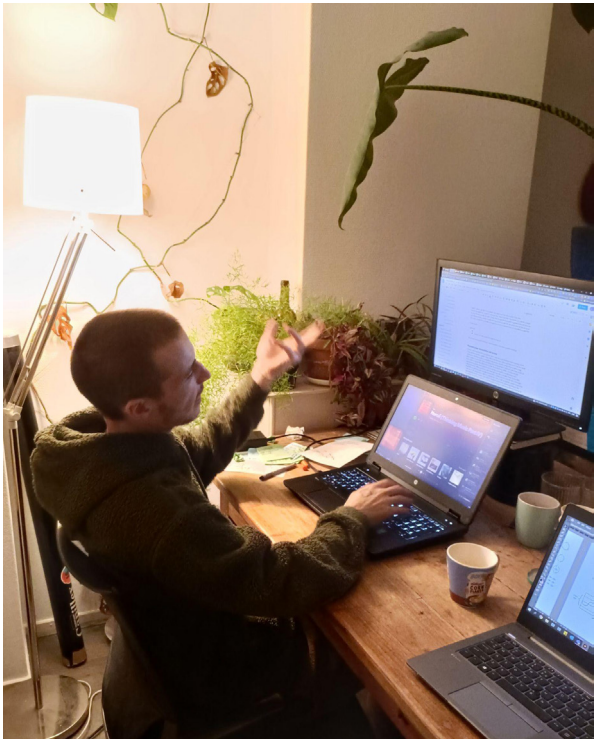
I knew I procrastinated a lot before, but I only recently realised that wanting relief from anxiety is what causes this. I often felt anxious when setting out to do the work I thought I needed to do to complete the project, to the point of procrastinating three entire weeks one time, avoiding everything project-related I possibly could. This was one of the reasons that the project was delayed first by two weeks, and why the report wasn't nearly elaborate enough for the first green light meeting, adding another four weeks. It feels rather counterintuitive that I show this behaviour while, I'm also deeply interested in phenomena related to creativity, aesthetics, mindfulness and consciousness. Other activities can easily get me into extended flow states (like meditation, painting and making music) and I constantly wondered why I wouldn't "just do it", as others have told me repeatedly. One of the problems seems to be that I get distracted very easily. Task differentiation and weekly planning helped, but becoming aware that I needed to do this and sticking to decisions doesn't appear in my awareness naturally, even under time pressure this doesn't happen. Sometimes the closure practice exercise itself helped to start thinking about details, giving an entrance to a 'task-completing mindset'.

One obvious source of anxiety for me is the openness of possibility of the future after graduation and its uncertainty. I currently want to pursue a PhD project that is tightly related to the topic of this graduation project, but I know that arranging funding will be tricky and of uncertain outcome. I also don't know exactly why I feel so strongly that I should do this, it's just a strong urge I have. It seems related to interest and learning, which seems to me what PhD projects are all about. There is also an aspect of responsibility,

as I feel and think that this topic is socially important and see that peers seem only superficially interested. I suppose that a clear end goal is still lacking for me, even though I do see a direction. This might have caused disjunction, but it also remains a mere speculation.

It seems to me that the source of anxiety might come from the vast space—of vast spaces—of action possibilities that lie ahead ("combinatorial explosion" in Newell and Simon, 1972/2019). I decided to pursue a self-proposed PhD project on the topic of mindfulness and design, but its framing is still rather vague to me and it isn't clear if I can even find a position or funding to start it. This apparent threat—though luckily the opposite of life-threatening—has been in the forefront of my awareness throughout the project. The idea that this other vague new project was a continuation of this project scared me even more, since the depths that I felt I touched upon in this project, which is not even an eighth the length of a PhD project, though overwhelmingly positive, just seemed to be the beginning of something much larger. I feel nauseated thinking about this even now. This is also confusing, since this seeming threat originates from the consequences of my hugely positive appraisal of mindfulness, the academic pursuit of which still seems like a worthy goal: my desire of developing a PhD project remains.

I had suspected I had been showing ADHD or ADD-like behaviour patterns for several years now (like avoidance, procrastinating, impulsivity and restlessness). A recent doctor's visit alluded to this being likely. This doesn't directly solve any problems at this time. It should help to learn more about strategies for decreasing procrastination and anxiety (its cause), and for increasing executive function, task salience, motivation and productivity and I've been doing this already. Getting back my mindfulness habits is an important part of this. (I want to move towards an hour a day again.) It's also possible that my hierarchy of goals is disorganised, or lacks unity, which would mean that the goals of completing the project, or graduating, aren't part of a higher-order goal or value structure or are not well-connected to the lower-order goals, like analysing an interview or writing a chapter.



Appendices

DESIGN FOR our future

TU Delft

IDE Master Graduation

Project team, Procedural checks and personal Project brief

This document contains the agreements made between student and supervisory team about the student's IDE Master Graduation Project. This document can also include the involvement of an external organisation, however, it does not cover any legal employment relationship that the student and the client (might) agree upon. Next to that, this document facilitates the required procedural checks. In this document:

- The student defines the team, what he/she is going to do/deliver and how that will come about.
- SSC E&SA (Shared Service Center, Education & Student Affairs) reports on the student's registration and study progress.
- IDE's Board of Examiners confirms if the student is allowed to start the Graduation Project.

USE ADOBE ACROBAT READER TO OPEN, EDIT AND SAVE THIS DOCUMENT

Download again and reopen in case you tried other software, such as Preview (Mac) or a webbrowser.

STUDENT DATA & MASTER PROGRAMME

Save this form according the format "IDE Master Graduation Project Brief_familyname_firstname_studentnumber_dd-mm-yyyy".
Complete all blue parts of the form and include the approved Project Brief in your Graduation Report as Appendix 1 !

family name: Wyber 5576
initials: A given name: Aidan
student number: 4488652
street & no.:
zipcode & city:
country:
phone:
email:

Your master programme (only select the options that apply to you):

IDE master(s): ★ IPD ○ DfI ○ SPD
2nd non-IDE master:
individual programme: - - (give date of approval)
honours programme: ○ Honours Programme Master
specialisation / annotation: ○ Medisign ○ Tech. in Sustainable Design ○ Entrepeneurship

SUPERVISORY TEAM **

Fill in the required data for the supervisory team members. Please check the instructions on the right !

** chair: Professor Peter Lloyd dept. / section: DOS-MOD
** mentor: Dr. Haian Xue dept. / section: HCD-DA
2nd mentor:
organisation:
city: country:

comments (optional)

Chair should request the IDE Board of Examiners for approval of a non-IDE mentor, including a motivation letter and c.v..

Second mentor only applies in case the assignment is hosted by an external organisation.

Ensure a heterogeneous team. In case you wish to include two team members from the same section, please explain why.

APPROVAL PROJECT BRIEF

To be filled in by the chair of the supervisory team.

chair Professor Peter Lloyd date 03 - 03 - 2022 signature Peter Lloyd Digitally signed by Peter Lloyd Date: 2022.03.03 16:52:23 +01'00'

CHECK STUDY PROGRESS

To be filled in by the SSC E&SA (Shared Service Center, Education & Student Affairs), after approval of the project brief by the Chair. The study progress will be checked for a 2nd time just before the green light meeting.

Master electives no. of EC accumulated in total: 27 EC

Of which, taking the conditional requirements into account, can be part of the exam programme 27 EC

List of electives obtained before the third semester without approval of the BoE

★ YES all 1st year master courses passed

NO missing 1st year master courses are:

name K. Veldman date 10 - 03 - 2022 signature Kristin Veldman Digitally signed by Kristin Veldman Date: 2022.03.10 12:36:32 +01'00'

FORMAL APPROVAL GRADUATION PROJECT

To be filled in by the Board of Examiners of IDE TU Delft. Please check the supervisory team and study the parts of the brief marked **. Next, please assess, (dis)approve and sign this Project Brief, by using the criteria below.

- Does the project fit within the (MSc)-programme of the student (taking into account, if described, the activities done next to the obligatory MSc specific courses)?
- Is the level of the project challenging enough for a MSc IDE graduating student?
- Is the project expected to be doable within 100 working days/20 weeks ?
- Does the composition of the supervisory team comply with the regulations and fit the assignment ?

Content: ★ APPROVED NOT APPROVED

Procedure: ★ APPROVED NOT APPROVED

comments

name Monique von Morgen date 29 - 03 - 2022 signature

A mindfulness toolkit for designers to enhance insight

project title

Please state the title of your graduation project (above) and the start date and end date (below). Keep the title compact and simple. Do not use abbreviations. The remainder of this document allows you to define and clarify your graduation project.

start date 14 - 03 - 2022 06 - 09 - 2022 end date

INTRODUCTION **

Please describe, the context of your project, and address the main stakeholders (interests) within this context in a concise yet complete manner. Who are involved, what do they value and how do they currently operate within the given context? What are the main opportunities and limitations you are currently aware of (cultural- and social norms, resources (time, money,...), technology, ...).

The benefits of mindfulness are numerous and attractive. These exist on both state and trait levels: short-term experienced conditions and long-term personality aspects, respectively. At the trait level, benefits are: alleviation of stress, pain, depression, sleeping problems and 'mindless' reflexive action, but also the increase of: attention, focus, emotional regulation and creativity (Zenner et al., 2014), flow and insight (Ovington et al., 2018), empathy (mindsight; Siegel, 2010) and wisdom (Vervaeke & Ferraro, 2013). Less research has been done for the state level, but increases in state insight have been found (Ren et al, 2011). Mindfulness practices cause these changes, in part, because they optimise a central cognitive process that allows you to realise what is relevant (Vervaeke & Ferraro, 2013). This means cognition improves at all levels: from realising the location of your pen, to realising solutions to wicked insight problems, like those often found in design.

So, I see an opportunity for designers to push the boundaries of their cognitive capabilities through their adoption of mindfulness practices. But the benefits seem too good to be true, why are these not standard practices yet? Firstly, 'mindfulness' has a short history in Europe. It was originally translated from Buddhist literature in 1881 (Davids), following the European interests in both exoticism and secular spirituality. Although cultural usage of the word has grown substantially, especially since the 1980's, a wide-spread confusion with its meaning remains, as it's devoid of its original context. Fromm (1976/2015) relates its original meaning to a remembering (re-embodiment) of a 'being-mode', as opposed to a 'having-mode'. Secondly, people who start regular mindfulness habits at home often don't meet practise suggestions, due to barriers of "busyness, forgetfulness, and lack of motivation" (Quach, Gibler, & Jastrowski Mano, 2017). On the whole, this means there are at least cultural and practical obstacles to overcome in order to make mindfulness practices more fitted to the lives of Europeans.

My aim is to make designers more effective by helping them to reach certain cognitive states that afford deeper insight, which is supposed to result in the acknowledgement that mindfulness practices have a practical value, leading to repeated use. The integration of a set of these practices in design processes would mean: not only an increase in effectiveness of short-term outcomes, but also a long-term, gradual personal development of the subject, leading to the cultivation of the traits discussed above, if practice can become routine.

As for the stakeholders, the target group would be European professional design practitioners and design students. They want to become better practitioners efficiently. Mindfulness and design research communities should also have an interest in the outcomes of this project. They have both generic and specific goals related to their research topics. Furthermore, TU Delft wants research and design of a certain quality and standard from me. Peter and Haian supposedly embody this role as supervisors. As for me, I state my interests in 'Motivations and ambitions'.

