A dialogue between

Body and Mind

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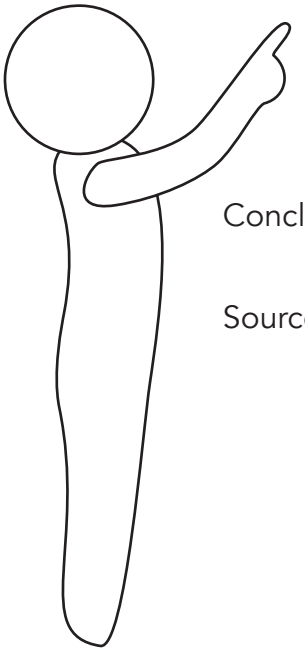
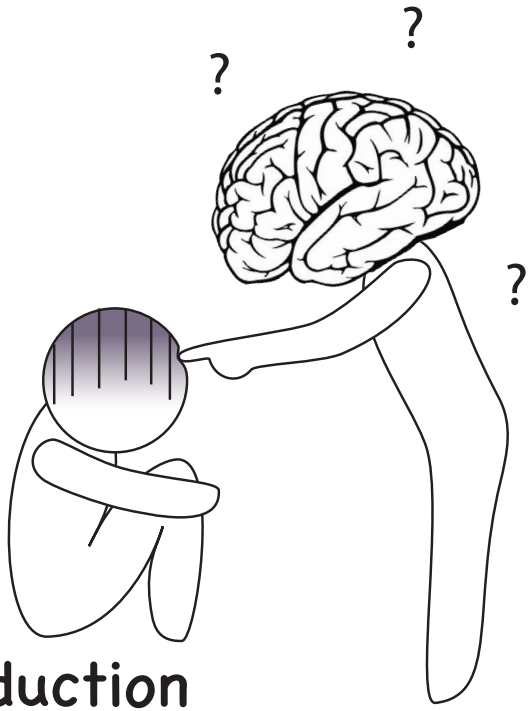




Introduction

Our body seems a mystery for the mind, can design bring them closer together?

We live in a society of internet; of sitting behind a desk staring at our laptops; of lounging on a couch scrolling through our phone. At the same time we live in a society of sports schools; of an increased interest in yoga; of mindfulness. Personally I experience a clash between my rationality, broadly supported by our society through education, internet and books, and my bodily sensations, greatly underexposed as they are highly personal and hard to explain in words.

Let me start with a short anecdote to illustrate my clash between mind and body. As a child I couldn't tell when I was hungry or when I was full. As a result I often forgot when to eat and ate fairly little. With time I learned that not eating led to reactions from my body such as nausea, dizziness, trembling and feeling light headed. Instead of a hunger feeling I associated these reactions to a lack of food with hunger. As I aged I slowly developed a more 'normal' feeling of hunger and found out what it meant to be full. Those two combined gave me a better feel on when to eat and how much. Years after, something strange occurred, the grumbling feeling I associated with hunger occurred separated from my eating rituals. For instance my stomach would start grumbling at nine in the morning, fade as I was eating, but

come back half an hour later, staying present for the rest of the day. I was so confused that I started to distrust my body. Instead I used an app to track the amount of calories I was supposed to eat in a day, structuring my eating ritual with rationality. The 'hunger' feeling kept occurring randomly and the distance between my body and mind kept growing bigger. I had forgotten that there were more signals that point to a lack of food intake, which I knew very well from when I was a child. Yet instead of wxploring alternative signals to make sense of my body, I turned to online data. It was only after I realised my mistake that I could start tackling the issue together with a doctor.

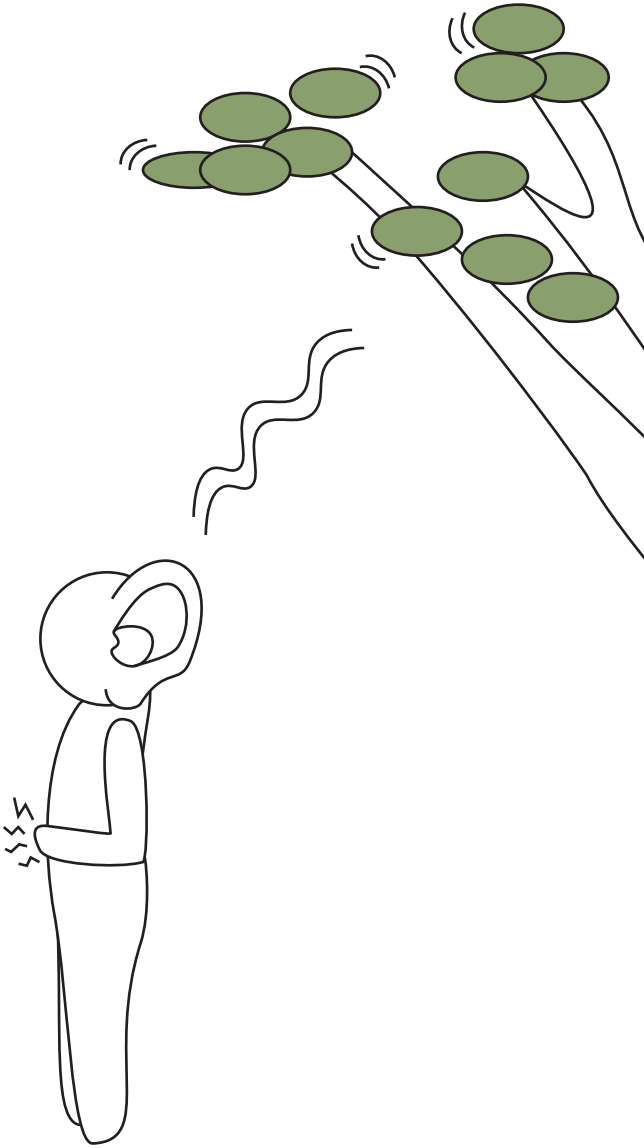
A big part of our society is based on language and rational thought. Our education system teaches us about it and our jobs implore us use it. Rational thought and language aren't bad, but they don't make much use of the body. As a result the body becomes like a luxury asset, something you use in your free time. Sitting behind a desk is countered with sport schools and the overactive mind with mindfulness. Although views are changing, with developments in both education and the workspace, our body-mind relationship is still underexposed in our daily lives.

Mindfulness, and similar practices like yoga, explore the connection between body and mind. In my opinion this is exactly what we are missing in our daily lives. My own struggle is a result of the underexposed body. I think learning about how our body and mind interconnect allows us to understand bodily sensations better. It allows us to tap into our biological warning system. It can help us deal with stress or recognise anxiety, it can signal something is wrong so we can explore and reach for help, even though signals are inconsistent. If we understand our body-mind relationship we can go beyond rationality and language to understand ourselves.

In this thesis I will explore how the body and mind interconnect and why it is underexposed in our current society. This research is in no way absolute, I search to create a better understanding of the subject, but this understanding is ultimately biased by my own views and preferences. To solve the problem I suggest design becomes a platform to discuss and explore our body-mind relationship. Allowing us to bring both body and mind into our daily lives.

In the first chapter I will establish what I refer to as ‘body’. I will explore how we gather information

with our senses and uncover how our body interconnects with our mind. The second chapter will establish what I refer to as 'mind' and will explore perception. It will grant us a better understanding of how senses, memory and perception are linked together. I will also explore the practice of improvisation and what this can teach us about perception. The third chapter will explore why the body-mind relationship is so hard to address. It will feature a venture into the origin of language and abstract thinking, exploring why language seems unable to catch bodily experiences. Finally I will explore how design relates to the issue. It will explore how design can become a platform to both discuss and explore the body-mind relationship. It will also react to the knowledge gained in the first three chapters, relating it to already existing designs and exploring various design approaches.



Body

The senses are our connection to our world as our body interacts with it.

The senses are our connection to the world and to our body. While our body interacts with our surroundings the senses relay information to our brain, this information we call sensations. Our brain can theorise all it wants, but ultimately it sits in a shell of bone, isolated within our skull. It needs the senses to gain insight in what happens around it: the temperature of the room you are in; the distance between your hand and the cup of tea you want to drink; and the slight grumbling of your stomach as it starts yearning for food.[1] [2]

When we speak of the senses, we usually count five: sight, hearing, smell, taste and touch. Although useful as a start, these five senses give our bodies less credit than is due. The senses go beyond these five and they gather a far more complete and complex picture of our surroundings. Temperature, for example, could be counted as a sixth. And, proprioception, that tells you where your arm is as you reach for your tea, could be a seventh. The hormones or chemicals making you feel hungry might be our eighth sense. At this point we haven't even talked about how you keep standing straight, how you feel pain when your tea is too hot to drink or how your heart starts racing when you kick the table and your cup slides dangerously

close to the edge.[2 3]

The amount of senses depends on how we group them. We could divide our taste up into five different senses: sweet, sour, bitter, salty, and umami. Similarly, we can divide vision into four: light, red, green, and blue. This way, we can easily surpass ten, and if we keep going, we could reach up to thirty-three. When we group the senses by the type of stimuli they gather, we could stop at three: taste, smell, and internal senses, like hunger, become chemical; hearing and touch become mechanical; and vision becomes light.[2 3]

We can simplify this even further by grouping senses informing us about our insides and our surroundings. After all, these differ in their objective. The 'outside' senses give us information on location, shape, color, texture, and size. The 'inside' senses don't. They tell us how our liver is doing, not where it is positioned and how it looks. Even though we count two groups in this system, it gives a more complete idea of the senses than the five we usually count. These five senses allow us to forget about the inner body and the placement of our body in space. They may be considered in the height of a doorknob or the temperature of a room, but tend to disappear into the unconscious.[1]

