INTERROGATING SELF-REPRESENTATION
AT THE INTERSECTION OF VISUAL ARTS AND NEUROSCIENCE

By
Nicole Ottiger

A thesis submitted to the University of Plymouth in partial fulfilment for the degree of

DOCTOR OF PHILOSOPHY

School of Art, Design and Architecture

December 2020
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ACKNOWLEDGEMENTS

This thesis is a result of a long-time passion and occupation with self-portraiture in visual arts.

Special thanks to Prof MD Olaf Blanke for his invaluable support and guidance, and also to Postdoc Dr Anna Sforza, Dr Christian Pfeiffer, Dr Bruno Herbelin, Dr Giulio Rognini and Matthieu Perrenoud at the Laboratory of Cognitive Neuroscience (LNCO), EPFL Lausanne for their support in different stages of this research.

Many thanks to Prof Dr Jill Scott (Z-Node at Zurich University of the Arts, until 2016), Prof Dr Jane Grant, Prof Dr Roy Ascot and Prof Dr Mike Philips for providing institutional support at the University of Plymouth, and externally to Prof Dr Dieter Mersch for his advice.

To my work colleagues, Hildegard Günther (✝), Dr Rose Ehemann (Team leader), Hans Peter Hug (former Head), Loretta Giacopuzzi, (Head) Beatrice Abbühl, Sonja Heiz, Stefan Gort, Ivana Lakic and Stefan Resch at the Psychiatry St. Gallen Nord for support and patience over the years.

Thank you to Casimir Eigensatz Foundation (Luzern, CH) and Solanum-Foundation (Luzern, CH) for financial support in 2017-18.

Particular thanks also to: Christoph Cramer, Irene Hediger, Gualtiero Guslandi, Birgit Matter, Laura Carmona Ayuso and Stefan Wickihalter; for incredible support in different ways at essential moments – I won’t forget.

A big thank you to all my wonderful friends, family and loved ones – you know who you are.
AUTHOR’S DECLARATION

At no time during the registration for the degree of Doctor of Philosophy has the author been registered for any other University award without prior agreement of the Doctoral College Quality Sub-Committee.

Work submitted for this research degree at the University of Plymouth has not formed part of any other degree either at the University of Plymouth or at another establishment.

Relevant art and science seminars and conferences were regularly attended at which work was often presented; external institutions were visited for consultation purposes and several papers prepared for publication.

PRESENTATION OF OTHER FORMS OF CREATIVE WORK DURING THE RESEARCH PERIOD:

ARTIST TALKS/ PRESENTATION OF RESEARCH

2018 When Art and Science Meet, 100 Ways of Thinking, Kunsthalle Zürich
2017 Practice as Artistic Attitude, Modul Kunst (BA Art Education), Zürcher Hochschule der Künste ZHdK
2016 Eyes at the Back of the Head: An Artist’s Research of Immersion into the Body of the Avatar, Models of Diversity Conference, Zürcher Hochschule der Künste ZHdK & ETH Zurich
2014 Video Ergo Sum. Self-Representations in Art, Leonardo Art Science (LASER event) New York USA
2013 How Close Can We Get?, Podium 1 – Vision and Perception (Ways of Seeing), Conference Thinking out of the box, Kulturama, Zürich
2011 Self-Portraiture, Consciousness and the Brain, Symposium Always Already Now, Deep Involvement of Education 2011, at NABA (The New Academy of Fine Arts), Milan ITA
2011 Self-Portraits, Consciousness and the Brain, public event of Think Art Act Science exhibition at San Francisco Art Institute USA
2011 Artist in her Studio (Art Research), Symposium Embodiment and Self-Perception as Conditions, Bibliothek Werner Oechslin, Einsiedeln
2010 The Artist in the Studio, Laboratory of Cognitive Neuroscience EPFL Lausanne

PUBLICATIONS

LIST OF CREATIVE PRACTICE ELEMENTS ON USB STICK

All video artworks also available as links to my Vimeo channel (nicole ottiger) – link code for access is provided in the chapters they are discussed. Some videos are available at http://nicoleottiger.ch