Davids TR (1881). Buddhist Suttas. Clarendon Press. p. 107. OCLC 13247398.
Ovington, L.A., Saliba, A.J. & Goldring, J. Dispositions Toward Flow and Mindfulness Predict Dispositional Insight. Mindfulness 9, 585–596 (2018). https://doi.org/10.1007/s12671-017-0800-4
Fromm, E. (2015). To have or to be? Bloomsbury Academic, an imprint of Bloomsbury Publishing Plc. Original work published in 1976.
Ren, J., Huang, Z., Luo, J. et al. (2011). Meditation promotes insightful problem-solving by keeping people in a mindful and alert conscious state. Sci. China Life Sci. 54, 961–965. https://doi.org/10.1007/s11427-011-4233-3
Siegel, Daniel J., 1957-. (2010). Mindsight : the new science of personal transformation. New York: Bantam Books
Vervaeke J., Ferraro L. (2013) Relevance, Meaning and the Cognitive Science of Wisdom. In: Ferrari M., Weststrate N. (eds) The Scientific Study of Personal Wisdom. Springer, Dordrecht. https://doi.org/10.1007/978-94-007-7987-7_2
Zenner, C., Herrnleben-Kurz, S., & Walach, H. (2014). Mindfulness-based interventions in schools-a systematic review...

space available for images / figures on next page

introduction (continued): space for images

TO PLACE YOUR IMAGE IN THIS AREA:
- **SAVE THIS DOCUMENT TO YOUR COMPUTER AND OPEN IT IN ADOBE READER**
- **CLICK AREA TO PLACE IMAGE / FIGURE**

PLEASE NOTE:
- **IMAGE WILL SCALE TO FIT AUTOMATICALLY**
- **NATIVE IMAGE RATIO IS 16:10**
- **IF YOU EXPERIENCE PROBLEMS IN UPLOADING, COVERT IMAGE TO PDF AND TRY AGAIN**

image / figure 1:

TO PLACE YOUR IMAGE IN THIS AREA:
- **SAVE THIS DOCUMENT TO YOUR COMPUTER AND OPEN IT IN ADOBE READER**
- **CLICK AREA TO PLACE IMAGE / FIGURE**

PLEASE NOTE:
- **IMAGE WILL SCALE TO FIT AUTOMATICALLY**
- **NATIVE IMAGE RATIO IS 16:10**
- **IF YOU EXPERIENCE PROBLEMS IN UPLOADING, COVERT IMAGE TO PDF AND TRY AGAIN**

image / figure 2:

PROBLEM DEFINITION **

Limit and define the scope and solution space of your project to one that is manageable within one Master Graduation Project of 30 EC (= 20 full time weeks or 100 working days) and clearly indicate what issue(s) should be addressed in this project.

The problem is how to go about integrating mindfulness practices into design processes in a way that serves a practical purpose for designers: a capacity for deeper insight. Questions that arise from this problem include the following. How can I form the interaction with these mindfulness practises to fit the context of design processes during working hours? How can I facilitate the first interactions with these practices? How can I facilitate repeated use and ultimately afford habit formation, in order to aid cultivation of the trait benefits? Can I make daily use attractive? How can I validate the expected effects on insight? What daily time constraints are there for my target group? Which technologies can I make use of?

At least, I already know I need to combine three types of mindfulness practices: a meditation type for training and extending the range of perception, a contemplation type for training and extending the range of abstraction, and a 'non-dual', cycling type for training the fluid movement along the dimension in between the two others: this results in increased cognitive flexibility, which is crucial to insight (Vervaeke & Ferraro, 2013). The last is only possible through the cultivation of the first two. But which practices exactly will I use: what are the concrete steps?

For now, I will limit my target group to designers in design agencies in Europe and IDE students (a convenient source of design students). What do the daily lives of these people look like? Which practices that relate to insight do they already use?

Vervaeke J., Ferraro L. (2013) Relevance, Meaning and the Cognitive Science of Wisdom. In: Ferrari M., Weststrate N. (eds) The Scientific Study of Personal Wisdom. Springer, Dordrecht. https://doi.org/10.1007/978-94-007-7987-7_2

ASSIGNMENT **

State in 2 or 3 sentences what you are going to research, design, create and / or generate, that will solve (part of) the issue(s) pointed out in "problem definition". Then illustrate this assignment by indicating what kind of solution you expect and / or aim to deliver, for instance: a product, a product-service combination, a strategy illustrated through product or product-service combination ideas, ... In case of a Specialisation and/or Annotation, make sure the assignment reflects this/these.

Create a set of interactions for design practitioners that includes a specific set of mindfulness practices that afford enhanced state insight, and that is easily integratable into daily design processes. The designed outcome embeds these interaction affordances into a form that allows scalable distribution.

The outcome could be a product, like the auxiliary card sets for designers you get these days, or a meditation timer. But it could also manifest more as a product-service combination, for example, resembling a meditation app, or an instructive podcast. I would like to keep the embodiment strategy open-ended for now, due to some of the highly abstract aspects of the problem.

I have some requirements: it needs to be easy to start the practices as a beginner, the practices need to be readily categorised by designers as design methods, the practices need to be repeatable on a daily basis voluntarily, and the distribution of the toolkit needs to be scalable to reach practitioners throughout Europe.

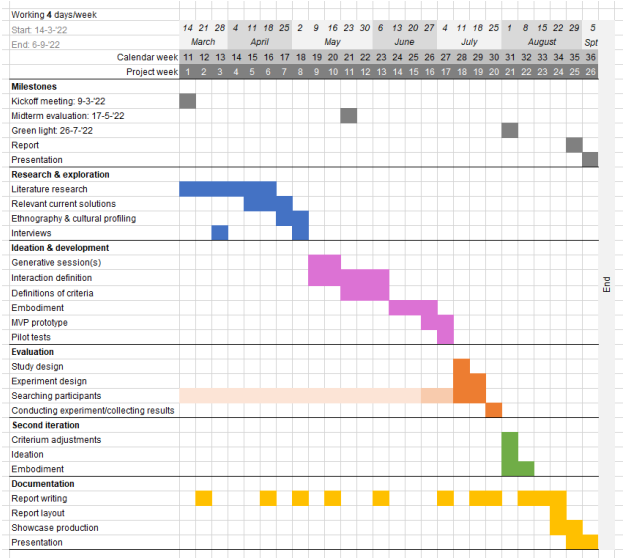
I want to validate the toolkit scientifically using the relevant psychological measures. At least, I want to test for a causal relationship with state insight. This test should be done with both professional design practitioners and design students alike, to get insight into promising strategies for the implementation of mindfulness practices into both design agencies and design education alike.

I would consider writing a paper on my findings and submitting it to a journal or conference if my results are significantly relevant.

PLANNING AND APPROACH **

Include a Gantt Chart (replace the example below - more examples can be found in Manual 2) that shows the different phases of your project, deliverables you have in mind, meetings, and how you plan to spend your time. Please note that all activities should fit within the given net time of 30 EC = 20 full time weeks or 100 working days, and your planning should include a kick-off meeting, mid-term meeting, green light meeting and graduation ceremony. Illustrate your Gantt Chart by, for instance, explaining your approach, and please indicate periods of part-time activities and/or periods of not spending time on your graduation project, if any, for instance because of holidays or parallel activities.

start date 14 - 3 - 2022 6 - 9 - 2022 end date



I'll be working on my graduation 4 days a week, as I'm reserving a day to paint (see motivations). This means the project will span 25 weeks to fill the required 480 hours.

I foresee the main focus of the project to be on research and ideation, so I've allocated less time to embodiment. This is because I imagine the development of a vision/angle will be more complex than the typical embodiment projects I've done during IPD.

During the evaluation section, I want to set up a kind of pilot study that measures the effectiveness of the design proposal through established scientific measures. My intention for that added rigour is to use the results to back up a future PhD proposal.

I've allocated an 8-day period for a short second iteration, to integrate any insights from the evaluation into an updated design proposal.

I understand I've scheduled a part of my project in July and August. If there's a scheduling conflict with graduating around this period, please let me know. I could take a break during the summer and graduate in September if needed.

MOTIVATION AND PERSONAL AMBITIONS

Explain why you set up this project, what competences you want to prove and learn. For example: acquired competences from your MSc programme, the elective semester, extra-curricular activities (etc.) and point out the competences you have yet developed. Optionally, describe which personal learning ambitions you explicitly want to address in this project, on top of the learning objectives of the Graduation Project, such as: in depth knowledge a on specific subject, broadening your competences or experimenting with a specific tool and/or methodology, ... Stick to no more than five ambitions.

I had a profound mystical experience a few years ago which oriented me towards the mystery of consciousness. That new interest guided me to meditation and increasingly sustained practices of many forms ultimately led me to realise that what I want most in my life is to help as many people as I possibly can. I have been thinking and writing about how to go about this a lot for the last year or so, and it seems to me that the adoption of mindfulness practices by designers may (indirectly) offer the most benefits to the most people for the amount of work I can put in. Designers create positive influences on the wellbeing of others in a way that scales exponentially, and so, I want to make designers more loving, responsible, in touch with nature, wise and attuned to the realisation of relevance in their own lives and likewise in the lives of others. And as far as I can tell, this is feasible, so that is why I am proposing this.

To anyone reading this that I might not ever see in person: I highly recommend taking up a daily practice. You can start with 3-5 minutes a day, at a maximum. It's hard enough in the beginning. Many guided meditations can be found online. I can also recommend mindfulness apps like Headspace or Waking Up.

In my graduation project, I want to prove my competencies in context mapping, problem framing, and embodiment. As for ambitions, I want to familiarise myself with the cognitive science of mindfulness/meditation and insight. I want to become a better thinker and writer. I want to solidify and deepen my personal daily mindfulness practices in order to build some expertise. I want to conclude with evidence to support a viable PhD proposal on this topic. I have also chosen to work on my graduation four days a week, to have an entire day for abstract painting, which I want to use mainly to develop my sensitivity to intuition. I may use it indirectly to contemplate my project, but it's also an opportunity to do this for fun while I still easily can.

FINAL COMMENTS

In case your project brief needs final comments, please add any information you think is relevant.

B. Broad cultural relevance

To demonstrate the relevance of this project on a grander scale, I'll situate the project in contemporary culture. I'll provide an extremely brief summary of some important historical developments and then argue for the central importance of the creative professions in society today, and why an ongoing, unfolding relationship with the transcendent is not optional for them, which is ultimately what mindfulness brings people.

B.1. The self-destruction of Christianity through scientism

As I understand Jung's view on this, the European Enlightenment was the effect of the centrality in Christianity of the pursuit of Truth, which eventually produced, through the fiction of alchemy, the scientific method (Jung, 1968/1980). Science, or rather, scientism however, has caused an increasing secularisation of Europe. As a consequence, technological progress has sped ahead of many of the presumably divine, but rigidly static precepts of Abrahamic texts, and similar processes of rising disbelief in other religions are happening simultaneously. As Wilber (2017) put it, European civilisations are being hollowed out, being dismantled from the core outwards, towards a leftover shell of 'sensory surfaces' that characterise scientific observations. He points at the necessary hierarchy that structures perception itself and organises itself as values, with an overspanning summit of abstract values—love, truth and responsibility—which was historically contained in Christianity for many Europeans, and similar ones which are contained in other religions for other cultures.

B.2. The meaning crisis

Nietzsche observed this "God is dead" before many others and from the inevitable loss of a hierarchical framework of values (in *Thus Spake Zarathustra*), and predicted a conflation of religion and spirituality as a consequence, as well as a general pervasive nihilism (in *The Will To Power*). Both of these ideas can be seen as reality today, with the rise of identity politics and the increases in self-reported nihilism , increases in rates of depression, suicide, loss of trust in political and judicial systems, and the increasing exposure to bullshit, on social media for example. The sum of these developments has been called the "meaning crisis" (Mastropietro and Vervaeke, 2020). The authors also include the rise of psychedelic use and increased academic interest in Buddhism as curative responses to this crisis. Vervaeke's academic work seems to be

aimed at resolving this meaning crisis, specifically, his work on mindfulness turned out to be of central utility to this project, as I show in the literature review.

B.3. At home in a worldview

Mindfulness, the set of psycho-technologies of Buddhism, seems to be a secular vehicle of realising a process of coming into a "correct" type of participation with reality, as facilitated by the increased insight it affords and the way it instates right brain dominance, essentially, passive perception over blind action (McGilchrist, 2009). It can provide a type of home-making, a necessary protection in the face of the inevitable existential horror and absurdity that is a consequence of a tyranny of propositions, the pancakeification of the value hierarchy caused by the fervent reductionism of scientism.