Perception is not just about our surroundings, it also deals with our position in space, and how we feel about that space. This means our 'inner' senses are just as important as our 'outer' ones, and they greatly affect our perception and decision making. Annet van Laar shows this well by illustrating how the body, mind and soul interact with each other. The soul is our essence, the origin of our personality. The mind encompasses our non-physical qualities, think of thoughts and emotions. The mind also shows most of our personality. The body is our physical self and houses our personality. So that means our soul influences our personality, which manifests itself in both our mind and our body.[24]

To gain a better understanding of how the body and mind link together Annet van Laar introduces zones in her book 'Van binnen weet je alles', each of which processes different information. The head is the center of thought and rational decisions. The stomach is the center of movements and direct physical reactions. Our heart is the center of emotion, but also of the senses and of perception. The heart is best informed about all the different parts of the body and combines them into a whole. It is aware of both mind and body. Important to note is that mind and body

are present in all of these zones. There are no real hard borders in Van Laar's approach, instead she works with relationships and contrasts.[4]

A disruption in the harmony between head, heart and stomach will cause our energy to drop. For example when you tell someone you will join them for dinner, not because you want to, but because you feel obliged to. In this case there is a clash inside of your body, it might not be directly noticeable, but your energy levels will drop. On the other hand, if you say yes because you want to, your head, heart and stomach are aligned and you will gain energy as a result.[4]

It is like the "outer" senses speak mostly to the rational mind, while the "inner" senses reflect on the body and its more intuitive knowledge. By becoming aware of how your breathing, heart rate, energy levels, gut or stomach feels you can draw conclusions about the situation you are in. Whether you are being truthful to yourself or suppressing something, but also whether others are being truthful or are having double intentions. It can also signal you made a wrong turn when you were going home, or warn you for an upcoming storm.[4]

The approach from Van Laar is poetic and leans to the spiritual, but there is scientific basis to what she says. Both our body and mind are present in our perception and they are more intertwined than we previously thought.[5]

The senses of a human being have a certain range, which is different from that of a dog or a bat. The absolute threshold defines the weakest sensation we can register. A sensation is what we call information gathered by the senses. Sensations that stay below the absolute threshold are called subliminal sensations. We receive them, but we are not consciously aware of them. This is what defines our biological limit, but even though sensations pass the threshold, only half of them are registered to short term memory and enter our conscious thought.[6 7]

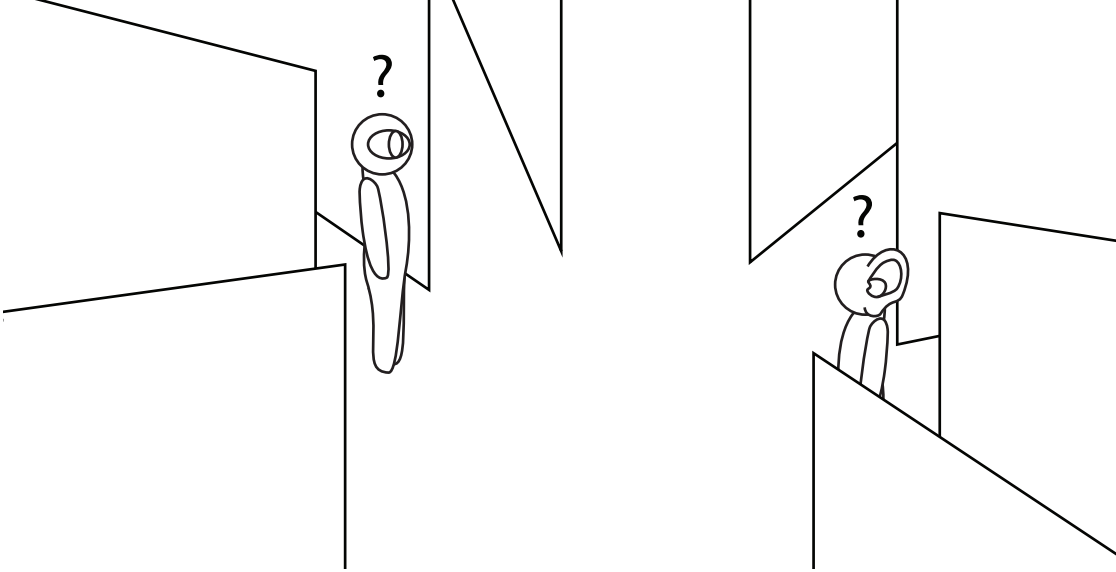
The mind can pull sensations to our consciousness or push them to our unconsciousness. Focus is one of the filters the mind can use. The internet is filled with videos of small experiments where you can experience the influence focus has on your perception. Most of them find their base in the experiment by Daniel Simons and Christopher Chabris performed in 1999 that researches selective attention. In this experiment participants

Top: Monkey business illusion, Daniel Simons Christopher Chabris[34]
Bottom: modern day reinterpretation[35]

were asked to look at two teams passing basketballs, one team dressed in white and the other one in black. They need to count how many times the white team passes the ball to each other. During the video a gorilla slowly walks through the players and stops in the middle. It looks straight into the camera before moving on. Even though it was in view for a few seconds, more than half of the participants missed it. The brain had filtered the gorilla out, because it was focussing on the white players and the ball.[6]

Expectation and motivation filter sensations as well. If you invited someone to your house, you might find yourself noticing every sound that resembles the doorbell. Your ears are straining themselves to not miss it ring and become oversensitive. The ability to pick out a single sound from distracting background noise is called signal detection theory. This might be why mothers wake from the softest cry of their babies, but not from other noises.[6 7]

We can also omit an impulse from registration because it is constant. Think about the ticking of a clock. When you enter a room you might hear it clearly, but as time passes this fades from your consciousness. Your brain gets used to it, and



stops registering it. A phenomena called sensory adaptation.[6 7]
The different senses in our body interact with each other and share information, both in real time and in memory. A warm flat cola doesn't taste the same as a cold fizzy one. The difference in experience is more than the added taste of carbonic acid. Similarly, the sensation of spiciness, which is registered by our sense of pain, not your taste buds, influences the taste of a dish. Sensations layer on top of each other creating a complex experience. In theory you can separate them, but in practise it is harder to tell them apart.[8]

Your senses don't just share sensations, they also share knowledge. You can see a surface as soft, because you link its texture to the tactile memory of touching a soft surface. In fact

things become fully three-dimensional after you experienced them with your body and your hands. Walking around something might give you some information, but when it comes to three dimensional understanding, your hands do a much better job. According to the 18th century Irish philosopher and clergyman Georgy Berkeley "visual apprehension of materiality, distance, and spatial depth wouldn't be possible at all without the cooperation of the haptic memory." As mentioned by Pallasmaa on page 42 of 'The eyes of the Skin'.[8 9]

So the mind interacts with the senses, and the senses interact with the mind, but the body movements play a vital role as well. The brain is full of noise, even when it has no sensory input there is a lot of activity. Previously there was no explanation for this noise. We thought the brain is just very noisy, after all why would there be brain activity in the visual processing area when it is pitch dark? [5]

This idea arose in part from studying anaesthetised animals. Although this brought us a lot of knowledge, it gave us a distorted view of perception. When anaesthetised the stimuli caused by the sensation of a ray of light

will travel through passive filters. This will result in a complex but purely visual interpretation. Studying awake animals showed that not only stress, emotions and motivation influence our perception, our movements do too. And most stunning, the difference in brain activity between a running mouse and a resting one, was bigger than between a sleeping and awake mouse.[5]

This caused our ideas about sensory processing to shift. The brain activity seen as noise, can now be traced back to small twitches and tics of the body. In fact every part of the brain knows exactly what the body is doing. That means the visual cortex processes more than visual information, it also processes movements of the body. This doesn't make the brain less efficient, it actually helps it understand sensory stimuli. Movement grants our brain a context to what our eyes sense. It allows us to know that we don't see twenty statues when circling around one, but that we see twenty different perspectives.[5]

Not just the body is present in the virtual cortex, other senses can be as well. The visual cortex can process auditory or tactile information for people that are blind or visually impaired. That means that we could see with our tongue if we were

conditioned to. A technology which is already in practice. It involves a small lollipop shaped device that translates shapes into vibrations, allowing you to see the outlines of objects and their location in space. It can be used to see at night, or to replace sight for the blind. Perhaps we should stop seeing the senses as separate and start seeing them as small parts of an interconnected whole.[5 8]

The philosopher Merleau-Ponty already argued that seeing is more than just registering visual information, after all an abstract painting can catch a scene perfectly, if not better, than a realistic one. He argues that sight is not merely a result of wanting to see. Sight is both inseparable from, and irreconcilable with, thinking. They are like two sides of a coin, different, but united.[10]