Video Works (V) and Documentaries (D): arranged in sequence discussed in Thesis

Chapter 1
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Chapter 2
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CH2_2_2002_squint_book_Flip.mov (V)

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WORD COUNT OF MAIN BODY OF THESIS: 51'020

Signed: Nicole Ottiger

Dated: 28.12.2020
DEDICATION

This PhD is dedicated to roots of life, and family, especially Nelly (Ellen) Dorothy Eke-Schofield (16.10.1920 — 21.04.2006, England) and Mathilde Ottiger-Suter (01.08.1913 — 11.05.1970, Switzerland), my grandmothers.

“I've learned that people will forget what you said, people will forget what you did, but people will never forget how you made them feel” (Maya Angelou)
ABSTRACT

This practice-based PhD thesis offers a deep exploration of representing the self, through the critical examination of three examples of my experimental studies; titled Video Ergo Sum (2010-11), From Perception of Art to Art Making (2010-11) and Feeling of a Presence (2015), and artworks produced in connection; Visual Space has No Owner (2015), Shooting Stars (2015-17) and What constitutes the Self (2018). The written thesis includes an appendix, which details other experiments and artworks that were part of the process.

This research is on one side informed by my experiences as an artist-in-lab in the Laboratory of Cognitive Neuroscience (LNCO), at the Brain Mind Institute (BMI), EPFL Lausanne (Swiss Federal Institute of Technology Lausanne), where brain mechanisms of body perception, body awareness and self-consciousness are being targeted and researched. On the other side, my method of art practice and artworks that reflect my thinking about the phenomena of the self and what the self represents today are presented in this thesis. When rendering a self-portrait — an intimate representation of the own personal self — persistent questions include: What is the self? What is I/me? What is conscious? How can self-consciousness be portrayed? What is the body in space? It is no longer appropriate to concentrate on the traditional definition of self-portraiture. I use technology to further my perspectives on the ‘self’.

This research documents my findings: With the word selfie — a new terminology since the existence of smartphones — we are confronted with a new phenomenon which controversially is linked to decay, decadence as well as live communication and a representing of the ‘here’ in situated space. I created a personal, subjective evidence of studying the ‘self’ from an artistic position, which I linked with theory (from neuroscience, psychology and philosophy) and contemporary art, and discussed in comparison with the challenge of how to represent/depict my own self as imagery in art. Though self-portraiture is not a new genre in art — the question is whether in every movement, and in today’s posthumanism era, the representation of the self needs to be re-positioned? The examples discussed in the thesis present an interrogation of how technology: digitality and virtuality influenced the artist’s perspective and thinking about what the ‘self’ constitutes, or not (unfeeling to be). The relationship between the artist and material/digitality, — as forms of material reality is visible in the documentation and reflection of the three experimental studies and also seen, visibly in the ‘shift’ of materiality chosen in the subsequent artworks created.
I faced issues of one’s own powerlessness because art, unlike scientific laboratory experiments, cannot be verified, and thus phenomenologically investigated how the artist uses intuition and sense impressions. The research documents and confirms that I have developed and used a strategy of *The Becoming of Unbecoming* — based on theories of Deleuze and Bergson, put forward by Grosz (2005). In my art creating processes, there were specific moments or durations where a difference, a form of knowledge emerged or actualized, whereby I felt stripped of a certainty of ‘self’, but also opening up other possibilities of sense of self.

This thesis argues that the artist as subject, predominantly using the technique of drawing as a recording tool and intelligence of seeing, and object (human body and mind, perceiving, experiencing and feeling sensations within specific constraints) in experiments made in the neuroscientific lab, as well as artworks created in the studio within the time-frame of this research (2010-2018) is a practice and method of critical thinking, drawing from methods of slow philosophy (Boulous Walker 2017) and forms of uncognitive knowledge and unthought, the power of cognitive nonconscious (Hayles 2017) in the production of research, demonstrating a knowledge linked to the precarious visualities of contemporary art and visual culture.