B.4. A necessary relationship to the transcendent

The creative professions, e.g., artists, authors, editors, architects and fashion designers, graphic designers and industrial designers all have a unique role in society. Their responsibility lies in the creative part of the archetypal hero's journey: the slowly stumbling forward in the darkness of the new or forgotten, the illuminating discovery of a treasure, and the creation of a plan to distribute it to the rest of society. The creative professions however, though depending on reputation, can have much power when it comes to the mass distribution of new technology in societies. The responsibility of these people surely matches this granted power.

Mindfulness was a way to catalyse the development of a worldview, of that participatory relationship with reality. Being in closer contact with reality must mean a greater apprehension of the Good, the True and the Beautiful. I see this development of a person's understanding of ontology, ethics and aesthetics and the relationships between them, within the person's worldview, as that which makes the person more conscious in their own process of being, as well as that of others. If combined with a love for life itself, and this is a necessity, and I think can be realised through beauty, what other than this development could be a better basis for the cultivation of wisdom? Creatives are in need of developing wisdom, just like everyone else, but it is the creatives that are potentially disproportionally dangerous when it comes to new tools.

Creative professionals are powerful agents of transformation, so they should have a balanced sense of

responsibility. This responsibility surely requires a well-established worldview, a real relationship with the Good, the True, and the Beautiful, before acting in ways that can change society on large scales. Mindfulness ultimately affords the development of this worldview and the resulting cultivation of wisdom.

C. Interview structure guide for the heuristic inquiry

1. Background
    a. About me
    b. Project topic: helping designers become more insightful
    c. Mindfulness: mental technologies that strengthen the attention mechanism.
2. Questions on their personal mindfulness
    a. What kind of mindfulness do you practice?
    b. Why do you practise this?
    c. When do you practise this?
    d. How long do you do this for?
    e. How often do you practise this?
3. Question on the influence of their practice
    a. What has been the influence of this practice in general?
    b. What is the influence on your design work?
    c. Would you recommend this to other designers?
    d. Why do you reckon others do not practise this?
4. Questions on enlightenment
    a. Have you had any experiences of enlightenment?
    b. If so, what were the consequences of it?
    c. How did it affect your work?
5. Rounding off
    a. Sharing final thoughts on the project.

D. Process of the creative synthesis

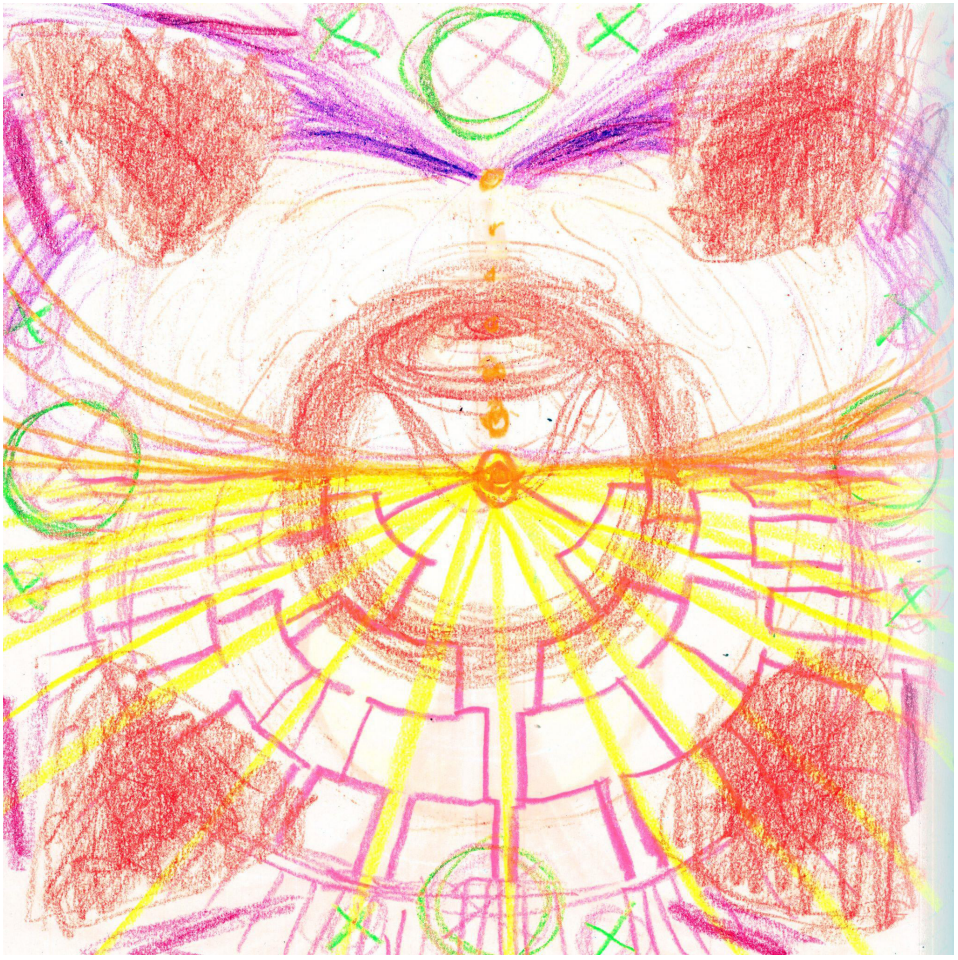


Figure A-1. Crayon drawing with two central eyes. An idea of a unified hierarchy extending to the horizon. An overlaid two-dimensional mandala in red and green.

Figure A-2. A cardioid shape as a symbol of the topological space of an insight. It feels round, but also turns in on itself in a way and comes to a *point*. A tunnel of 'truth', or connectedness to the "outside" world.

Figure A-3. A flower mandala symbolising the insight. The lotus-like flower symbolises an unfolding in time and growth as a consequence. First occurrence of the idea of the water droplet symbolising eternity. An eternal growth.

Figure A-4. Simplification of the previous image. More centrality to the water droplets of eternity. The flower is abstracted into two sets of four petals. A sun symbol at the centre.

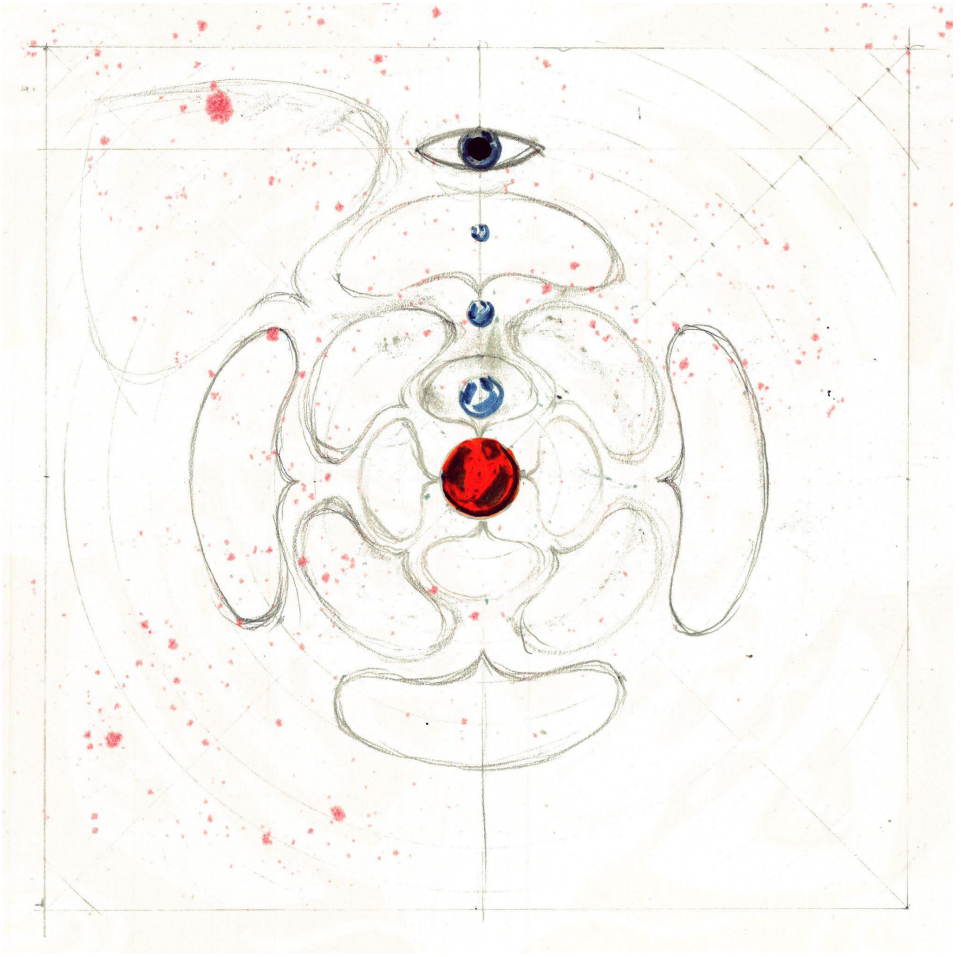


Figure A-5. Trying to integrate the water droplet as central with an eye and the lotus flower in a two-dimensional mandala.

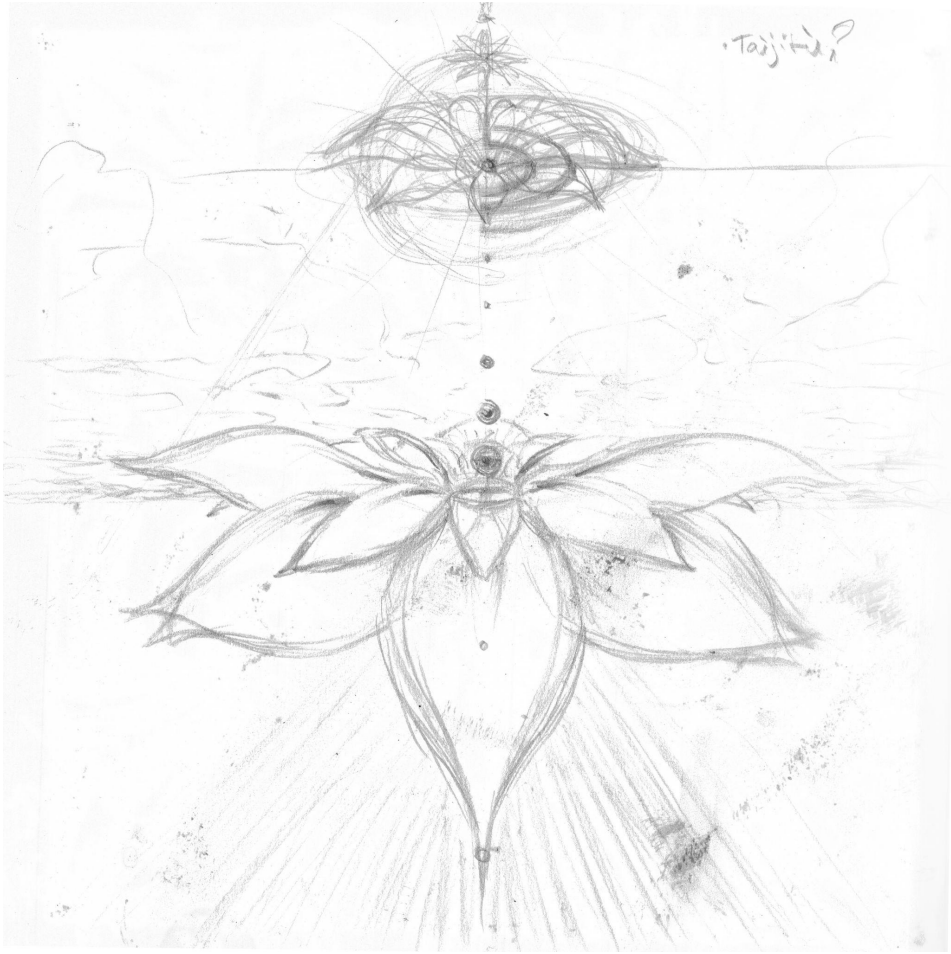


Figure A-6. Pencil drawing as a preparation for the final painting. Use of perspective allowed more feeling of spaciousness. A third dimension makes it possible to move away from the central flower. The name for the yin and yang symbol is taijitu, which I was considering incorporating, but I wanted to move away from possible misapprehensions of this symbol. Little changed structurally in the final painting.