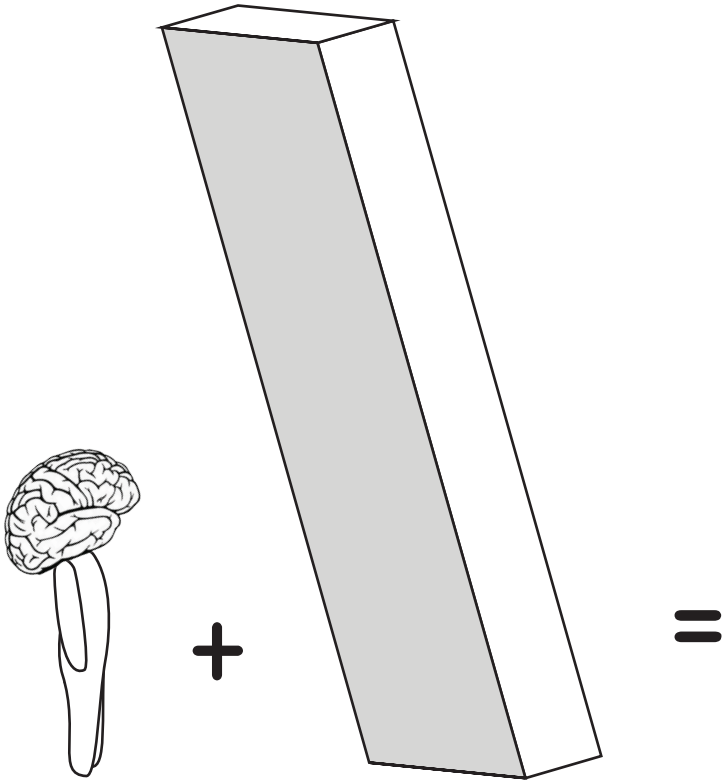
To define what seeing meant he researched painters, because he believed they held the key. The following quote from page 30 in his book 'Oog en Geest' describes how a painter researches seeing. "Het is de berg zelf die zich, van daar beneden, door de schilder laat aanschouwen, het is dezelfde berg die hij met zijn blik ondervraagt. Maar wat vraagt hij hem precies? Hij vraagt hem de middelen te ontsluieren, niet dan de zichtbare middelen, waardoor de berg

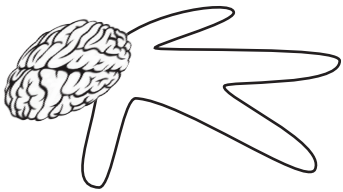
een berg word voor onze ogen."Which can be roughly translated to: It is the mountain itself that lets the painter, from way down, behold it, it is the same mountain the painter questions with his gaze. But what exactly does he ask him? He asks him to unveil the means to him, which are not the visual means, which make the mountain become a mountain before our eyes.' So the painter looks for the non visual means that make a mountain visible. This reflects Merleau-Ponty's belief there is more to vision than visual stimuli, something he is unable to catch in words, but that painters seem to explore in their paintings.[10]

Merleau-Ponty's struggle to define sight becomes more clear with the knowledge that vision is not just defined by visual stimuli. Perhaps painters can approach a more complete definition of sight because of their active conversation between the act of painting and the thought of it; between act and intention; between body and mind.[10]

So in short. The senses connect our mind to our surroundings and our body. While the five senses are still broadly referred to, we have way more senses, and the information gathered by them is much more complex and complete. As Merleau-Ponty pointed out, seeing is more than

just gathering visual stimuli. A statement that is now backed up with science: our visual cortex also processes bodily movement and can interchange functions and information with other senses.
We can conclude that our body and mind are interconnected and there is no linear road from input to perception. The approach from Van Laar proves interesting in this new context. She speaks of the body, mind and soul as a trinity. The body is indeed present in our mind as we process the senses and our mind is present in our bodies as we make decisions.





Mind

The mind connects memory, emotions and rationality. It fears, dreams and predicts. But above all, it makes sense of our surroundings.

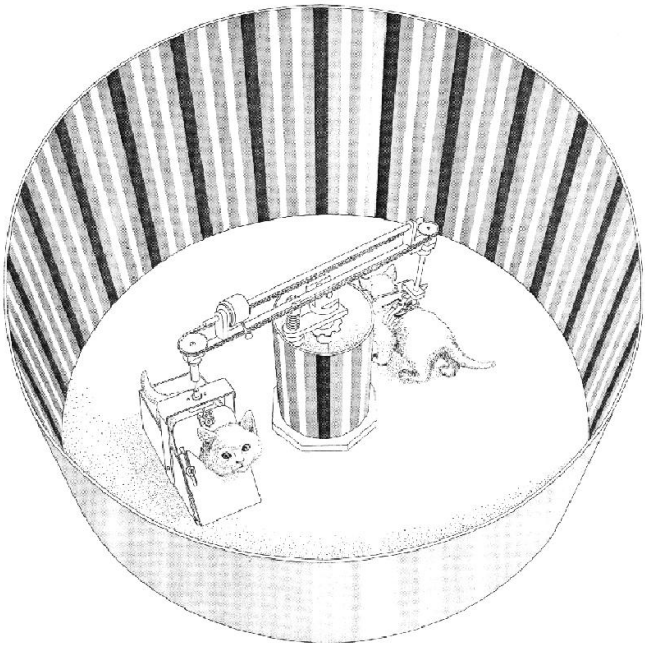
Your senses gather sensations and the mind selects, organises and interprets this information leading to perceptions. Sensations are the raw information your senses supply to the brain. These sensations are useless without the brain, like big data without its human interpreters. In the first chapter we already learned the body and the brain are connected. We also saw the influence of focus, motivation and expectation on perception. But these only apply filters to our perception, in order to interpret sensations with the brain we need something else, we need memory. [6 11]

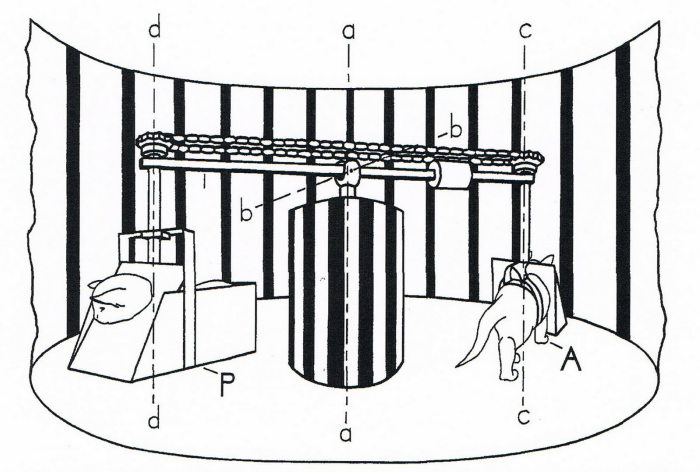
Previous experiences and knowledge stored in memory give us a context to place our sensations in, together with the bodily movements we addressed in the first chapter. That means perception is constantly evolving, becoming more refined throughout our lives. It also means that we perceive actively, using both body and mind. The kitten carousel experiment by Held and Hein, performed in 1963, shows that knowledge alone is not enough to see, we need to actively engage with the world. The experiment uses two newborn cats. One of them is placed in a basket and carried around while the other is walking on its own. The basket is connected to the free cat, so wherever it walks the one in the basket is carried.

In other words, both have seen the same things. When tested the cat in the basket is incapable of reacting to visual stimuli, it doesn't perceive sight. If you would throw a ball at it, it wouldn't move, even if it would threaten to hit his head. The other cat could see and perceive normally. The cat in the basket was deprived of active interaction with its surroundings and did not gain a context to interpret visual sensations with. When left out to play it quickly regained sight.[12] [13]

There is a clear line between sensations and perception, which means we can lose perception without losing our senses. On page 11 in 'The man who mistook his wife for a hat' Oliver Sacks describes a peculiar case of a man, referred to as Dr P., that indeed mistook his wife for a hat, but also his foot for his shoe.[14]

"Can I help?' I asked.
'Help what? Help whom?'
'Help you put on your shoe.'
'Ach,' he said, 'I had forgotten the shoe,' adding, sotto voce, 'The shoe? The shoe?' He seemed baffled.
'Your shoe,' I repeated. 'Perhaps you'd put it on.'
He continued to look downwards, though not at the shoe, with an intense but misplaced





Kitten carousel, Held and Hein[36 37]

concentration. Finally his gaze settled on his foot: 'That is my shoe, yes?' Did I mis-hear? Did he mis-see? 'My eyes,' he explained, and put a hand to his foot. 'This is my shoe, no?'
'No, it is not. That is your foot. There is your shoe.'
'Ah! I thought that was my foot."[14]

Dr P. was suffering from a type of visual agnosia. A condition which compromises your ability to recognise objects through vision. He was also unable to recognise faces, a condition called prosopagnosia. There was nothing wrong with his sight, something went wrong in the processing of visual sensations, something went wrong in the road to visual perception. According to Sacks, what he lost was judgement, and he was left with an abstract attitude. He was able to see patterns and categorise information, but he was unable to relate that information to himself. He was unable to make it personal. The difference between his visual experience and his experience of smell is well described by Oliver Sacks on page 15 in 'The man who mistook his wife for a hat' and gives us some insight in what he lost. The passage starts when Dr P. is given a rose and asked what it is he holds.[14]

'About six inches in length,' he commented.
'A convoluted red form with a linear green attachment.'
'Yes,' I said encouragingly, 'and what do you think it is, Dr P.?'
'Not easy to say.' He seemed perplexed. 'It lacks the simple symmetry of the platonic solids, although it may have a higher symmetry of its own… I think this could be an inflorescence or flower.'
'Could be?' I queried.
'Could be,' he confirmed.
'Smell it,' I suggested, and he again looked somewhat puzzled, as if I had asked him to smell a higher symmetry. But he complied courteously, and took it to his nose. Now, suddenly, he came to life.
'Beautiful!' he exclaimed. 'An early rose. What a heavenly smell!'[14]