This thesis shows and reflects on ‘type(s) of knowledge’ acquired in art-based, experimental research at the interface of art and neuroscience, and artworks made within the process. I argue that a richness of inherent knowledge comes from using art as visual methodology, in which new artistic subjectivities come about, derived from shifts in the sense of self – in the re-localisations and re-positioning of the self and perception thereof. Changed perspectives are always possible. The research results directly inform practice and contribute to the debates on interdisciplinary ‘thinking’ in art, art-science collaboration and add new potentials for neuro-aesthetics. I raise awareness for the interconnected, changing relations between perception and self-representation, and evolving ways of thinking/showing knowledge in art.
# Interrogating Self-Representation at the Intersection of Visual Arts and Neuroscience

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Image (5-14) What constitutes the Self X, 2019, Nicole Ottiger

Image (5-15) What constitutes the Self XV, 2019, Nicole Ottiger

Image (5-16) Towards Anti Portraiture, 2019, Nicole Ottiger (Videostill)

Image (5-17) Voice Notes I for Towards Anti Portraiture
1 INTRODUCTION

“I am out with lanterns, looking for myself” (Emily Dickinson)

1.1 Background

Discovering an image of myself (at 9 weeks old) with my two grandmothers, in a cupboard amongst many unsorted images of the past, was a profound encounter with a photographic self-representation (image 1-1). I remember, actively, repeatedly looking at the photograph many times over the years, always tucking it away again – and now almost 40 years later, this image comes to mind yet again – for when seeing one’s self and looking at/for one’s self in the world, we often search whilst reading materiality for an identification with truth (cf. Benjamin 1999, Gelley 1999) and stumble into the eyes of ancestors. The writer, artist and art critic John Berger (1972: front cover) specified:

“Seeing comes before words. The child looks and recognises before it can speak. But there is also another sense in which seeing comes before words. It is seeing which establishes our place in the surrounding world; we explain that world with words, but words can never undo the fact that we are surrounded by it. The relation between what we see and what we know is never settled”.

I had grown up knowing the one grandmother (Nelly) very well, but not the other. The photo (Image 1-1) shows both grandmothers sitting side by side (my English ‘Nanny Nelly’ on the left and Swiss Granny ‘Mathilde’ to the right, from the viewpoint ‘looking’ at the photo), and me as a baby in the arms of the unknown – the already deceased Mathilde by the time I had the photo in my hands – but surprisingly the photo gave me a ground beneath my feet – roots. Looking at the photo then discovered as a child of eight or nine, I felt an unexplainable ‘live’ connection to Mathilde, though that photo depicts the only time she and I ever saw each other. Such a connection, derived by a visual means, can’t always be explained, and yet, the connection I felt, does confirm, for me, Barthes’ theory (1981) that a presence (a magical element), something that I did not seek — the photographic ‘punctum’ — does have the ability to prick/touch my psyche (cf. Orcutt 2015). With this example I attempt to pinpoint an issue that runs repeatedly through this thesis: we humans constantly interpret what we see, and are often faced with the reoccurring question: but what do we really understand of what we see? For me, the connection I felt on seeing the photographic material affected me strongly – it was not a mere ‘liking’ or studium (cf. Barthes 1981) but visual material that made me think hard about “Who am I? What roots am I made of?”. Also, “Who is Mathilde? What was she like?” The uncanniness of having both grandmothers, the unknown element – the dead grandmother as well as the then familiar alive Nanny Nelly in my presence was subversive for
it triggered a deep desire in me to ‘know’ more — it triggered my fantasy and motive to find out more about viewpoints of reality that my ‘self’ is connected to (cf. Barthes 1981).