E. Eye symbolism

The centrality of the eye in the painting, for me, relates to traditional use of eye symbolism, which is widespread throughout cultures and their histories. Examples are the eye of Horus (fig. A-7), the third eye (fig. A-8), the eye of providence, the evil eye and many more. McGilchrist (2009) in his seminal work argues that the right hemisphere of the brain should be 'in charge' of the left, as perception is more important than 'blind' action since it is the only mechanism that can update action patterns. I see this strongly in the mythos of Horus and Osiris, and eye symbolism in general seems to convey this importance. It seems to relate tightly to the experience of the insight, in that framing is 'embodied' perception: when you're framing a situation in an unhelpful way, you literally see it like that, as though you're projecting that framing onto your retina.

Figure A-7. Eye of Horus (Dahl, 2007, via https://commons.wikimedia.org/wiki/File:Eye_of_Horus_bw.svg)

Figure A-8. Shiva and his third eye (Vassil, 2007, via https://commons.wikimedia.org/wiki/File:Shiva_Mus%C3%A9e_Guimet_22971.jpg)

F. Initial instruction manual for observation-contemplation

Observation-contemplation: an exercise to enhance your insight

Introduction

This document describes an experimental mindfulness exercise that I've put together for my graduation project. The goal is to enhance designers' capacity for insight with mindfulness exercises that are tailored to design practices. Please try it out. I would encourage you to use it multiple times to become familiar with it. My expectation is that it will be of more help to you than hindrance, even though it's still a prototype. I encourage you to save this document for future reference, as the first few times it may be difficult to perform the exercise correctly from memory.

What it is

The exercise is made up of two key components: an observation part and a contemplation part. Observation is supposed to be about being here and now, and the concrete, sensory direction of attention, like in meditation. Contemplation is about thinking and the abstract direction of attention, as when reflecting on the meaning of an artwork. I will explain more on how to do both of these below. In the exercise, you'll be alternating between these states of mind. It will be the switching itself that helps you get new insights, so please note that it's not about the level of your 'performance' in either state, although that will get better with practice.

When and where to do it

This is actually the main thing I want to find out: in what type of situations you see benefit in using this practice. I do have some recommendations. I think the best time to do it would be either one of two situations: when you are stuck with a specific problem, i.e., when all the solutions you come up with only generate more problems, or when you feel that your intuition is falling short at a critical point in your project, and deliberate 'thought' or inspiration is needed.

As for the environment of practice: context is key. It should be carried out in an environment that is relevant to your problem. That could be in a specific building related to the problem, with a product in front of you, or behind a computer screen. Essentially, being there physically, with the problem, allows you to (implicitly) try out new subject-object relationships and reorient yourself in respect to those changes. Your intent should be not to achieve a solution, but to understand the problem in a more useful way. This is what insight means. Solutions will become obvious as a consequence.

How to do it

The knot loop

A knotted loop of twine is a part of the exercise. Send me your address, and I will post one to you in a letter. Alternatively, you can make one yourself if you like, from the instructions below. The knot loop

functions much like the rosary, tasbeeh or Indian mala. Here, you'll use it to count your exhalations. The purpose is to achieve a constant interval for switching between observation and contemplation. You hold the twine in between your thumb and index finger on a knot, and move to the next knot after every exhalation. On reaching the larger, connecting knot, you switch states from observation to contemplation and vice versa.

Getting ready: posture and breathing

Start by having a pen and paper or a note taking app at hand. You don't want to spend your resources on remembering ideas and insights. In whatever situation you are in, whether sitting, standing or walking, compose your posture in a way that uses the minimum of muscular force to keep balanced. Do this by relaxing as many muscles as you can while maintaining your posture. Start breathing from your abdomen, instead of from your chest if you were. This will make you more relaxed throughout. It is important in the following exercises to breathe naturally and automatically. You're going to follow your breath, not actively control it in any way. Take a handful of breaths and just notice the sensations that arise from the breathing.

Observation

Think of observation as meditating, but just in whatever situation you find yourself. For twelve exhalations, focus your attention on your senses. Notice what is happening in your awareness right now. Try to accept how you are perceiving it. How does your body feel? Warm? Are there pressures? Tensions? What is your vision like? What is the ambient sound like? If you get distracted by a thought, just refocus your attention back to your breathing as soon as you realise you were distracted. This can be frustrating, but this just happens automatically. The more you practice, the less distracted you'll become. Follow a few breaths and continue. After reaching the connecting knot, move on to contemplation.

Contemplation

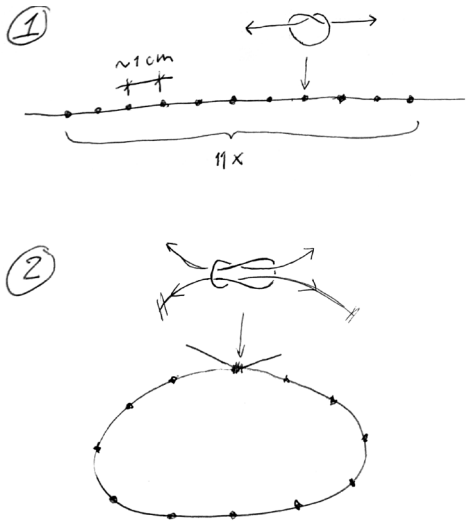
For twelve exhalations, contemplate, ponder, think deeply about the most abstract concepts you are currently aware of in your problem context. What are they exactly? What do they represent? Importantly,

what are the relationships between them? What type of construct are they: concepts, systems, values, morals, symbols? Is there a relevant level of abstraction above them? Or are you looking at the problem too abstractly? You don't even need to ask these questions exactly, as long as you're thinking at this level. It's more about exploration than finding an answer. After reaching the connecting knot, move back to observation. Continue the cycle as long as you see fit.

Feedback

There are a few things I would like to ask you in the future, after having tried this observation-contemplation several times. I would love to know in what types of situations, when and where you have performed it. And how many times did you repeat the contemplation-observation cycle? Please don't hesitate to contact me for troubleshooting or any other related questions. Thank you.

Aidan Wyber
+xx x xxxxxxx (also for Whatsapp)
xxxxxxxxxx@xxxxxxxxxxx



The knot loop instructions

G. Transcript for the audio prototype feedback discussion

This is a collection of transcripts of audio files that were sent over Whatsapp over the course of several days. The audio was originally in Dutch, the translation is by the author, aided by Google Translate for some heavy lifting. Gijs is a design practitioner and has had at least 1000 hours of experience meditating and the quality of his feedback demonstrates it.

G.1. Gijs, 23-06-2022

I just did the exercise. [… On] different subjects. [...] I thought it was really nice to meditate with that thing in my hands. Uh, I really liked being away from home meditating with that thing in my hands. Uh, it kind of feels like you normally meditate without a timer, not necessarily that you lose track of time or anything, but that you're just kind of, uh, in the middle of nowhere or something. I don't know, I can't explain it very well, but now you just have some "houvast".

[This word *houvast* in this context I think means something like grip, hold, or support, which is a metaphor and seems to relate to Merleau-Ponty's *optimal grip* relationship with the participatory reality that exists before conscious awareness, perhaps as in Heidegger's *Geworfenheit.*]

[...] I really feel that, because you have that focused meditation that you really get out of that train of thought and kind of reset again or something and then dive back into the vagueness again, […] it really triggers a different [mental] state.

[...] I'm going to do this more often, man and I think it can really help with […] projects, even if you're only doing one round. Because of that variation, that makes it very dynamic. And I think that's really nice. I never have that in meditation, at least in this way. So uh, nice job.

G.2. Aidan, 24-06-2022

[...] I can see that you clearly have a lot of experience with meditation, that you can describe it that way, because [other] people [I've talked to] can't describe it that way.

[...] What you said about that dynamic [aspect], that's really definitely a different kind of state than, well, a normal meditation, yeah. [...] And to meditate is to go within, to the centre of what consciousness means. A basality. And going into abstraction is kind of very much like going outwards and [...] increasing that and the identity. And that last exercise that I do, [...] that's that Prajna [non-dual, opponent processing] exercise. And in that you combine that out of that magnification of identity [in contemplation] with that whole shrinking [(dissolving)] of identity in meditation. So there you combine that in your breathing. And then you are switching from as small as possible to as large as possible all the time. So that's what I based my practice on. That is also up and down, but with more time in between and a more limited up and down. [...] And then you switch between them, and then you end up in that dimension so to speak, that dimension in that direction from up to down. You end up in that direction, the derivative so to speak. [You identify with the process itself. ...] So that will also be a different kind of state. And [...] I have the feeling with my method that you can also end up in a similar state. But more concretely. It's not quite that, but I feel like you can get into something else [than just awareness of the separate phases]. What you were talking about is a different kind of state than normal meditation.

[...] So far I have experienced that the people who are not experienced in meditation have much more trouble with this practice, that they get much less out of it and that they are much more sceptical about it working or not. Much more sceptical in my conversations with them, but also just less enthusiastic in general that it's just not really something cool to do. I think so many have trouble getting those different phases mixed up, if you know what I mean. I mean that those contemplation and observation phases are very intertwined, but that I can separate it better and so can you. [Note to self: this is to explain how the exercise can work better for experienced meditators in comparison to naive meditators.]. And the more you can separate that, the more you can [rest] in both those [phases], so to speak, without it getting mixed up and that things don't go the way you want. The less that happens, the more it might help you.

G.3. Gijs, 25-06-2022

[...] When I did that exercise the first time. Then I noticed that it already had some kind of good effect on me. In a way, so to speak. I found that with that focus [he means the observation phase here] you really bring the focus and you really pull yourself out of the subject. That might also be easier to explain to a coach because you take the focus away from[…] You look at it a bit from a distance. No, you just look objectively at your body and no longer subjectively at the problem. [...] But if you do the contemplation then you start thinking about the problem. But what I did notice […] that sometimes I also lost focus

and then you start thinking in a sort of abstract way about the problem or something, but also about other things. But it's very important that you just say to yourself, just try not to think too hard about the problem, because that's the idea. But that may also be a difficult one for many people who haven't meditated or have much experience with it is to just let go that you want to get something out of it. But that is also difficult or something. Because I noticed that it made me very calm because I really liked that shifting, because I feel it makes it easier to let go of the fixation on the thing you are trying to work on.

[...] Then I thought oh, I'm going to apply that to […] emotional issues[. ...] And then I did that yesterday and I noticed that I could look a bit more objectively, but also maybe come up with solutions that I normally would, where I would have to put more effort into coming up with those lines of thought. Suppose you just [...] have an emotional struggle or an insecurity that bothers you? Then you can always think about it at the moment. Then that often triggers a feeling that you don't like. And if you then uhm, so if you have that contemplation, then you focus on the problem, but you try to do it very abstractly. So it's not that close either. But if you then focus more on your breathing, you still take your focus away from the problem.

[...] Because you are working so dynamically now, it is also easier to lose that fixation or something. So I think that's very nice. And I feel like I just might want to make this part of my daily meditation ritual because it just… It feels very tangible and very accessible to me. But that's because I already know how to meditate, I think. So that's part of my reflection.

[...] I also like to help put things into words to try to tell [this] in human language, instead of it getting stuck on a meditation level and people thinking how the fuck am I going understand this? Why do you keep talking so abstractly about consciousness and uhm, that kind of shit. I also had a lot of trouble explaining that to my coaches. And eventually I kind of stopped trying to explain it. [...] I thought that was a bit of a shame: they really wanted to know what the effects were, and so on. And then it was like oh yes, but hey, will it help with stress? Or does it make you feel less tense or focus better in general? Then I thought yes, I am not at all concerned about the benefits of meditation. I started meditating to make my head think differently, to create a different consciousness. And then, "oh yes, but I'm conscious anyway, because I think?" Yes, no, that's not how it works. But that's a bit of a discussion or a conversation that I don't really feel you can always have or something.

So I would try [...] to explain it a lot more in childish language, that zooming in and out. That you create a kind of variable focus, so you might be able to look at your problem from multiple sides instead of saying

you first zoom in on your breathing and then you zoom out on everything and look very abstract to your problem. Yeah, that might be a bit too confusing for a lot of people.