An interesting note to this case is that Dr P. didn't just struggle with visual perception, he also struggled with visual imagination and memory. When he describes seeing the rose we can feel his inability to refer to previous experiences of seeing. Instead he uses intellectual knowledge to place his sensations into a context. While when he smells the rose he immediately links the smell to earlier

experiences of similar smells and the associations that belong to those memories.[14]

Previous experiences are saved in memory, if you run into a similar situation your brain will refer to that memory to be quicker to react. This is how an abstract painting can be associated with a landscape, because somehow it connects to the memory of experiencing one.[6 12]

These interpretations are highly subjective, they depend on the surroundings you grew up in and the experience you gained, but there are common factors. When you kick a glass from the table, it will fall. If the table is high it will break. If there is water inside we might get wet. These are all natural laws we learn about as we grow up. We encounter them as we play, regardless of where we were born.[15]

Culture creates common ground as well. In the Netherlands bike paths are for bikes only. When you cross one thoughtlessly you risk the wrath of a stressed biker. In Spain biking is less common, and bike paths are commonly used by pedestrians to walk on. The first time I encountered this habit, as I walked through the city with my spanish boyfriend, I got very uncomfortable. While we

were walking on a bike path I couldn't shake the fear of a bike hitting me from behind. This fear is an association I bring from the Netherlands, for me a bike path equals stressed bikers, for him it is just another part of the street that happens to be comfortable to walk on. Aside from culture, we can find common ground in work fields, hobbies or even neighbourhoods. Anywhere you encounter a shared set of rules or habits.[6 16]

While an objective perception might seem desirable to some, our bodies developed to be practical, meaning our perception can be wrong. Our senses gather a vast amount of information. To save time, our brains look for patterns, which generate expectations. This allows you to make quick decisions, rather than spending time analysing every detail of your surroundings. We predict ourselves into existence, as Anil Seth says in his TED talk 'Your brain hallucinates your conscious reality'. And yes, this leads to prejudices and misconceptions, but it is also the base for creativity and innovation.[1 6 12 16]

Connecting expectations to sensations, is called bottom-up processing, it allows you to place them into context, bypassing the need to process everything. The opposite is called top-down

processing, which analyses sensations thoroughly, up until we find a connection to memory and switch back to bottom-up processing. If you look out the window and see it rains you expect to get wet when you go outside. When you don't you can imagine you are puzzled. You experience a moment of top-down processing, a moment of wonder and complete disconnect. As you stare out into space your brain will try to find new links between sensations and memory, trying to find a new fitting perception. In this moment you are open to any type of perception, up until you find a link to memory and expectations start to seep back in. While perceiving without expectations seems amazing, using as many shortcuts as possible is more efficient. While a computer system goes through every single sliver of information to reach a conclusion, we can fantasise and associate to reach the same result, with less energy.[6]

Improvising shows how we can be creative with associations. When improvising you associate freely, trying to break with your normal road to perception. Normally an association with memory leads to an expectation and a pattern of behaviour. When you sit down on a chair you will place yourself on the seat. While improvising you

question this behaviour. What if you turned the chair upside down, where would you sit? What if you wanted to lie down on it, or stand on your head?

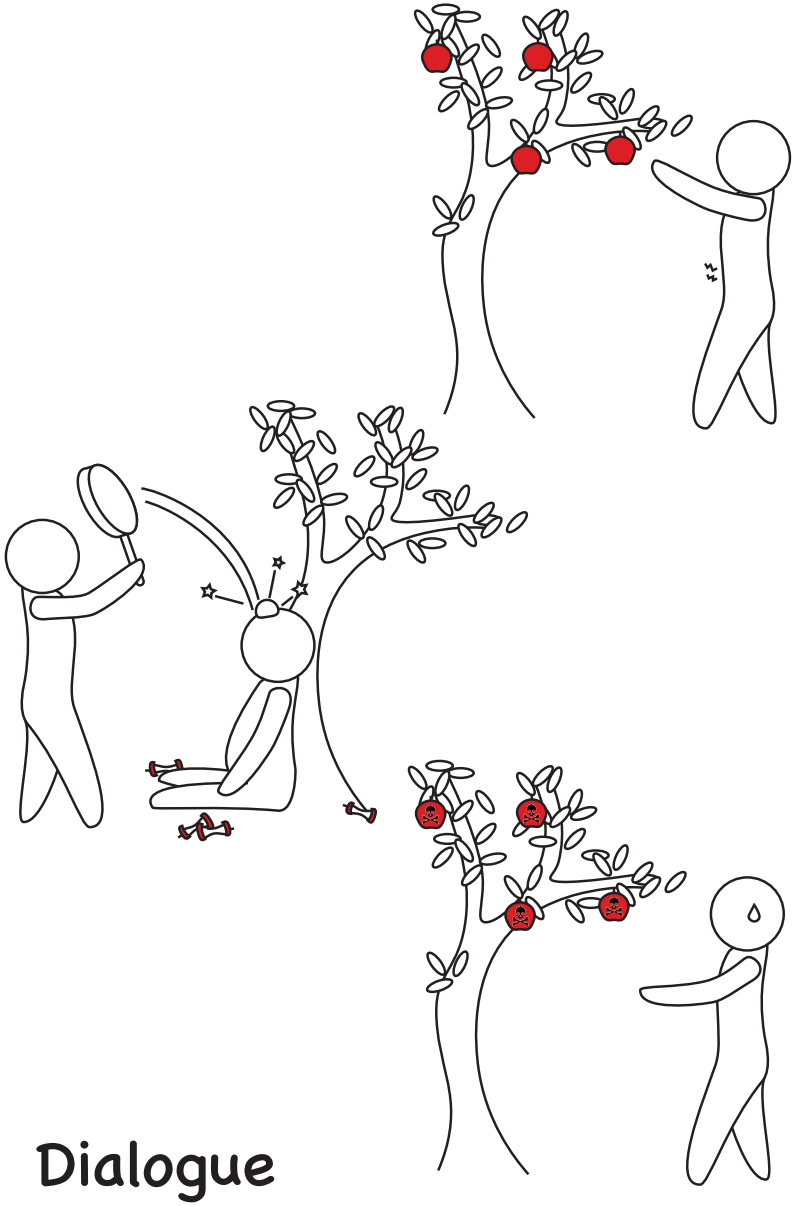
The chair and the way your body interacts with it becomes the focus of the improvisation. In Jazz improvisers focus on time schedules and scales, in theatre improvisers focus on their fellow players and the details of the scene. This means there are certain boundaries to the improvisation. A jazz player will not think of how they sit on a chair.[17]

This focus allows you to be fully present and aware of your surroundings. It can be called a flow state, an optimal psychological state where you are completely one with an activity. When improvising in movement I can feel a flow of energy. One movement will always show possibilities of a new one. I merely have to choose which way to direct it. When improvising with a group I can lose my sense of self, instead I become part of a flow of movements and possibilities. This kind of flow can indeed make you lose the conscious of self or identity as well as time. People have even completely lost their memory of improvisation, their bodies not feeling the need to store anything to long-term memory.[17]

So improvisation can teach us how to act in the moment and be aware of our surroundings. It can also teach us about our habits and preconceptions. After all in order to break with your regular road to perception, you first need to understand it. When I was improvising in music I slowly learned that I referred to music styles I knew. I would find myself falling back to specific sets of chords, or rhythms that I heard before. Not only that, the music instrument I used also influenced the result of my improvisation. When playing on the piano I played with chords and melodies, but my rhythms were usually quite slow. On accordion I would play with quicker rhythms, while chords were less present. As a result I started researching how I could apply my knowledge from accordion to piano and the other way around.[18]

So in short. The information our senses gather are called sensations. Our mind organises, selects and interprets these sensations with the help of memory creating perceptions. Our perception evolves over time and becomes more intricate as we gather more memories. It is subjective since it depends on the surroundings and situations we have experienced and the knowledge we have access to. This means that while focus, emotion,

motivation and the body influence our perception as we saw in the previous chapter, memory is vital in reaching perception. Our perception relies on expectations and will look for patterns to save time. To avoid getting stuck in patterns of expectation and behaviour we can use knowledge from improvisation. There we learn how to be fully present in the moment and use our associations and memory to reach new ways of perceiving.



Dialogue

While the body interacts and moves, the mind interprets and predicts. Through their dialogue they shape our perception.