1-1. My Grandmothers and I, Hellbühl (Switzerland), 1969

1.2 Thesis Structure

In this research I map out a personal research journey and undertaking to understand what “self-representation” in contemporary art entails, looking at how I represent the ‘self’ in my art – through the critical examination of my experiences and three experimental studies in
context as an artist-in-lab, in the Laboratory of Cognitive Neuroscience (LNCO), at the Brain Mind Institute (BMI), EPFL Lausanne (Swiss Federal Institute of Technology Lausanne), whilst keeping my eyes and mind open to a fundamental question (of mine) of what it means to be a contemporary artist portraying ‘self’ images/artworks today. Art today is no longer just artistic form, but very quickly a social, academic and political statement too. Though as a practicing artist of visual arts I often want to avoid a ‘complete’ in-depth socio-cultural-environmental contextualizing of my artworks as such, because visual language has its own meaning and relation between being and event that cannot necessarily be articulated or uttered as speech (cf. Mersch 2015), I am keen to analyse such processes involved in my artistic practice today in a (post-)digital world, which often means using some form of technology, and to position my self-representation artworks in this respect. The result is this practice-based PhD thesis, which offers an examination of three of my artworks — Visual Space has No Owner (2015), Shooting Stars (2015-17) and What constitutes the Self (2018) in connection to my experimental studies; titled Video Ergo Sum (2010-11), From Perception of Art to Art Making (2010-11) and Feeling of a Presence (2015) — that the reader will encounter in chapters 3 to 5. The written thesis includes an extended appendix, which details other experiments and artworks that were a relevant part of the process.

Throughout this thesis, I have structured my art practice and research study pursuant to (1) to the relationship between the artist and materiality/technology and my thinking about the what the ‘self’ constitutes (sense of self) or not (unfeeling to be/non self), (2) what my artistic strategy in scientific collaboration is, and related issues of powerlessness, in part to the non-verification of my experimental acts, but also to the forms of knowledge that (my) art processes produce. I investigate the power of cognitive unconscious in the production of research, specifically looking to demonstrate types of knowledge linked to the precarious visuality of contemporary art and visual culture.

As already mentioned, I am concerned with a series of experiments and artworks – artistic research — undertaken at the intersection of visual arts and neuroscience. This journey began within a 9-month artist-in-labs residency grant (provided by Zurich University of the Arts and Swiss Federal Office for Culture) at the Laboratory of Cognitive Neuroscience (hereafter LNCO), Brain Mind Institute (BMI), École Polytechnique Fédérale de Lausanne (EPFL)

1 [http://www.artistsinlabs.ch/residency_programs](http://www.artistsinlabs.ch/residency_programs)
2 Artist-in-Labs documentary of my residency can be seen at: [https://vimeo.com/331879241/04dde20172](https://vimeo.com/331879241/04dde20172)
3 [https://lnco.epfl.ch/](https://lnco.epfl.ch/) , [https://sv.epfl.ch/BMI-home](https://sv.epfl.ch/BMI-home)
4 [https://lnco.epfl.ch/](https://lnco.epfl.ch/)
Lausanne in 2010, where collaboration continued until the last experiment was conducted in 2015. I also mention and discuss some artworks that are not related to the research conducted in the lab but which have to do with self-portraiture and are relevant in my process as an artist, and development in understanding the ‘self’ concept and ‘form of knowledge’ that my art generates (cf. Daichendt 2012). A revised form of knowledge becomes evident in my later artworks.

In this Chapter 1, I formulate my research questions and aims, position and contextualize my - the artist’s - methodology. At the end of the chapter I state the intended contribution to knowledge.

Chapter 2 outlines a literature review of the selfie phenomenon, and discourse on predominantly existing contemporary art research on self-representation and how this informed and compares to my research work. Some related neuroscientific, psychological and philosophical research aspects will be discussed accordingly.

The following three chapters outline my three strands of experimental studies, each interconnected to my core question what the self is and constitutes. Each experimental strand helped me gain further perspectives and understanding of the self, and informed my artistic practice.

Chapter 3 describes and evaluates the 1st set of experimental studies: From Perception of Art to Art Making, and resulting artworks Shooting Stars. Here the focus is on how we (the self) perceive(s) and how art may be used as a tool to understand more about perception and how our ‘seeing’ functions.