G.4. Aidan 26-06-2022

[...] You further said [...] that by shifting between observation and contemplation, you can draw the focus from your project into observation. I hadn't really looked at it that way before, but I [recognise that and] actually really like that about it. […] I think you tend to identify with your project when you're thinking. Just like you normally identify with your thoughts. I also have that when someone asks me: "how are you doing with your graduation?" And then I say, "Yeah, so-so, because my project is going so-so." But then I always think at that moment "oh, but I'm not really my project. And actually I'm doing pretty well, but my project is just going so-so", you know. And I think this exercise helps a lot with that [(disidentification from project-related thinking)] because you're *coming out* of your project all the time [(during observation)]. Uhm, or yes, so during that thinking you are probably identifying with your project, all the time, and by getting into that focused awareness [(in observation)] you no longer identify with those with those thoughts. Then you're only 'the observer', so to speak.

H. List of insights and ideas from testing observation-contemplation

The following list is a compilation of extracted ideas and insights from my interviews with participants testing the second iteration of the practice. Suffixed is the number of participants that contributed to the idea. Numbers 1–10 were also presented in the main document.

1. Effective for producing insights or ideas IIIII
2. Helped "zooming out" on the project IIII
3. Participants expressed a desire to do it in the future IIII
4. Guiding audio may be desirable IIII
5. A dedicated space at work IIII
6. Desire to be alone IIII
7. Repetition causes increased ease of performance III
8. Positive reaction from all of the proficient meditators III
9. Experienced as "unnatural" by some non-meditators II
10. Difficulty transitioning attentional modes III
11. A calming effect that was desirable III
12. Performed in the evening III
13. Difficulty understanding the exercise (esp. contemplation) II
14. A trigger for starting II
15. Self-directed focusing effect II
16. Experienced inadequacy in achieving constant attentional scales by some non-meditators II
17. Use in group context may be desirable II
18. Embarrassment at work II
19. Physical tracking of breath was distracting I
20. Use as a tool for reflecting on the day after work I
21. Effective for prioritising and planning I
22. Doesn't help with well-defined (technical) problems I
23. Facilitating the different uses in different ways I
24. Misinterpretation of the instructions I
25. Contemplation as emotionally intense I
26. Observation as a relief after the burden of contemplation I
27. Internal distractions are more difficult to deal with than external ones I

I. The first audio prototype: transcript and feedback

I.1. Transcript

Organise your environment so that you can participate in the being of your project.
A baker is only a baker within a bakery.
Isn't a designer only a designer within the context of a problem?
Be in an environment that makes both your role and your project make sense.

[Chord denoting preparation for the exercise]
Whether sitting, standing or walking, adjust your posture to be as comfortable as possible.
Breathing from the abdomen, loosely, naturally, automatically, without intent.
Count three breaths, feeling how air feels inside the body.
One.
Two.
Three.

Beginning with observing
[Chime denoting the start of the exercise]
[1st observation chord]
Pay attention to your senses.
What are you seeing?

Hearing?

Touching?

Feeling these sensations while focusing on a detail of your project.

[Silence]

Transitioning into contemplating.
Letting go of your direct surroundings.

[1st contemplation chord]
Closing the eyes.
Remind yourself: what is the bigger picture of the project?
Try zooming out.
Solving problems is not important right now.
Be in the mode you're in when staring out of a window, loosely considering something without an explicit goal, allowing your mind to wander, to explore your associations.

[60s silence]

Transitioning back to observing, letting go of any thoughts you're having.
[2nd observation chord]
What do you see around you?
Let the name of objects around you say their name in your mind.
What about their shapes? Colours?

Let objects you can see, say their names in your mind.
And let their parts speak their names.

[60s silence]

Transitioning again, to contemplation.
[2nd contemplation chord]
What is your why?
Why did I start this project?
What is my personal purpose within the project?
What comes to mind?
It doesn't need to be the right answer.
Try zooming out.

[60s silence]

Nearing the end of contemplation.
Letting go of any thoughts.

[3rd observation chord]
You don't need to be a passive observer.
You're already moving your eyes.
Feel free to move your head.
Or even, to walk around.
Taking new points of view may help, both literally and figuratively.

[60s silence]

Nearing the end of observation, transitioning to contemplation.
[3rd contemplation chord]
Back to your why.
Don't worry if you're having trouble with this
It's all about the trying.

[60s silence]

Before returning to observing, pay attention to your breathing for a second.
And count to three again.
One.
Two.
Three.

[4th observation chord]

[60s silence]

Transitioning to contemplating.
[4th contemplation chord]
Explore your associations.
Explore your purposes, goals, motivations.

[30s silence]

Who are the stakeholders?

[30s silence]

Nearing the end of contemplation.
Letting go of any last thoughts on your problem, if you're having any thoughts at all.
Transitioning to observing.
[5th observation chord]
Coming back to the senses.

[30s silence]

Are there any emotions that arise?

[30s silence]

Transitioning to contemplating.
[5th contemplation chord]

[60s silence]

[Ending chime denoting the end of the exercise]
Remember, if you're having problems transitioning:
You are not your project.
Even though it may seem that the thoughts you have during contemplation are you, notice that they are just experiences in your mind, just like colours and shapes are experiences in your mind.

I.2. Feedback on the audio prototype

Co-researcher Grassflower's feedback, sent July 12th 2022:

"Organise your environment":

- Introduce your project a little bit first. Or have a separate explainer audio to understand the

concepts.

- Start with something simple, maybe the goal of that session, "take some time to relax in your current environment"
- Give some short bits of information after a while, not all the tips at the beginning of the contemplation or focus
- One sound at the beginning of focus is enough I think, because this shows a new cycle?

"A baker is only a baker in a bakery"

- A bit vague, maybe start with the designer view

"Feeling 3 breaths"

- Was too fast for me

At 2:30

- Long pause? Feels too long

4:50

- Do I have to open or close my eyes? Do I have a choice, or should I keep them open. You could say that at the beginning of the session

6:14, "What is your why?"

- This question was too vague for me, it took me out of my focus.

10:00, "What are values associated with your project?"

- Keep it simple!

13:10, "Explore your associations, purposes, goals, motivations"

- Why not focus on one of these elements at a time, this makes it easier to think about

17:20, "Just like how shapes and colours are experiences in your mind"

- I think you should keep it more basic, not too much abstract

J. Metadata, transcripts and audio information of all The mindful designer episodes

Searchable tags for all episodes:
co-identification, consciousness, contemplation, course, creativity, design, designer, creative practitioner, development, insight, meditation, methodology, mindful, mindfulness, project, relevance, stress, tool

J.0. Introduction

Title: 0. Introduction
Duration: 17:47
Permalink: https://www.spreaker.com/user/16624155/introduction
Description:
Introduction to The mindful designer podcast. Please start here. You can come back to this episode at any time to refresh your understanding of the course.

References mentioned:
Knoblich, G., Ohlsson, S., Haider, H., and Rhenius, D. (1999). Constraint relaxation and chunk decomposition in insight problem solving. Journal of Experimental Psychology: Learning, Memory, and Cognition, 25(6), 1534–1555. https://doi.org/10.1037/0278-7393.25.6.1534
Merleau-Ponty, M., and Landes, D. A. (2012). Phenomenology of perception. Routledge. (Original work published 1944)
Vervaeke, J., and Ferraro, L. (2016). Reformulating the mindfulness construct: The cognitive processes at work in mindfulness, hypnosis, and mystical states. In Hypnosis and meditation: Towards an integrative science of conscious planes (pp. 241–268). Oxford University Press.
Vervaeke, J. (2022). How a philosophy of meditation can explore the deep connections between mindfulness and contemplative wisdom. In Routledge Handbook on the Philosophy of Meditation. Routledge.

Transcript:

Intro

Welcome to The mindful designer. This podcast is a course that will teach you a mindfulness practice that has been adapted for creative professionals. I've named it closure practice. Its first goal is to help you with your creative work, as a tool to be employed while working on projects. The second is a long term goal, to provide a potential vehicle for the transformation of your character, a way to become more insightful and more creative, and maybe ultimately, a wiser person.

In this introductory episode, I'll first give an example of a design project in which an insight occurs, so that you may get an intuition for the type of insights, and the type of value you can get from this course.

I'll then cover some of the science behind mindfulness that you can use to make sense of the later exercises.

After this theoretical part, I'll talk about mindfulness in the context of creative work, why you may want it to become a part of your creative process and how I've aimed to adapt it to typical creative work.

Lastly, I'll gloss over the structure of the course and how it's embedded in the podcast.

Insight in an example project

So, first, to get a better sense of the value of this course and its mindfulness techniques, I'll lay out a concrete scenario with a creative project that might highlight the importance of bigger insights. This example is not a true story, but it is based on one of my own experiences with doing design projects at university.

Say you're an industrial designer, and you're in the first phase of a design project, when you're researching the context of the design brief and looking for a right way to frame the problem from your own perspective. You might find that the conflict that's causing the problem somehow doesn't make sense to you yet: you're using an unuseful framing of the problem. Say you're designing a product to activate and entertain elderly people with dementia, because they often become apathetic and passive, and that causes their dementia to progress even more quickly. So, you're researching what types of activities they typically like, when and where they need those to happen, do any caretakers need to be present to help, and so on…

One of the facts you may know about this problem context is that family members of most of these people only seldom visit them. Maybe this has a cultural cause, since productivity is a main value of capitalism. You may know this and understand it as a part of the problem: right, I need to focus on a device that can help these elderly people while alleviating the professional caregivers… Assuming that the familial relationships stay the same. But you can also change your representation of the problem: you can alter some connections to become more prominent, more important, and pay less attention to others. One of these changes might be much more relevant and that realisation is the insight. In the example, you might find that actually, you want the family members to become more involved in the care of the people with dementia, and to facilitate them to help more with the activities and entertainment. It might even make more sense, since they would often know the person with dementia very well. So, insights are like this, or at least, the ones I'm pointing at: insights are a change in how you represent facts about your problem context, which is the same as a change in problem framing, or seeing the problem in a different light. This type of insight is the type that this course can help you get with more ease.

The reason that mindfulness works for this is that it optimises the way your brain and nervous system is functioning towards a greater likelihood of obtaining insights.

The cognitive science of mindfulness

Intro

I now want to go into some of the cognitive science behind mindfulness. Please bear with me: a basic understanding of how mindfulness works for causing insight will orient you in the later exercises and will let you make more sense of what it is that you'll be doing.

Mindfulness definition

I'll define mindfulness here according to the work of (Vervaeke and Ferraro, 2016) and (Vervaeke, 2022) (see the episode description for references). Mindfulness is the set of practices that optimise cognition for insight. That means: mindfulness is an umbrella term for any type of activity or exercise that changes the functioning of the brain and nervous system in a way that makes having insights more likely. Remember

that the insight in the example was a 'better' change in what you saw as relevant in the context. These better changes become more likely. When I say mindfulness, I'm talking about types of practices that you can do that change your physical and mental state in a way that the occurrence of insights becomes more probable. In order to see how this can work, I first need to explain two aspects of how attention works. These aspects are scaling in attention and opponent processing in attention.

Scaling in attention

Imagine a pen. You can see it as a whole. But, you can see it as a bunch of parts that are assembled together into a pen. You can do this with one of the parts too: what does the nib consist of? What does the metal consist of, what are the elements in the alloy? Conversely, you can also see the pen as a part of a greater whole. What is the function of the pen? Its reason for existing? How does it help you in your daily life, what part does it take? And even further, what cultural or historical significance does the pen have? You can see a pen in all these different ways, and in many many more. This also goes for any other thing. Even abstract concepts have parts or aspects and usually belong to a bigger or more abstract whole. This is your ability to scale your attention.

You should know that this is a skill that everyone has and is *constantly* exercising. You're constantly trying to find the right level of analysis of any thing or situation that you encounter. This was called *optimal grip* by philosopher Merleau-Ponty (Merleau-Ponty and Landes, 1944/2012). At the moment, you're probably not paying much attention to the *individual phonemes in my voice*, but probably more to the words and sentences. You find the level of analysis that makes the most sense, the most relevant framing, it's kind of like a small insight.