The body is commonly associated with emotion. Fear can be felt in the gut, sadness might be signified by a drop in the stomach and anger can be translated into the urge to move and destroy. The mind on the other hand is associated with reason. It can leave emotions behind and soar above our bodies to make rational and clean decisions.[19]

But the mind can't soar above our bodies, and its decisions are far from clean. As we have seen in the previous chapters, the body is present in our rational decisions and the mind defines many of our emotional reactions through memory. The two are so connected that your mental health is reflected in your physical health. This is why emotions can be felt in the body. But aside from sensations in the body our mind can actually make us sick. Anxiety can cause an increase in stress hormones, which, in turn, affect the immune system and make you more susceptible to disease.[20]

The idea that our body and mind are separate entities is pretty outdated. It arose during the 17th century, together with the idea of the body as a machine with undependable and replaceable parts. The relationship between body and mind

has been back in interest since the 20th century, yet we still seem to struggle with integrating this in our lives. The popularity of mindfulness, meditation and yoga doesn't come from nowhere. The trend deals with increased pressure in our work and social lives by dealing with stress. Mindfulness promotes a better understanding of our mind and body. Apparently this is something we miss.[21]

Language could be one of the reasons the mind body relationship is underexposed. If we want to relay how we felt on a specific rainy day, we often talk in examples and associations: 'It was like someone poured a bucket of water over me.' 'My hands froze to the point I couldn't feel my fingertips.' In doing so you allow others to remember their own experiences, and by layering them on top of each other come close to the experience you had. If instead you said: 'rain was falling with 5mm per minute, and the temperature was around 5 degrees,' you may find less recognition among the people in the room. This illustrates that experience can't be properly caught in language. The body-mind relationship is mostly found in experience, and what can't be described in language, easily disappears to the unconscious.[22]

In ‘De blinde vlek van de filosofie’ Aard Breed reasons language is fundamentally different from experience. Language defines things through concepts. A building is a structure with walls, a house commonly has an entrance and windows. The important thing is that anything with walls, an entrance and windows can be defined as a separate house, regardless of the context it is in. When looking at a street full of grey houses we tend to group them as one. Only when one is painted red we start seeing it as a separate entity. Similarly a hill becomes a hill, because the surrounding ground is lower; a lake becomes a lake, when it is surrounded by dry land. In language a concept can exist by itself. In experience concepts become redundant, instead things are defined through relationships and contrasts.[22]

The development of language equals a development of abstract thinking. Our words don’t resemble their meaning at all. The word ‘dog’ sounds or looks nothing like a dog. And words like ‘energy’ or ‘love’ don’t even have a physical shape. This abstraction creates efficiency. A word can have more than one meaning and can be used in multiple contexts. At the same time language became so abstract and separated from its origin,

that it became like its own world. A world that overlaps with reality, but is significantly different, as Aard Breed points out.[22] [23]

There are several theories on how language originated. Some think it appeared through a single mutation of the brain. It means whatever prompted us to create language is an ability of the brain that other species don't have. Others think it evolved slowly over time.[24]

One theory finds the origin of language in gestures. Apes in the wild make lots of gestures. These gestures come closer to language than any sounds they make. The gestures closely resemble what they mean. For instance an ape will point to some part of the body mimicking scratching, which means he wants another ape to come over and scratch him there. A difference we have with apes is that we started to walk on two legs, freeing our hands. This would be the moment gestures become more developed and laid the basis for language. We can imagine the first gestural language was a little like mime, mimicking shapes or movements that refer to the object or action described. Later in our evolution we started to use tools. This could be the reason gestures moved from the hands to the face, that way we could free

the hands for the use of tools. At the same time we would've made the first grunts and sounds that later developed into our current language.[24] [25]

A language based on mimicking is very time consuming. To make things more efficient, we can imagine gestures became more and more simple. This is where abstract thinking comes in, which is closely tied to the development of language as mentioned before. After all simplifying gestures means they drift further from what they originally portrayed. Instead gestures start working like symbols, in which mutual agreements decide which gesture belongs to which meaning. This could explain why there are so many different languages. An agreement is subjective, the chance the same one is made one hundred kilometres apart is very small.[25]

In writing we find a similar development in abstract thinking. The first known writing system was found in Mesopotamia, it was used to count and record goods. Of course writing developed in many countries over the world, and each have their own shape and development. To show how writing equals a development in abstract thinking, like language I will take you through one of them.[23]
In Mesopotamia, a small clay token represented

the type of good, and the amount of tokens equalled the amount of goods. For example five ovoid shaped tokens resembled 5 jars of oil. This system already requires some knowledge in order to understand it. Meaning some level of abstraction is applied.[23]

A problem occurred when tokens were stored until payment, probably to keep track of debts. To keep tokens together they were gathered in a clay envelope, however this envelop hid whatever was inside. To make the system more efficient the tokens stored inside were impressed in the surface of the envelope. This way you could see which and how many tokens were inside without opening it.[23]

The use of tokens quickly became unnecessary. First the physical tokens were left out and only a tablet with impressed shapes remained. After the tokens disappeared all together and the shapes were made with a stylus, creating pictographs. Now a single pictograph was combined with a set of numerals, representing the type of goods and the amount. The numerals became simplified and more abstract, they didn't equal the exact amount represented. For instance, ten could be written as a single symbol. Thus thirty-three jars of oil didn't have to be shown in thirty-three markings, it only

Top: clay envelop with markings and tokens[23]

Bottom: thirty three measures of oil in pictographs[23]

used seven. One pictograph represented the oil, three represented ‘ten’, and three represented ‘one’.[23]

So far writing resembled amounts and shapes. While these were abstracted into pictographs, both writing and goods can be visually experienced. A new level of abstraction is added when writing starts to reflect language. The visual writing suddenly describes auditory sounds.[23]

The reason for this shift was the forming of states. There was a need for names to be noted down with the tablets tracking goods described before. The names were represented by a combination of sounds. These were noted down by visually representing words with similar sounds. To make an example with English: Neil could be represented by bent knees, referring to the word kneeling. These first phonetical symbols allowed writing to develop into resembling language.[23]

Moving away completely from the visual and into the alphabet marks the current stage in abstraction, where they hold little to no link to the visual world and build a world of their own.[23] The abstraction of writing isn’t just found in its medium, as with spoken language. It doesn’t

just abstract meaning into visual symbols, it also separates information from its origin. Sheep that are counted through tokens don't have to be present in the same place. The owner of the sheep or the accountant that first counted the shape doesn't have to be present either. Anyone that is familiar with the token system can access the information stored through tokens.[23]

Not only is writing separated from its context, it is also separated from the body. While the spoken word takes place in space and time, the written word is timeless, and despite its physical shape, it isn't bound to a person. Many nuances that can be made through intonation and expression of the body and face have to be caught with words and punctuation. It is no wonder that writing is an art form, and that in daily live texting, misinterpretations are easily made. Just think about how revolutionary the emoji was.[23 25]

So language makes things more abstract and writing can set information apart of our body. Yet language is our main way of communication. This can give us some pointers to why the mind-body connection is underexposed. While the conscious mind goes well with language, the body doesn't and neither does the unconscious. On top of that

many of our current technologies clear our daily lives from the necessity to move. Your laptop gives you access to entertainment and food. The only reason to move is when you need to visit the toilet or open the door for your dinner. This technology is not necessarily bad, but it allows us to forget about our bodies, escaping into the realms of technology where the mind is king. So how do we bring the connection between body and mind back into focus?

The relationship between body and mind isn't something static. It is something you experience and that you will have to learn about throughout your life. This means an answer might hold true one time, but proves false the next. What I have been amazed by personally is how my stomach can get upset by the smallest amounts of stress. A few minutes of hurrying for a train can result in several hours of stomach-ache. But the same type of ache can also be caused by eating too fast or an intolerance to a specific ingredient. And on top of that my mood can hold sway as well, if I feel sad and tired I will notice small pains more quickly, while if Im happy and energetic they will clear quickly.

While the body-mind relationship can be researched, it can't be taught. After all it is highly personal and hard to catch in words. Instead we need to create a platform were we feel comfortable to explore our own body-mind relationship. A platform based in experience. For inspiration we can look at mindfulness, but also at improvisation. One asks you to make rapid decisions and the other to observe in silence. Yet both accomplish a similar detachment from the sense of 'self'.[26]

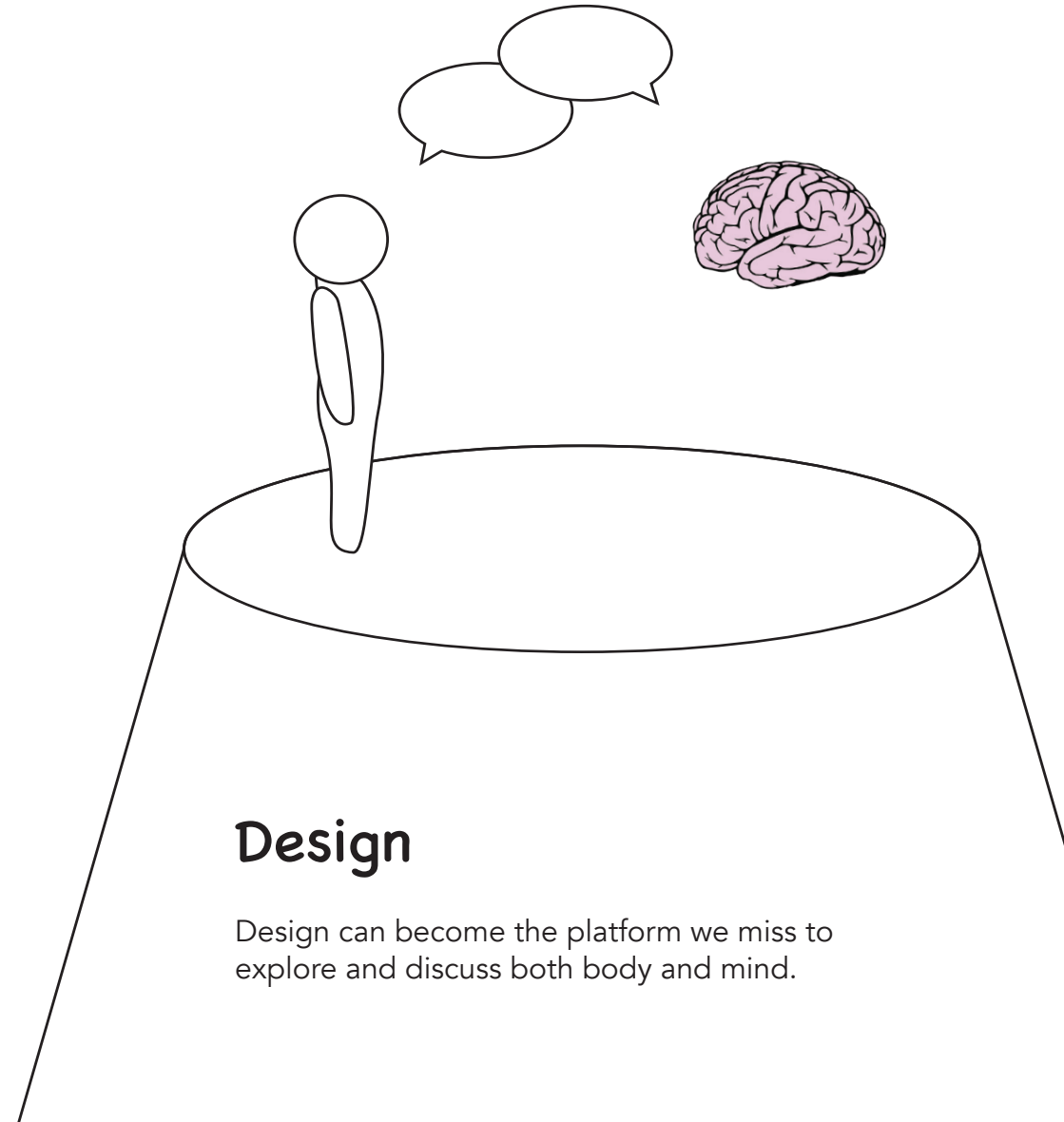
Mindfulness helps you to step back from your own thoughts and emotions. The distance created allows you to conclude 'this thought is not me'. It doesn't just make you more aware of your thoughts and body, it could make you aware that the concept of self is only a psychological one. A concept "made up of changing memories, beliefs, sensations, and ideas" as Faith Brynie explains in her article 'Growing More Mindful of Mindfulness'. Identifying less with the concept of 'self' allows you to be more aware of your body and others and to be more compassionate. Worries about old age or a negative self-image disappear to the background, decreasing stress.[26]