Chapter 4 recounts and takes measure of the 2nd set of experimental studies: Video Ergo Sum, along with the artwork produced Visual Space has No Owner. This chapter addresses the concept of ‘minimal phenomenal selfhood’, which is defined as the most elementary form of self-consciousness that experience having a body and location in space and time (cf. Blanke & Metzinger 2009), by using an experimental set-up that neuroscientists (Lenggenhager et al 2007) created to test manipulated body illusion, and describes my attempt to represent my ‘self’ in this set-up, through art.

Chapter 5 homes in on the 3rd, and last set of experimental studies: Feeling of a Presence and reviews the latest, most recent artworks What Constitutes the Self. In this experimental
sequence I was confronted with robotic ‘touch’ (digital finger) linked to computer interface that could adjust the feeling (pressure of touch as well as ‘when’) whilst being applied to my body (the back). My artistic practice went through a series of changes after this experiment – I review my artwork in this light.

Chapter 6 explains how this research contributes new, current knowledge and practice at the intersection of visual art and neuroscience in addition to my own conclusions and thoughts relating to the research process. It includes my conclusions to the research questions presented and how this research on artistic self-representation today can contribute to future research ideas in perception, neuroaesthetics and art.

1.3 Aims, Objectives and Research Questions

In shaping this study, my research questions went through a series of changes and development. Originally I had two central questions:

(i) Why do artists make self-portraits and what makes them so particular?
(ii) How might visual art intervene or be used as a tool in the neuro-aesthetic debate regarding art perception in neuroscience?

These questions changed and were modified the more I became aware of the nature of neuroscientific research in the LNCO, and that my preferred aim and role is that of an artist, not a scientist. I realized that my questions always came back to more fundamental questions and issues within my artistic practice: How can I portray the self? Do I need to use my own ‘self’ to make a self-representation? What is the self? How are other artists making self-portraits? What are current self-representations in contemporary art looking like? Should I be concerned with feminism as a female artist, though many of my role models were/are male artists? I also was very occupied with materiality and use of technology, with actual making/creating of artworks – with the tension that goes with it — Will I succeed or fail to produce? And I found I was less concerned about creating tools for visual perception studies in neuroscience. I wanted to create new artworks that have meaning and are self-representations. I also concerned with how to achieve contemporaneity in my own artworks – in doing so I refer to the philosopher Peter Osborne’s (2013, 2018) concept of contemporary art, understanding that material is not limited to traditional media but is more a movement or controversial interplay between the artworks’ actual and virtual dimensions that arise from its’ contextual and time-situated relations. The question of contemporaneity in contemporary
art is also “the question of the new – and its constant reforming, reframing and reconfiguration of ... meaning” (Osborne 2013: 195).

My overall aim therefore was to explore and contribute to the changing relations of sense of self through a deep exploration of representing the self in art. I intended to demonstrate changes in my concept of self through (1) the influence of technology (both as a tool and as a form of social embodiment), and (2) by showing how the ‘self’ then manifests in artworks/as artworks. Bearing in mind that all existing concepts of self are highly complex – in accordance with Ionta, et al (2011: 1), it is acknowledged that:

“some of the most important brain systems of humans are dedicated to the maintenance of the balance between the self and the external environment, by processing and integrating many different bodily sensory inputs (visual, auditory, vestibular, somatosensory, motor, visceral, etc.), and providing an online representation of the body in the world (Damasio 1999, Gallagher 2005, Jeannerod 2006, Blanke & Metzinger 2009)”.

I discuss ‘technology’ more fully later in section 1.4.2.1 for while technology was once seen as the development and use of all kinds of tools from clothing to machines, communication and transport devices (cf. Bain 1937), this definition has since developed and extended steadily to include theories and philosophies about how society and culture shape and advance technological innovation and reconfiguration. It is recognised that cultures and technology interact and affect each other (cf. Feenberg 2011). In this correlation, with the human nature’s ability to adapt to contemporary technology, and develop technoscientific knowledge, it becomes essential to also discuss the term and concept ‘posthumanism’, because this term is wound around concepts of human nature that constantly adapt to contemporary technoscientific knowledge. I will situate the concept of posthumanism in relation to my aim to contribute to advances in my concept of sense of self. I therefore examine posthumanism in section 1.4.2.