While solving a design problem, you're also constantly doing this, but the insight takes a much longer time to come, because the problem is usually both complex and new. The way you approach the problem, its framing, how you literally *see* it, is determined by earlier experiences and those framings often prove inadequate for these new and complex situations.

In mindfulness, you're trying to speed up the processes that produce insights by practising these two directions of scaling separately.

In the Buddhist traditions for example, meditation is a strategy for practising scaling down. You're

breaking up your experience into individual sensations and sometimes even further into the field of empty awareness that lies below those.

In contemplative practices, like forms of loving-kindness contemplation, you're practising integrating your identity into greater wholes by cultivating various loving relationships with successively larger levels of being: first with others around you, then humanity, all sentient beings, and all beings, onwards and upwards into greater and greater wholes, which can end in a unity.

Do you see how meditation and contemplation are kind of like opposites in this regard?

Opponent processing in attention

Next to the scaling aspect, the other aspect of attention that's important in how mindfulness causes insight is opponent processing. The word 'opponent' suggests an adversarial relationship between scaling down and scaling up. They are opposites and have opposite goals. If you're only scaling down all the time, you become more in touch with the concreteness of reality, but you can get stuck in details. I'm sure that has happened to you before, this is called choking. But if you're only scaling up all the time, you can get in touch with the abstract patterns of reality, but you might get lost in abstraction or you might project the wrong framing too readily without checking it. Remember, you want to find the *optimal grip* on reality, the right level of analysis. This is why a constant motion between the two directions is important. You could think of it as a constant dialogue between an inner physicist and an inner philosopher, the physicist breaking up the world into new parts, the philosopher integrating the world into new wholes, trying to come to a conclusion about how to approach reality in the most relevant way.

Insight

This constant inner dialogue causes changes to happen in the representation of the problem you're attending to. The more often these changes happen, the more it helps build an understanding of what the problem is *not*. This process of dismissal of bad problem framings is like making a mound of sand: a formless heap grows and grows and organises itself into a cone. At a certain point, this cone can't support the new sand on top of it and a small avalanche occurs that widens the base of the cone. This avalanche is the insight. You build up knowledge of how the problem should not be framed, until a critical point

is reached, an insight occurs, and the information about the problem is reorganised into a more relevant pattern. The dynamical opponent processing, of the pushing and pulling, of scaling down and scaling up, underlies this process.

Moreover, the increase in relevance happens because the solution to the problem becomes instantly obvious with a good problem framing, as I earlier showed in the example situation with the elderly with dementia where you suddenly realise *how* to help them by changing what you found important. This is a theory of insight, called representational change, and is from seminal work by Knoblich and colleagues (Knoblich et al., 1999).

Summary

So to summarise: mindfulness was defined as the set of practices that optimise your cognition for insight. The two main aspects of mindfulness are: (1) scaling in attention: down and up, breaking up into parts and integrating into new wholes, and (2) an opponent processing between the two directions of scaling, the constant push and pull of up and down that keeps a dialogue of change going until a critical change is made that causes an insight and makes the solution obvious. *Ahaaa*. A lightbulb moment.

Mindfulness for the creative professions

With this background in some of the cognitive science on mindfulness, I've adapted traditional forms of meditation and contemplation with the goal of fitting them to everyday working situations of creative professionals, so that you may become more insightful.

The three main strategies I've used are (1) to constrain the limits of the scaling of your attention, to keep the focus of your attention relevant to your projects, (2) to implement a cycling of meditation and contemplation, and having a predefined time between them, to give an explicit structure to opponent processing, and (3) providing guided sessions in this podcast that help you get into the right relationship with this technique, which you can also come back to to practise.

Structure of the course

My aim for this project is to help normalise the adoption of regular mindfulness practices in the workplace for the creative professions. This course will teach you a technique I call closure practice.
The term closure was used by (Jagers op Akkerhuis, 2016), who has attempted to generalise Darwinian evolution to include matter. Here I'm using closure to try to suggest to you a feeling that I have had during insights: a closedness, or a circularity. A type of relationship that wasn't there before the insight.
Earlier I spoke of insight as a representational change. A metaphor I use to think about this is that you initially see the context of a problem as a line segment on paper. The line has a position and angle, but isn't able to capture much information about the white space of the paper. If you close the line segment into a circle, you have created a boundary, an inside and an outside, separating the white space of the paper into two parts. To me, this feels like what happens during an insight: you are able to suddenly see a clear boundary of the problem and that boundary simultaneously drastically limits the possibilities for solutions, so that a general direction of a solution becomes obvious. You have *closed* the design space and created a direction to a solution at the same time.

Closure practice is a repetition of two different exercises that repeat, which I call its *phases*. These are the observation phase and the contemplation phase.
Observation is for scaling down, breaking things up into parts, breaking up ways you're framing reality, zooming in. You can think of observation as a type of meditation, except more active and more involved with your project.
Contemplation is for scaling up, integrating things into wholes, projecting new frames onto reality. You can think of this as a type of loose thinking about your project in an integrative way, pondering the bigger picture, zooming out.

Doing these in sequence, observation, contemplation, observation, contemplation, etc., will be what activates and develops your ability for opponent processing. The combination of observation, contemplation and the opponent processing between them are the skills you need to activate and train for deeper insights.

In the first episode of this course, I'll talk you through an isolated observation exercise, and the second will be an isolated contemplation exercise. Episode 3 will also be a narrated exercise, but will combine the two techniques in a cycle. Episode 4 is the same exercise as in 3, but is not narrated. There will be only musical markers as guides. Lastly, in episode 5, I'll explain how to make a bracelet that you can use

together with your breathing so that you can eventually perform closure practice independently from this podcast.

Summary

To summarise
This podcast is a course aimed at teaching a mindfulness technique that is intended to help creative professionals become more insightful in their creative work.
I gave an example of the type of insights that will be caused through this practice with the project about connecting people with dementia with their family members.
Then I covered some of the cognitive science behind mindfulness and why it works: mindfulness is the set of practices that optimises cognition for insight, by developing your the capacity of your attention for scaling down and scaling up, the physicist and the philosopher, *and* developing opponent processing, the dialogue between them. These were necessary skills for obtaining insights.
From there, I adapted traditional mindfulness practices with the theory of mindfulness to design a new practice for creative professionals. The strategies I used were: constraining the context to a project, using the cyclical structure of scaling down and scaling up in a loop, and designing this course that also functions as a resource for practising with.
Lastly, I covered the structure of the course, and alluded to the form of practice that you may take away after completing the course.

My hope is that this course may enrich your experience of your profession and make you more effective because of it.

Good luck with the exercises if you choose to engage with the course, and thank you for your attention.

J.1. Observation

Title: 1. Observation
Duration: 11:20
Permalink: https://www.spreaker.com/user/16624155/observation
Description:
This exercise is about learning the observation phase of closure practice in isolation. In order to close a problem space, you need to break up your perception of objects and concepts into parts to find out what they really are. This is what you'll be practising.

Transcript:

[Start of episode chime]
This exercise is about learning the observation phase of closure practice in isolation. In order to close a problem space, you need to break up your perception of objects and concepts into parts to find out what they really are. This is what you'll be practising.

In the introduction episode, I explained how observation is supposed to capture the aspect of mindfulness that is the training of scaling down, your ability to break up objects and framings into their constituent parts. The observation phase is supposed to be similar to meditation: you're trying to focus your attention into your senses. What are you seeing? Hearing? Feeling? Smelling? Tasting? And how are you noticing these sensations? Are you moving your head to look around? Are you walking towards a source of sound? Are you sniffing to smell something better? Can you become aware of the processes that steer your attention? Or, approaching this question from another angle: can you become aware of the way you are interpreting your senses? Both formal meditation and the observation that I'm trying to describe for you are equally trying to make you aware of smaller, simpler, lower order processes in your attention. Are you hearing words right now? *Or are they phonemes*? Or is this just a continuous pressure wave with constantly varying frequencies and volumes? You can also become aware that the experience of silence [a few seconds of silence] is a necessity for the experience of sound to exist. This type of breaking up of the senses is what you can do during observation.

You can try to do this by cultivating a genuine interest in what it actually is that you are perceiving. Your concentration during observation should not feel enforced or task-like. You should assume that the object of your awareness is never really what you think it is. When sensing something, you could tell yourself

continually: "But what is it really?", in order to get closer and closer to your senses.

During this exercise, I'll explain how to do the observation phase of closure practice with
I want you to find a physical object that is somehow related to a project you're working on. If you don't have any specific ideas, or if the problem is still too ill-defined, I would suggest you use something you are sure of that you're going to use, like a pen or pencil, a sketchbook, notepad, or even your computer mouse. I recommend using the same item in the following episode on practising the contemplation phase. You can pause this audio now if you don't have it on hand yet.

[Starting chime]
To start the exercise, find a comfortable posture. You can do it while sitting, standing, walking, lying down, any way that you can relax into a posture that is easily maintainable with minimal strain. Throughout all of the exercises in this course, try to breathe from your stomach, instead of from your chest. This will relax you. Find a posture and settle into it.

Now, just become aware that you are breathing. Don't force it. Keep it automatic. Just let it happen naturally.
Count your breath every time you breathe out. Count to three. Enjoy.

Let your eyes fall gently on the object.
What can you notice about it?
And how are you seeing it?

Now feel the object.
What can you notice about your sense of touch?

Are you using your hands? Fingers? Nails? Feet? Can you use a different body part to touch the object?

You should be trying to let any thoughts go when they arise, just focusing on your sensations and *how you are experiencing them*. This sounds like it should be very easy, but it often seems almost impossible to maintain, even for experienced meditators. Don't worry if you're thinking. It's only natural to think, it happens automatically. Every time you notice that you're thinking, just let go of the thought and gently redirect your attention to your breathing, like closing a tab in your browser.
After following a few breaths, you can focus your attention on the object again. You should do all of this

as though you were teaching a dog how to sit. You can be a friend to yourself by accepting your current incompetency and focusing on your ability to learn. This type of distraction will become less frequent with practice.
Continue touching after enjoying the count of three breaths.

What is it really?
But what is it really?

Can you use your hearing to know the object?
Can you make it produce sound?
What are you hearing?

Apart from what you think it is,
What are you really hearing?

What else are you hearing around you?
Are there distinct sounds that are similar to those of the object?

What are they really?

Again, as soon as you realise that you are distracted by thought, a daydream or emotion, just gently help yourself refocus your attention back to your breathing. Label the type of distraction, just say it in your head, for example: 'thinking'. Follow a few breaths and continue. Like training a dog in a friendly way.

Smelling. Does the object have a smell to it?
What does the smelling do to you? How are you interpreting it?
You could also try tasting the object if you like.

How are you experiencing this?
Don't answer that question in words. Just pay attention to your unique experience, right now.

[End chime]

In later exercises, you don't have to focus on one object in particular. You can let your attention wander

and pick out something that stands out to you and go investigate it. With repeated practice, you'll notice how much influence your environment has on your attention during closure practice. You can really help yourself by choosing to do the exercise in an environment that is relevant to your project.

J.2. Contemplation

Title: 2. Contemplation
Duration: 13:58
Permalink: https://www.spreaker.com/user/16624155/contemplation
Description:
This exercise is about learning the contemplation phase of closure practice in isolation. In order to close the design space, to constrain the infinite possibilities for action, you need to do be to integrate parts of the context into new wholes, you need to be able to project those new wholes as potential framings onto your context, fabricate new lenses, obtain new ways of seeing the context. A part of this process is unconscious and you don't need to have this as an explicit goal. But this is what you'll be practising.

Transcript:

[Start of episode chime]
This exercise is about learning the contemplation phase of closure practice in isolation. In order to close the design space, to constrain the infinite possibilities for action, you need to do be to integrate parts of the context into new wholes, you need to be able to project those new wholes as potential framings onto your context, fabricate new lenses, obtain new ways of seeing the context. A part of this process is unconscious and you don't need to have this as an explicit goal. But this is what you'll be practising.

In the introduction episode, I explained how contemplation is the aspect of mindfulness that is about the training of scaling up your attention, this ability to integrate parts into bigger wholes, into more encompassing framings. In this exercise, I'll cover several closely related techniques that can amplify this ability of scaling up. You can do any of these in all of the later exercises.