Perhaps the last thing standing in the way of our

body-mind relationship is the concept of 'self'. In order to become fully aware of your body, mind and surroundings you definitely have to let go of preconceptions. Letting go of the concept of 'self' doesn't mean you lose your identity. It means you stop questioning how a situation defines you, as a separate entity. Instead you can question how things interact. You can relate your mind and body directly to each other and to the world around you.[26]

So in short, while there is interest in the relationship between body and mind, the uprising of mindfulness and similar practises shows us we are still missing knowledge of this relationship in our day to day lives. One of the reasons can be found in communication. Our communication is mostly based on language, and language is inherently different from the way our body experiences things. Not only does it abstract things into concepts, it also detaches them from space, time, and body, when recorded in writing. Things we can't explain well are easily ignored and pressed to the unconscious. At the very least it proves hard to create a discourse about something we can't speak of. Mindfulness and improvisation show that the concept of 'self' can obstruct researching the body-mind connection as

well. This hits the core of the problem, we need to shift our thinking. When looking at the connection between body and mind we need to stop thinking how to define it. Instead we need to explore how things connect and interrelate. We need to accept there is no 'one answer', there are merely interpretations and approaches.



Design

Design can become the platform we miss to explore and discuss both body and mind.

Our body and mind construct perception together, but there is a third part to this interaction: the subject of perception, our surroundings. Most of our daily lives are filled with manmade objects. The city we live in, the couch we sit on, the plate we eat from... each was designed by someone. Design shapes a big part of our surroundings, which are the subject of our perception. Our surroundings can both be experienced and described. So if the body-mind relationship can't be addressed in language, why not address it in design? What if design becomes the platform where our body and mind can be both discussed and explored?

The exploration of the connection between body and mind isn't new in design. A classic example is Juhani Pallasmaa. In his book 'The Eyes of the Skin', he criticises our society as being mainly visual. He speaks of the 'hegemonic eye' that Pallasmaa speaks of the 'hegemonic eye' that, quoted from page 22 in 'The Eyes of the Skin', "… seeks domination over all fields of cultural production, and … seems to weaken our capacity for empathy, compassion and participation with the world."[9]

Interesting enough empathy, compassion and

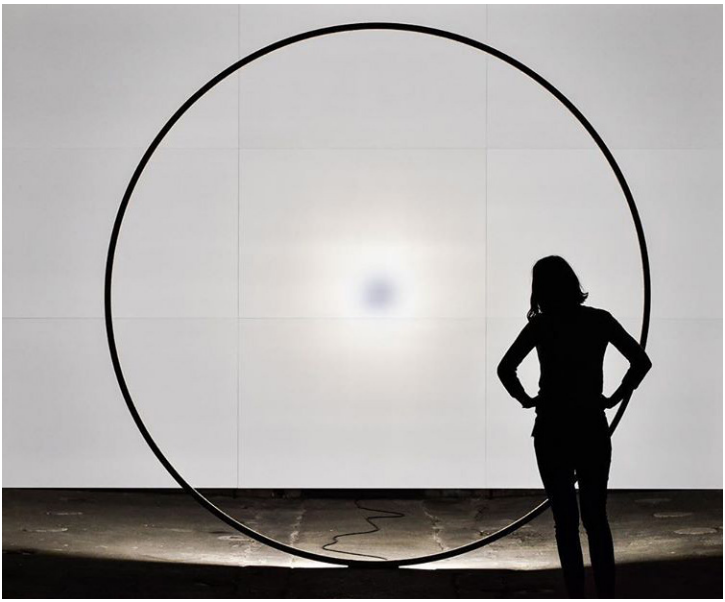
participation with the world is exactly what mindfulness can bring us, as shown in the previous chapter. So perhaps the 'hegemonic' eye has less to do with vision and more with the urge to define and separate things. Perhaps the 'hegemonic' eye is like the concept of 'self' mentioned before. It sets us apart (and isolates us) from our surroundings. Pallasmaa actually mentions the relationship between his 'hegemonic eye' and the concept of 'self' on page 25 of 'The Eyes of the Skin': "The gradually growing hegemony of the eye seems to be parallel with the development of western ego-consciousness and the gradually increasing separation of the self and the world".[9]

In order to solve our separation from the world and our bodies, Pallasmaa proposes that architecture becomes a reference point to bring us back to them. Architecture is the perfect medium to do so because it reflects our relationship with the world. A building is approached, you relate your body to it. By moving through it you become aware of your placement in space; by touching the wall your skin materialises. Architecture shows us we are not just viewers, but we are interconnected with our surroundings, we perceive, connect and interact with them. And architecture is not just a passive subject either. The ideas of the architect

will interact with the ideas of the viewer, or as Pallasmaa wrote in his book 'The Eyes of the Skin' on page 68: "the work projects its aura, and we project our own emotions and percepts on the work."[9 15]

Our spatial awareness arises from our interaction with space. In the first chapter we learned that our three-dimensional understanding can't exist without the haptic memory, without touch. And indeed touching an object gives us a more three-dimensional experience than looking at one. Spatial awareness also makes use of proprioception. When you move through a space the measurements of your body interact with it. A space feels comfortable when it 'fits', when the doorhandles are on a good height for you to grab, when you fit through the doorframe, when the ceiling is a reasonable height away from your head. As a kid I really wondered why doorhandles were placed so high. Isn't that very uncomfortable?

As an architect you can play with measurements to encourage or discourage interaction. Something comfortable to hold can pull you to do exactly that, while a passage too low to stand can make you refrain from entering.



Top: ‘Tunnel of tears’ by Keith Sonnier[38]

Bottom: ‘Negative Space of Light’ by Dachroth and Jeschonnek[39]

Perspective is a powerful tool as well, and it becomes interesting when we realise it changes when the body moves. To deal with this 'fluid perspective' Steven Holl introduces the idea of overlapping perspectives. As we move through space the arrangement of surfaces changes. Objects move from close to far and from far to close. These overlapping perspectives create multiple vanishing points, a radically different approach from the static perspectival point of Renaissance space. When put into practice designing with the moving body and mind can make objects seem to move as the viewer changes position.[15]

A peculiar example of an artwork made with the moving body in mind is 'Tunnel of tears' by Keith Sonnier in the light museum Unna. Instead of objects that seem to move as you change your position, this room changes color. The installation is made up of a space divided in two rooms, both with colored neon lights. The front space has mostly orange and red lights, the back has lights in blue. As you enter the space looks orange with a bit more red in the back. However, once you arrive in the blue space and look back, the space is overwhelmingly red.

A second installation in this museum that really struck me was "Negative Space of Light" from Dachroth and Jeschonnek. The installation consists of a ring of light and a seemingly white background. The combination between background material and distribution of light creates an optical illusion. In the middle of the light circle you see a shadow. A shadow that moves as you move. When viewed from the side it breaks down in a multitude of colors. The light becomes refracted like a beam of light that hits a prism. When you move really close the shadow disappears and you see the background is actually grey. The material looked a bit like those 3D cards in which the image changes depending on the angle you hold it.

When we take the moving body as a basis for design we can incorporate a time line. Our gaze travels from object to object, we don't grasp every detail in an instant. We can think of a design like a music composition. The entrance is the beginning and as you walk through space the composition unfolds. In the 'Tunnel of tears' you enter a space with neon lights that create a visual play of colors and lines. As you walk through, the colors start to change, which shows they are not just there to look pretty. Once you arrive in the blue space

and look back the real story unfolds, not only did the color in your surroundings change, your perception of them did too.