I aspire to gain a deeper understanding for my artistic process(es), including the confrontation with my own powerlessness as a researcher doing experiments, and being a test subject in such, that can’t be objectively, quantitatively verified. I aimed at looking for those ‘yet unknown’ aspects that stand out (such as aspects of seeing, function of thinking and tactile/tangible physical feeling), and discuss the strategies I developed (such as The Becoming of Uncoming, a theory put forward by Grosz, 2005) or rejected in the process of coming to forms of unthought (Hayles 2017) and uncognitive knowledge.
I put forward the idea that artistic research at the intersection of visual arts and neuroscience is a chance to gain new knowledge and insight to what might be fragile, deep, and exact shifts in meaning of self-representations today. It may also be way to gain a glimpse as to why representing the self (even as selfies) still is very much relevant for humans. Artistic research on self-portrayal is an exploratory method, one I would like to argue can join the discussion in becoming aware of the changing aspects of ‘what the self is’ today (and of how we are representing the self), and may be an agent in grasping our situation – a posthuman, hypocrisy (cf. Morton 2013), and engineered Anthropocene age (cf. Demos 2017). Art might somehow reveal, and point to what it is we are dealing with in this new age. According to the philosopher Timothy Morton (2013:174) we are hurling towards an age of asymmetry where art acts as a tuning to (hyper\(^5\)) objects. He suggests: “art becomes a collaboration between humans and nonhumans, or as Negarestani puts it, “complicity with anonymous material”.

My objectives thus were:

- To acquire a deepened understanding of the fundamental processes involved when the artist is: (a) the subject, using predominantly the technique of (1) drawing onto paper and canvas and (2) technology (predominantly using video and virtual reality, but also robotic limb sensation) as recording tools and acute intelligence of seeing, as well as being (b) the object (bodily self and mind) that is concentrated and immersed in experiencing – feeling sensations and perceiving information, within specific experimental conditions devised in LNCO as well as in my studio – this is/can be emotional, yet requires profound layers of consciousness and unconsciousness, in order to aesthetically discharge and create uncensored images (from the perception of the outside self/body/world, as well as inward intuitive understanding of my ‘self’ and bodily consciousness).

- To create (and map) my personal, subjective awareness of ‘self’ within in my art practice, which I link to neuroscientific, philosophical and psychoanalytical theory, critical thought and art aspects. Self-portraiture is not a new genre in art, but the question is, whether in this present (posthuman) era the representation of the self needs to be re-positioned? I aspire to make a note of, record, and analyse how technology (digitality and virtuality) influenced me in bodily sense, as well as in my consciousness, and my thinking – it is causing a shift in how I create my art. This is methodology in art. I attempt a visual language method – drawing is thinking in action.

\(^5\) Morton (cf. 2013) describes hyperobjects as viscous, (they stick, they are closer to us, and surround us more than we realize] and paradoxically nonlocal (blurred, not always transparent) and atemporal — hyperobjects operate with locality and time in a more abstract way or with such gigantic dimensions, that we don’t have the know how to measure these yet.
Experimentation is thinking in action. Even making self-portraits using digital photo and video technology (also see Chapters 3-5) are forms of thinking in action.

My key research question is:

(i) **What is the self?** Within and around this question, the following question surfaced: Are there meaningful differences between the terms self-portrait, selfie and self-representation, in visual arts? At each stage of my research I queried and asked myself: what artworks do I consider to be meaningful self-representations? Where is localization of subjectivity within my artworks? *What does representing the self in art today want to accomplish?* Can artistic practice still inform about concept of self? This is the vital subject and field of my study.

My research process included the following questions:

(ii) **How do I represent the self?** This question focuses on what tool(s) and method(s) is artistic practise in the context of representing the self. Whilst making artworks, the question of how the artist utilizes ‘seeing’ emerged as another important question. I also observe how/if the artist (and my art) utilizes neuroscientific knowledge and methodologies to explore the self and bodily consciousness. I will be analysing the relationship of self-representation and materiality. The aim is to situate the status of what the self is from a very personal artistic practice and put it in context of today.