In contrast to observation, where you're trying to stay away from thinking and focusing on the senses, in contemplation, you want to do the opposite: you want to be thinking, intentionally, loosely about your object and project. You want to steer your focus away from the sensory details, towards more abstract

patterns of thoughts and emotions. This could be as concrete as the object seen as a whole, thinking its name, for example, and could be as abstract as zooming right out, as much as you can, looking at the project as a whole, considering its relevance for you, your company, society, the future of society, and so on. The sky's the limit for abstraction, but keep it related to your context.

Find an object that relates to a project you're working on. The same one that you used in the observation exercise would be best. This will reveal more clearly the range of the abilities of your attention.

The words I speak throughout this exercise are here only to suggest certain ways of thinking to you, to make certain patterns of thought conscious to you. You can consider them only as an initial suggestion. Feel free to ignore the exact instructions, but it might help you to surrender to them.

[Starting chime]
To start the exercise, find a comfortable posture. You can do it while sitting, standing, walking, lying down, any way that you can relax into a posture that is easily maintainable with minimal strain. Throughout all of the exercises in this course, try to breathe from your stomach, instead of from your chest. This will relax you. Find a posture and settle into it.

Now, just become aware that you are breathing. Don't force it. Keep it automatic. Just let it happen naturally.
Count your breath every time you breathe out. Count to three.

Recite the name of the object in your mind. Let the object speak its name to you.

This was the highest level of resolution you want to see the project in. Scaling up from here.
One way to consider your object in a contemplative manner, is to see it as a symbol. Any object can become a kind of gateway into its encompassing frames, the greater wholes that it is a part of. You could say that the object can become 'cognitively transparent', so that you can look through it, into its deeper meanings. Please try this out. What could the object be an instance of? What could the object symbolise for you?

How does this object relate to your project? How far can you zoom out?

The questions I'll pose now are starting points. You don't need to answer them. Feel free to continue a

train of thought and ignore my voice. But maybe a certain word or phrase will illuminate an association that you can use. When doing this type of contemplation without a narrated recording, you could ask yourself these types of questions. I'll be speaking about the object.

What is its history?

What have you *experienced* with it before?

Why is it here now?

If you become distracted by sensations in your environment, don't worry about it, it happens automatically. If this happens often, it may help to close your eyes, or to wear ear plugs. Every time you become aware that you're distracted, just gently refocus your attention on your breathing, relax your body, count to three and continue the exercise.

What could I use it for in my project?

What other things relate to it?
For a while, just let your attention wander freely…

How do all these things relate to my goals for the project?

We can let go of the object now. Remember, it is just a starting point.
What are any of my personal values that could be relevant to this project?

Let's take a break and breathe for a moment. Nothing else to do right now. Count three breaths.

Notice that any thoughts you're having are experiences in awareness, in the same way that the sound of this recording is an experience in awareness. If you don't identify with the sound, you don't need to identify with your thoughts. If you get frustrated during this exercise because you're not coming up with good thoughts, remember that you are the experiencer of your thoughts. If you're not in control, why get frustrated? Thoughts are like clouds passing, you are not passing, you always remain.

Relax into your posture. Return your focus to your breathing. Count three breaths.

Anytime you take a wrong turn, you may lose your way, but you may also find a new interesting place. You can also allow your attention to branch off onto unpaved roads…

Are there any ethical or moral beliefs that you hold that relate to your project? How should you act in the best way when it comes to the project, according to your own beliefs?
The following exercise is a bit different, but might give you a taste of what the upper plateau of your ability for scaling up is like. I'll recite a list of virtues that might spark thoughts in you. Pay more attention to the words that stand out the most to you. Let the other ones go. It won't be easy. Notice what it is like for your attention to be at this level.

Fairness, Modesty, Flexibility

Justice, Patience, Loyalty

Peace, Imaginativeness, Perseverance

Cooperation, Compassion, Purposefulness

Trust, Respect, Excellence

Beauty, Gratitude, Wisdom

[Ending chime]

This is the end of the exercise. It was probably difficult for you. The contemplation phase will always be difficult, this is normal. Maybe nothing came to mind at all. Keeping your attention in this state requires a lot of effort. With practice, over time, it will become easier and more automatic to maintain focus. You will eventually settle into the ways that work best for you to scale up.

To end, let's breathe another moment, while letting go of any thoughts.
Nothing else to do right now. Count to three.

J.3. Closure practice

Title: 3. Closure practice
Duration: 18:18
Permalink: https://www.spreaker.com/user/16624155/closure-practice
Description:
This is about learning to perform closure practice as a combination of the observation and contemplation phases. In the introduction, I explained the importance of opponent processing, the dialogue between scaling down and scaling up, between the inner physicist and the inner philosopher. Opponent processing helps you reject unhelpful framings and build up to a critical point where your representation of the context you're working on can change which makes an insight occur.

Transcript (version 4):

[Start of episode chime]

This is about learning to perform closure practice as a combination of the observation and contemplation phases. In the introduction, I explained the importance of opponent processing, the dialogue between scaling down and scaling up, between the inner physicist and the inner philosopher. Opponent processing helps you reject unhelpful framings and build up to a critical point where your representation of the context you're working on can change which makes an insight occur.

Start by having a pen and paper or a note taking app at hand. You don't want to spend energy unnecessarily on remembering ideas and insights. Taking notes is probably more important than following the exercise, don't worry about not following the audio during that time. Afterwards you could rewind or just continue.

Have at least one object around you that somehow relates to your project. If you can't, you can also try seeing your environment through the lens of your project, but I strongly recommend matching your intentions to your environment and your environment to your intentions.

To start the exercise, find a comfortable posture. You can do it while sitting, standing, walking, lying down, any way that you can relax into a posture that is easily maintainable with minimal strain. Throughout all of the exercises in this course, try to breathe from your stomach, instead of from your chest. This will relax

you. Find a posture and settle into it.

Now, just become aware that you are breathing. Don't force it. Keep it automatic. Just let it happen naturally.
Count your breath every time you breathe out. Count to three.

[Starting chime]
Beginning with observing
[1st observation chord]
Pay attention to your senses.
What are you seeing?

Hearing?

Touching?

Feeling these sensations while focusing on a detail of your project.

[Silence]

Transitioning into contemplating.
Letting go of your direct surroundings.

[1st contemplation chord]
Focus your attention on something around you that reminds you of your project.
Can you see it as a symbol for your project?
What does it symbolise?
Try to zoom out.

[60s silence]

Transitioning back to observing, letting go of any thoughts you're having.

[2nd observation chord]

Which perspectives are implicit to your attention right now?
How are you framing what you perceive?
Metaphorically, you're always wearing glasses.
What colour are the lenses?
Looking at the way you are perceiving your environment.
What identity are you assuming and what identity are you assigning to your environment right now?

Can you perceive reality as it is, below this construction?

[60s silence]

Ending observation.
Transitioning to contemplation.

[2nd contemplation chord]
Why did you start this project?
What is your personal purpose within the project?
It doesn't need to be the right answer.
What comes to mind when you consider your purpose in your project?

[60s silence]

Ending contemplation.
Letting go of any thoughts.

[3rd observation chord]
You don't need to be a passive observer.
You were never one to begin with.
You're already moving your eyes.
Feel free to move your head.
Or even, to walk around.
Taking new points of view may help, both literally and figuratively.
How are you framing what you're sensing?

[60s silence]

Ending observation.
Transitioning to contemplation.

[3rd contemplation chord]
Don't worry if you're having trouble with this exercise, remember that it's all about the trying.

I'll recite a list of virtues, like in the contemplation exercise. They are meant to provide starting points for thoughts to bubble up. Feel free to ignore these words if you want.

Cleanliness, Passion, Creativity

Authenticity, Preparedness, Idealism

Humility, Understanding, Honour

Courage, Wonder, Integrity

[60s silence]

Before returning to observing, pay attention to your breathing for a second.
And count to three again. Just being.

[4th observation chord]
How are you seeing your project?

[60s silence]

Transitioning to contemplating.
[4th contemplation chord]
Try to just loosely consider your project now.
What thoughts come to mind when thinking about what you already know about the project?

Ending contemplation.
Letting go of any last thoughts on your problem, if you're having any thoughts at all.

Before returning to observing from the last time, just realise that you are breathing.
Count to three again. Just being here, now, nothing else.

Transitioning to observing.
[5th observation chord]
After having done a few cycles, it's okay to allow the two phases to cross over into each other. After all, scaling up and down are not separate, but part of the same opponent process that is always making sense of the world.
One way that our perceptions are framed is through emotions.
Objects can have emotional associations.
Are there any emotions that arise from what you perceive around you?
Does anything in your environment cause you to feel anger, fear, sadness, surprise, disgust, joy, or something else?
What about a combination?
And what does that mean for your relationship with the object?

[60s silence]

Transitioning to contemplating.
[5th contemplation chord]
In this last contemplation phase, I'll repeat some virtues from the contemplation exercise here. Don't worry if you don't get any thoughts at all. Just let it happen naturally, but try to recover that desire to think. Just notice any associations that arise and go from there.

Peace, Imaginativeness, Perseverance

Cooperation, Compassion, Purposefulness

Trust, Respect, Excellence

Beauty, Gratitude, Wisdom

[60s silence]

[Ending chime denoting the end of the exercise]
If you're disappointed in your performance of this exercise, remember that this exercise is based on a skill, a skill that you may have not developed much yet. If you repeat this exercise, you'll become better at closure practice, and eventually it will come increasingly naturally to you, even in times that you're not intending to do it.
Another important point is that your project *is not you*. Especially during contemplation, it can feel like you're identified with thoughts about your project, you feel like you're inside those thoughts. Realise that thoughts are just experiences, just like . A part of the project is happening through your awareness, but that means it is not equal to your awareness. You are the experiencer of sensations, emotions, feelings and thoughts. The project is always *in* awareness.

J.4A. Closure practice on your own (3 cycles)

Title: 4A. Closure practice on your own (3 cycles)
Duration: 8:02
Permalink: https://www.spreaker.com/user/16624155/closure-practice-on-your-own-3
Description:
This exercise is the same exercise as the one in episode 3, but is not narrated. Instead, musical markers denote the points of transition. Major for observation, minor for contemplation. This track has 3 cycles of observation and contemplation. You may choose episode 4B for a longer practice.

Transcript: none

J.4B. Closure practice on your own (6 cycles)

Title: 4B. Closure practice on your own (6 cycles)
Duration: 15:32
Permalink: https://www.spreaker.com/user/16624155/closure-practice-on-your-own-6

Description:
This exercise is the same exercise as the one in episode 3, but is not narrated. Instead, musical markers denote the points of transition. Major for observation, minor for contemplation. This track has 6 cycles of observation and contemplation. You may choose episode 4A for a shorter practice.

Transcript: none

J.5. Closure practice with a bracelet

Title: 5. Closure practice with a bracelet
Duration: 6:09
Permalink: https://www.spreaker.com/user/16624155/closure-practice-with-a-bracelet
Description:
In this last episode of the course, I'll explain how to do closure practice without the guided audio tracks that you have practised with up to this point.

Transcript:

In this last episode of the course, I'll explain how to do closure practice without the guided audio tracks that you have practised with up to this point.

Instead of relying on the timed intervals in the audio track, you can use a type of bracelet to help you keep time. The bracelet is supposed to replace the 1 minute intervals between the phases in the guided audio exercises. The bracelet is not really meant to be worn, but rather functions much like prayer beads, like those found in many religious traditions: the rosary in Christianity, the tasbih in Islam, the japamala or mala in Indian religions such as Hinduism, Jainism, Sikhism and Buddhism. In all of these traditions, prayer beads are used to keep track of the number of prayers, mantras or breaths that have been completed during a ritual. For closure practice, I intend to use beads in the form of a bracelet to count exhalations, out breaths. You start by holding the bracelet in your dominant hand, holding it between your thumb and another finger, at the joining point or joining knot. You then start the observation phase. Every time you exhale, breathe out, you move the bracelet down, to get the next bead between your fingers. You continue doing this for all of the beads and once you feel with your fingers that you have reached the joining point or joining knot again, you end the observation phase and transition to the contemplation phase. You then

go on with the contemplation phase while doing the same thing and then transition back to observation, and so on. How long should you do this? You could determine how many rounds you want to do before you start, or you could just see what happens and stop whenever you like.