Incorporating a timeline allows you to assess how different elements interact and enhance each other as they spread out over time. For inspiration, we can look at music. One melody can be full of sorrow while another is lively and happy, they can dance around each other strengthening the contrast between them. The composition will not be sad or happy, it will be something more complex, something created through the interaction of the two. But there is more than different instruments and different tones. When language comes in we get even more layers to play with. The meaning of words and their intonation get added to the mix. And finally the transcription of notes can hide secret messages of the composer. Bach for instance hid his own name in many of his compositions using certain successions of tones.[27]

Let's look at the 'Tunnel of tears' like a piece of music. The red and blue light are like two different melodies. The layout of the space is like a rhythm, defining the pace of the composition. The visual shapes become something like an opening

Sensory Cutlery Collection, Jinhyun Jeon [28]

statement and background support for the colors. As the piece unfolds the blue and red light interact with each other. Each has their own ‘melody’ that creates an atmosphere, but they also harmonise, creating a storyline that only exists when both are present.

The layering of information is nothing new. In any design there will be an interplay between material, color, intention, associations and so on. These layers include both sensations gathered by the senses and associations made with the mind. In fact it refers to how perception works. The body and mind interact with each other, combining different layers of information to shape complex perceptions. Designing with layers in mind allows you to influence this process, and perhaps, make people more comfortable with it.

The sensory cutlery collection by Jinhyun Jeon explores how we can design for the interacting senses. He explores the daily act of eating. Elements explored in the design are: temperature, color, texture, volume, weight and form. The experience spreads out over several stages: the colors stimulate our vision as we pick up the cutlery; the distribution of weight and the shape of the handle interacts with our skin and connective

tissue as we hold it in our hand; the shape defines how we pick up our food and rations the portion of each bite; the portion of food redistributes the weight and interacts with the action of bringing it to your mouth; and finally the texture interacts with your tongue as it wraps around the cutlery to ingest the food carried on it. By engaging more senses than just your taste bud, the designer wants to encourage a more mindful way of eating, paving the way for a more healthy and joyful experience of food.[28]

We have seen how the senses can interact with each other and how information can be spread out over time. What we haven't talked about is accessibility. When dealing with layers of information you can think about what you need to access these layers. This means you can design for people with a specific background or that exhibit specific behaviour. Take the signature from Bach mentioned before: in order to find this message you need to have knowledge of musical transcription and theory. For someone without this knowledge, it will be impossible to see. Similarly a visual symbol can be missed because you never saw it before and the use of wood can become more meaningful when you know how it was produced. On the other hand you could place

information in hidden corners, only accessible for those that set out to explore. Maybe intricate sounds can be heard when it is completely silent, or the space changes its appearance with the turning of the sun.

In order to make sense of our surroundings we associate it with memory, as we have learned in the second chapter. These associations are personal, but there are common factors, as explained before. Through the use of common factors we can design associations made with objects and spaces. We can design the experience they evoke. A building with a steep angle will make us think of those blocks we used to play with, which, once they started to lean over, would fall to the ground. As such, the building looming over our heads will make us feel scared and intimidated. Similarly glass is seen as fragile, a cup dropped to the floor is doomed to break. A glass floor doesn't just trigger associations with breaking cups, it also shows you exactly how far you would fall should it break, making the experience even more frightening.[15]

These associations don't just happen with visual stimuli. Scent for instance holds a particular strong bond with memory and the unconscious. Perhaps

because it sits closely to those parts of the brain that deal with memory, and far from those that deal with language. As a result a smell will quickly refer to memory and evoke emotions and feelings, often before you can pinpoint why with your conscious mind. This is why smell is so popular as a marketing tool. In supermarkets the smell of freshly baked bread is spread through their store to bump up bread sales. Since the association stays unconscious you are quicker to think it was your own idea.[38]

Textures can influence our decisions in a similar way. Research shows that we relate textures to abstract concepts like stability, difficulty or seriousness. In one experiment people were haggling over the price of a car. One group was sitting on a soft chair while the others sat on a hard one. Those sitting on the hard chair were less willing to change their bid, those sitting on the soft chair changed their bid significantly more. [29]

Associations can be used to influence perception by harmonising design with expectation, but we can also break these expectations to force you to re-evaluate them. The installation Der reflektierende Korridor from Olafur Eliasson is a good example. The installation consists of a

Der Reflektierende Korridor - Olafure Liasson[40 41]

bridge lined with waterfalls on both sides. As you enter the sound of water is deafening, small splashes of water reach your skin and the space feels and smells damp and cold. Yet your eyes see water drops hanging silently in the air. The effect is created with strobe lights. The frequency of light flashes and droplets falling have been timed perfectly, so they appear to stand still. The disconnect between vision and my other senses was so great that I couldn't help but touch the droplets, I had to make sure my eyes were wrong. The experience was strange and left a big impression on me. It showed me it was possible for my eyes to have a completely different experience than the rest of my body. It showed me just how easily perception can be fooled.

Associations don't have to link to a far past. They can also link to something experienced earlier that day or even a few moments before. By employing this knowledge we can design our own vocabularies.

A vocabulary doesn't have to base itself in language. A vocabulary is taught and in essence it links an abstract concept to some kind of medium. That medium can be a word, but it can also be a shape, color, smell or sound. Think of the

existence of braille and sign language, but also a specially adapted sign language for the deaf blind, which is spelled out in the palm of the hand. Advertisements make use of how we link meaning to a medium. By playing a known song or theme in an advertisement, they link it to the product they want to sell. If seen often enough, upon hearing the song, you get the uncanny feeling you heard it before, but with a very encouraging voice, very bright colors and some type of toothpaste.[30]

'Dialect for A New Era' by Frederik Duerinck and Marcel Van Brakel explores how we could link language concepts and meaning to smell. Working together with a linguist and a perfumer they define four major functions of language: to know, to reflect, to act and to bond. These are used to create a set of scents that can be combined with small sentences. In the installation pedestals display these sentences. With the press of a button their accompanying scent is spread through the space. The visitor will start linking the text to the scent, connecting smell and meaning to slowly assimilate a new dialect.[8 31]

The company 'Man Made Music' shows that researching how to develop new vocabularies can be useful in practice. Their research is aimed at

Dialect for A New Era by Frederik Duerinck and Marcel Van Brakel [31]

improving alarm sounds in hospitals, essentially developing a new sound vocabulary. The common emergency room holds a cacophony of alarm sounds, each blaring for attention. A loud intense alarm sound can induce a moment of shock, which in terms of valuable reaction time of health workers can be disastrous.[8 32 33]

The average amount of alarm sounds in the ICU holds forty different ones. Yet the human ear can differentiate between no more than six. To deal with this overstimulation of blaring sounds, employees become indifferent to them. This problem is called alarm fatigue and is a real issue in the medical system. To solve this issue 'Man Made Music' explores how to create a well defined vocabulary of alarms, that can be used all over the world.[8 32 33]

Such a universal vocabulary can be found in aviation technology. In airplanes all over the world information is relayed not just through alarms, but through a specific set of sounds. The key feature is that each is very different, while one can be a simple beep another might include an English spoken message. In doing so, the sound becomes a symbol that relays information. Once initiated in this system a pilot can react to these

sounds intuitively, without feeling stressed or overwhelmed.[32]

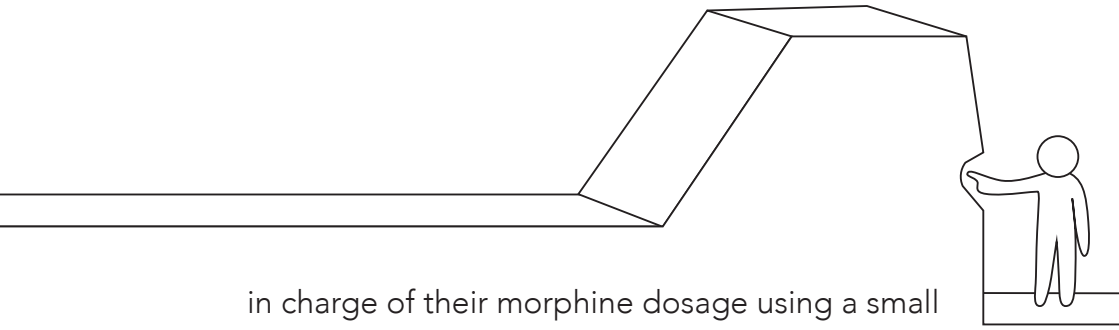
A hospital, of course, is a little different from an airplane. Doctors are not stationed in a single spot, so alarms will be part of the general soundscape. To make this soundscape less chaotic, information needs to be simplified. We need to make sure that critical alarms are most present. One way to achieve this is by condensing several alarms into one. If a patient is hooked up to several systems, each of which come with their own alarm, why not have a separate system decide which is most important? That way the most pressing one can be set off.[32]

We might be able to simplify alarms and make them easier to tell apart, but we can never get rid of them. For patients, alarms providing unknown information can be scary and induce stress, which counteracts their ability to heal. To counter this problem, ambient sounds can be included in the rooms of patients. Perhaps they can choose between the sound of waves, birds chirping in a forest or a city at night. Not only will this grant them some control over their soundscape, it will also counter the hectic sounds of the hospital.[32 33] Our perception is active, as we have seen in

the first chapter. Our bodies don't just observe, they interact. Designing for interaction gives us a feeling of inclusion and control. Instead of performing a monologue its like the design asks you to join and become part of the conversation. It asks us to stop thinking of objects or spaces as passive dead things. A room can become a living creature with its own identity. It doesn't just sit quiet as time passes, but it reacts to us and its surroundings.[8]

Technology has already embraced interaction. Phones don't just allow you to change the background, but also the configuration of apps, the loudness of your ringtone and when we want the phone to be silent. We live in a time in which people become increasingly involved with their surroundings, with customised experience becoming the new standard.[8]

In museums, a touch screen might include an accessibility mode that can be turned on or off. In this mode the text might be bigger, gestures more simple or perhaps it allows the use of a keypad. In the project above 'Man Made Music' considered giving patients some power over their personal soundscape. They were inspired by the findings of doctors which showed that when a patient was



in charge of their morphine dosage using a small device, they were more relaxed and used less morphine than when on prescription.[8]

Aside from practical uses of interactivity in the form of customisation, we can also use it as a design approach. 'Underall II/III' by William Forsythe, is an installation that offers a curious dialogue. Blending into the landscape, the round plate reacts to your weight as you stand on it. Since it is slightly tilted, the plate will start turning, moving you to the lowest point. As it turns it makes sound, inviting you to keep walking so the plate keeps turning and the sound swells in strength. Once I stepped on the installation the sound convinced me to start walking. A cunning way to stimulate you to move and to interact with the installation.