I recommend you construct your own bracelet. This will give an added value to the object and help you connect to closure practice in your own way. I would advise you to keep one around your usual working space. I like to have one on my desk when I'm working. You could even make several to have them available in different locations. Suggest the poss

Feel free to come up with your own design, but I'll tell you the two ways I've made them.
The first way is to get some string, maybe around a mm thick, between 1/32 and 1/64". Cut a length of about 30 centimetres or maybe, that's 12 inches, and tie simple overhand knots in it with an equal spacing of around 1 to 2 cm, a half to 1 inch. Then you tie the ends together with a reef knot—that's R-E-E-F.
The second way is to buy or even make some beads and string them onto a piece of string with the right diameter and then close the band, again, with a reef knot.

The number of beads or knots on your bracelet isn't critical, as your breathing will vary per session anyway. You can measure how many times you breathe naturally in 1 minute and use that number. You could also vary with that time span. Shorter phases will increase the frequency of the transitioning periods, which relates to increased opponent processing. Longer periods will decrease that frequency, but elongate the phases so that you may have more time to get into each phase more deeply. Personally, I like to use bracelets with between 12 and 15 beads, which correspond to around 1 minute for me.

Here are some tips for your practice.
Firstly, you may stop moving your bracelet when you become too focused on the current phase. This could happen when you notice something new in our environment during observation, or when you get lost in thought during contemplation. Remember that when you notice that you've stopped moving the bracelet, just acknowledge that fact and refocus your attention gently towards your breathing for a moment. Then continue the exercise, just like in the previous exercises.
Secondly, remember to have a pen and paper or a note taking app at hand. You don't want to spend any attention on keeping your ideas in working memory if you don't have to.
Lastly, and this might be the best tip, you don't have to limit the use of this method to your work. You can apply this technique to any type of creative problem, be it cooking a new dish, doing an artistic project, deciding how to arrange your living space, or even making big life decisions.

I sincerely hope that closure practice can be of help for you in many ways.
Thank you for your attention.

The design instructions start at [*2:49*].

K. Forms and questionnaires

K.1. Consent form and preliminary questionnaire

Form URL: https://tinyurl.com/yc8j65j3, or https://docs.google.com/forms/d/e/1FAIpQLSf_MR3no2q9PyqBXbeMiYw1s-4_CINlXssSIg4GEI_DXcfadA/viewform
Response spreadsheet: https://tinyurl.com/2ddh35tr, or https://docs.google.com/spreadsheets/d/1YSo_BwQmQxEBPe2TQJstsAFmNktAmNij9yxX_FOz5LI/edit?usp=sharing

K.2. Daily questionnaire

Form URL: https://tinyurl.com/2p8d9kta, or https://docs.google.com/forms/d/e/1FAIpQLSfvA3u97B407ew3i3AilkYqcD4ySaBEMl9KIuDzC3vbMQOwNg/viewform
Response spreadsheet: https://tinyurl.com/39eafjsw, or https://docs.google.com/spreadsheets/d/1y_70MGkO9i4dGJMi7Eie1Ue5mhM2v1A5_JPXXXQ-6PY/edit?usp=sharing

K.3. Final questionnaire

Form URL: https://tinyurl.com/2jtwrk82, or https://docs.google.com/forms/d/e/1FAIpQLSf5aHWY7c_nU0AIGBVkGOiQ5Qg9p51O6qW382F170ikEMkd4Q/viewform
Response spreadsheet: https://tinyurl.com/yuv675cz, or https://docs.google.com/spreadsheets/d/1eA9PbGZRxlBohatFW1x6TyFISf2vUQehyozyTMFe46c/edit?usp=sharing

K.4. LIWC analysis data

Spreadsheet: https://tinyurl.com/au2wu4j3, or https://docs.google.com/spreadsheets/d/1gTwhsPN8rh1mgUdIbF9Ro1fb4KofIL2Xbt9_1bJfRRk/edit?usp=sharing

L. Feedback from participant D

Participant D refused to fill in any questionnaires and instead opted to provide feedback over email:

> [...]
> Let's see if I can remember all I wanted to say :-).
> First of all congratulations for your podcast and your project in general, I find it very interesting because as you well know I strongly believe in mindfulness and self awareness as I key tool for designers.
> In a way you put into words what I've been experimenting with my students and all participants of my workshops.
>
> While listening to the different episodes I could see my self doing some specific behaviours that you are describing while I'm creating something new, or working in the ideation phase of a new project.
>
> I think the strongest episodes are the first 2, those you call Observation and Contemplation.
> For the rest (a part from the introduction) I found them I bit redundant. I guess you did them for trying to say that everyone should have their own way and timing in the process but instead I believe separating one from the other (observation and contemplation) is already creating a sort or given rhythm. (I hope you can understand what I'm trying to say).
>
> Also, I think the use of the bracelet is a bit too much, again, it's about finding the rhythm in the bracelet instead of within who is doing the project.
>
> What I mean is that while I'm designing something I find my self switching from one (observation) to the other (contemplation) with no rules, I could it going in and out when I describe it to my students.
> I know at TU Delft they tend be "scientific" about methodologies and creativity but to me it's a little bit of a paradox.
>
> Another thing I noticed is that it would be very useful if you could give an example of a project designed using your method. So far, it's still quite difficult to link the process you are describing with the creation of a new object, especially because the observer is using an existing object, while, during the ideation process, the object does not exist yet (this is something I also struggle with when I need to explain my students why my observation exercises are related to design).
>
> I might be forgetting something but I guess these were the most important points I wanted to light up.
> [...]

M. Cognition and perception data

LIWC scores of "cognition" and "perception" of participant response data are plotted below. Note the increase in the difference between days 1 and 2, corresponding to the observation and contemplation exercises, respectively, as shown in table 5 (sect. 6.3). Note also the clear domination of cognition over perception on the last day (6), which was about reflecting on the podcast as a whole, showing at least some recognition of the validity of these metrics in the quality of the actual responses.

The "insight" score seems relevant to this project, but the number of words that corresponded to this dictionary was low, so I opted to use the broader cognition score, which has higher word counts, as a metric of contemplation instead.

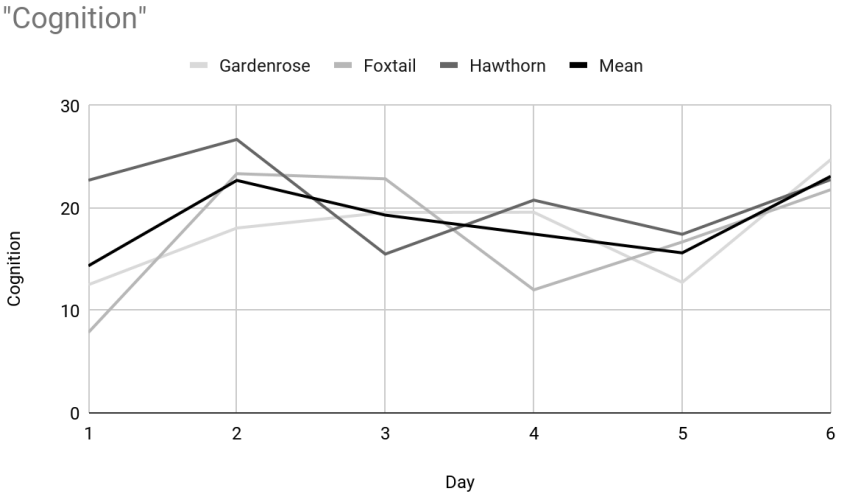


Figure A-9. LIWC cognition scores.

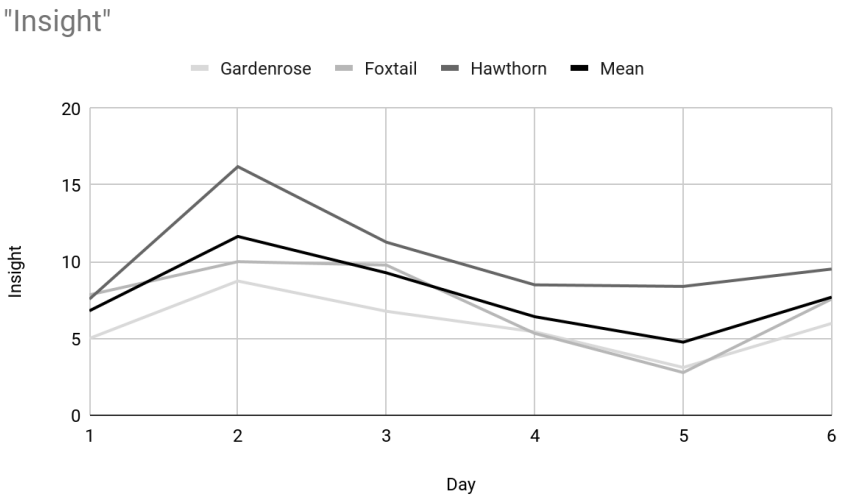


Figure A-10. LIWC insight scores, a feature of the larger cognition score. Note the peak on day 2 that is also present in the cognition score.

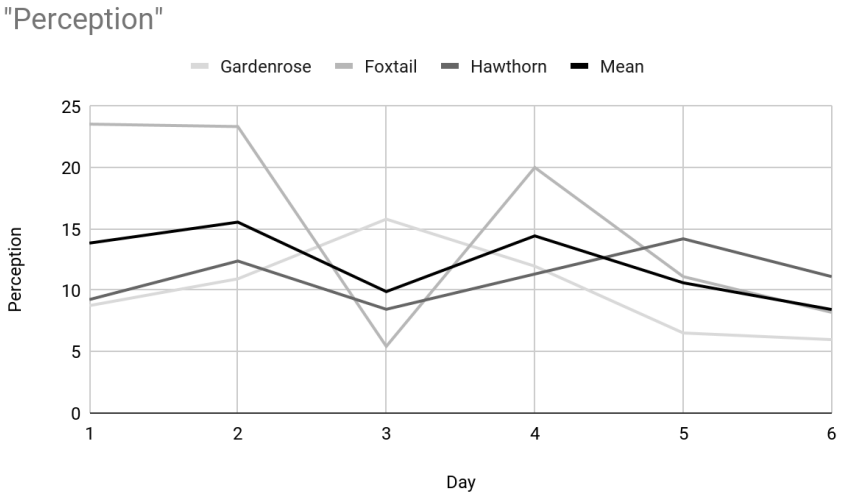


Figure A-11. LIWC perception scores.

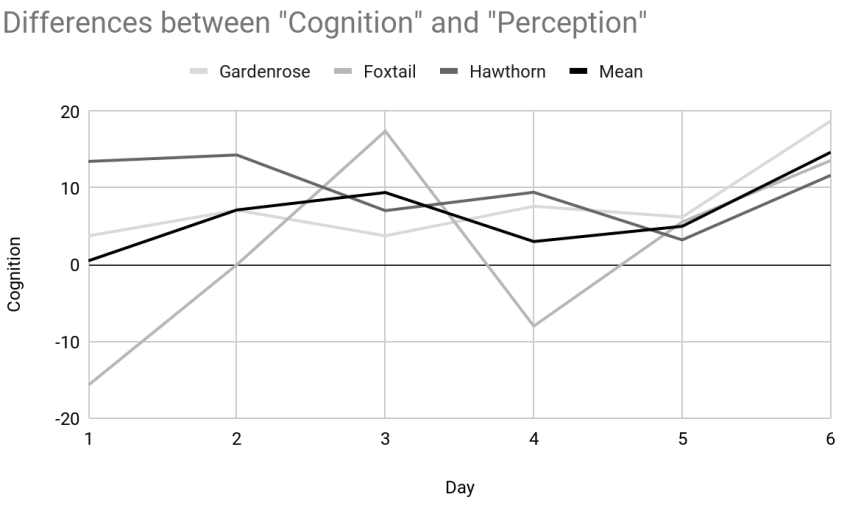


Figure A-12. Difference between LIWC cognition and perception scores.