When a design takes shape through interaction the lines between object and person become blurred. It is similar to how two melodies can form a new story by interacting with each other. Except now the viewer doesn't observe the story unfold

Underall II/III, William Forsythe [42]

over time, he becomes part of the story himself. If done well it can induce a simple version of the flow state found in improvisation. By engaging yourself with the object you become grounded in your body and the moment, acting, perceiving and reacting following up on each other, just like in improvisation.

So in short, the body-mind relationship can't be put into words. It can, however, be placed in space. The subject of our perception are our surroundings, and in perception, our body and mind come together. Since design creates most of our daily surroundings it could become a platform to both discuss and explore our body-mind relationship. This idea was already introduced by Pallasmaa. In the previous chapter we learned that the sense of 'self' could be obstructing the discussion between body and mind. Pallasmaa speaks of something similar, except he calls it the 'hegemonic eye'.

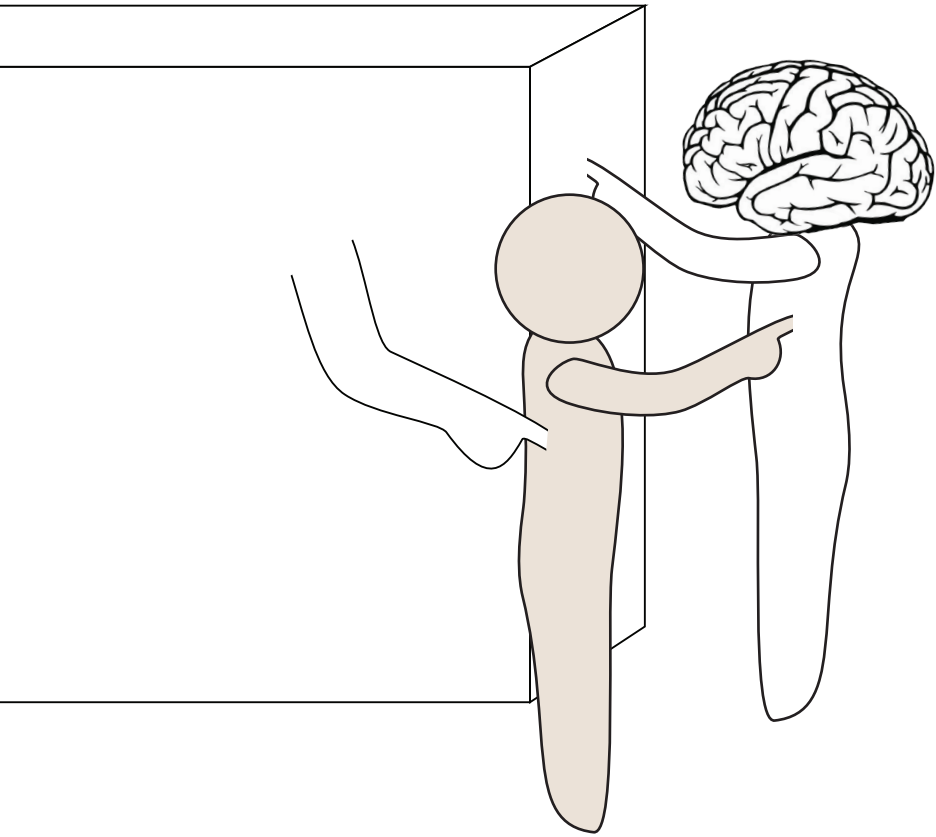
Various elements we discussed in the previous chapters can be used to create a design that reflects the body-mind relationship. The interconnecting senses, body and mind can be addressed by making the moving body the center point of design. Perspective becomes fluid

allowing a design to spread out over time.

If we want to design with a timeline we can approach space like music. Light, color, and shape interact with each other over time and interconnect into a single complex storyline. This also allows us to think of how the senses and body interconnect, guiding the process of perception. Different elements could be translated to layers, each with its own requirements to be accessed. This allows us to speak to people with a specific background, or that behave in a certain way.

Associations can be used to evoke atmospheres, but we can also train our flexible mind to link meaning to new shapes, smells or sounds. We can also use a clash between expectation and reality to make us question our perception and bring us back to reality.

Finally, we can design for interaction. This allows the design to become alive, it allows us to converse with it and blurs the boundaries between object, body and mind. Like in improvisation and mindfulness, the 'self' is pushed to the background, and instead you are challenged to be present in the moment, to act, to perceive and to react with both body and mind.



Conclusion

When design, body and mind interact our body-mind relationship can be explored

We live in a society that yearns to define things. We want to know who we are and what defines us. This search for meaning brought us far, but regarding our body-mind relationship it becomes an obstacle. We need realise that things exist within a context. That things can't be defined by themselves, that things change as they interact and intertwine. To start we can learn how our body connects to our mind and how both connect to our surroundings, using design as a platform.

Through my research I show the different parts of our body are less separate than the concepts that define them. As we move through the world our body and mind converse with each other. While our body walks through the city our senses meet and share information, our memory pitches in as well, regulating the conversation by deciding what is interesting and what isn't.

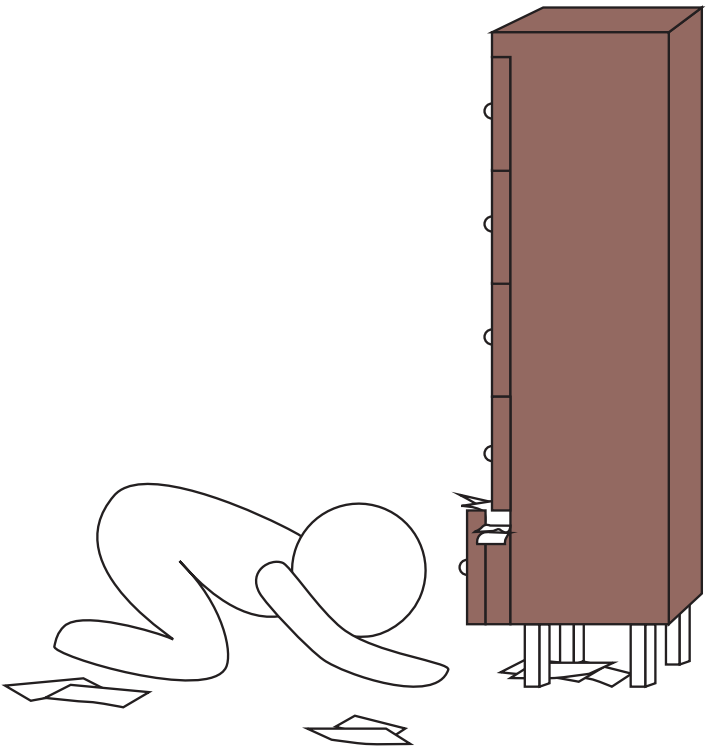
Our body and mind don't just share information, they are interconnected. The body is present everywhere in the mind, in the processing centers of the senses, but also in memory. At the same time the mind can be felt in the body. Sadness can be felt as a knot in the stomach, but sadness isn't physical. Sadness exists in our mind and is triggered through associations and memory.

Language can create a disconnect between our thoughts and our experience. Definitions and concepts form the base of language. Experience on the other hand is based on context. A hill can be defined as a rise in a landscape, but a rise without a drop can't be experienced as a rise. As a result we can't properly describe experience.

But the issue of language spreads further than communication. It made its way in how we think and see ourselves. Meet the concept of 'self', an entity that tries to define who we are. This isn't right or wrong, but by following the concept of 'self' we ignore that we exist within a context, that we aren't separate from our surroundings, but we exist in our interaction with them, in our interaction between body and mind.

Design can create experiences that speak to both body and mind, allowing them to interact. Since much of our daily lives are spent in designed surroundings, they can prove a key figure in reintroducing the body-mind relationship.
As a conclusion to my research designing for interaction comes closest to the body-mind relationship. Like in improvisation we can induce a state of 'flow'. A state in which people experienced a blurring of 'self' and 'other'.

Action, interpretation and reaction follow each other rapidly, causing body, mind and design to intertwine. Through interaction design can let us encounter and explore our body-mind relationship.



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