My questions are not limited only to the abovementioned, for I also interrogate the influences and sense of powerlessness, decisions and experiences that contributed to a particular artwork being made. In this research process, the American Art Critic/Art Historian G. James Daichendt’s (cf. 2012) words that ‘art’s questions can never assume an answer’ were useful as a reminder and as a support that artistic research risks living with the idea and possibility of ‘never arriving at a specific destination’. For me, this *uncertainty* is very much a part of the contextual understanding and conditional vocabulary of what art research is and includes. This issue and the implications of ‘unknowing’ are addressed throughout the thesis where appropriate.
1.4 Methodological Framework

My research began with an interweaving of theory and practice: on one side I started the (re-)search for the relations between artists (contemporary and historically) doing self-representations and materiality as well as connections to neuroscience, psychology and philosophy — this is a concise comparative literature review, to identify and compare relevant projects within art and neuroscience; most examples coming from within art (see Chapter 2). On the other side I continued what the artist knows and does best: learning by doing myself in arts practice (see Chapters 3-5). I applied my artistic practice as a method of phenomenological enquiry, as a form of knowledge and knowledge of doing. (cf. Daichendt 2012).

Phenomenology is a qualitative approach to psychological subject matter, based on writings of the philosopher Karl Marx, Edmund Husserl, and the philosopher Maurice Merleau-Ponty, philosopher Martin Heidegger and the writer and philosopher Jean-Paul Sartre (see also Gallagher & Zahavi 2012, Zahavi 2019). This approach has two methods, (1) the descriptive and interpretive approach developed by the psychologist Amedeo Giorgi (2009) in the 1970s, whereby a same situation is described and interpreted from two different levels of discourse. And (2) the experimental approach associated with the biologist, philosopher and neuroscientist Franscisco Varela (et al 2016), and philosopher Shaun Gallagher (2012) amongst others who focused research on embodied cognition and intersubjectivity. I use both these participatory approaches (descriptive and experimental) in my endeavours, (1) to find the defining characteristics of the ‘self’ (including bodily self / virtual self and bodily consciousness) in the genre of self-portraiture, and (2) to advance understanding of art, and drawing as an intelligence of seeing, as well as materiality as forms of knowledge (of/in art).

In relation to guiding biological research, the psychiatrist Josef Parnas and philosopher Dan Zahavi (cf. 2002: 137) endorsed the strategy of ‘phenomenology’ by stating that their quest is a search for a faithful description of experience. They posit that this methodology must be considered as a necessary first step in any psychological classification, as well as the attempts to reduce abnormal experience to its potentially biological substrate. While it may be clear that the human brain is linked to both the presence of propositional attitudes and psychopathology (Broome, 2006), I want make sense of the potential of ‘art’ as a subjective practice yet also as a kind of objective tool within art practice (as well as in any future collaboration with scientists). This may add new value to interdisciplinary potentials because as the psychiatrist John Sadler (2002:7) states that values can be defined as concepts that
‘tend to direct action’ and ‘are subject to praise or blame in reference to such actions’. In agreement the philosopher John McDowell (1996, 1998) suggests, the only kind of knowledge we can have is perspectival and local.

My claim is that theoretical investigations and practice processes both question and interact with each other, and therefore in my research both theory and art practice are constantly being applied to the main questions: What constitutes the self? And, How to represent the sense of self as art? I anticipate that my research will also be of relevance for psychologists and cognitive neuroscientists as well as artists and interdisciplinary researchers engaging themselves in art and science at the same time. I designed and carried out phenomenological, and experimental research within visual art. I therefore employed strategies of observing/seeing as a means to create/produce the ineffable. In doing so, within the embodied, visual research of my artistic practice I generate new data and explore new interpretation of representing the self and bodily self. With the artworks (within materiality of drawing, video, sculpture and performance/sound art) I display different perspectives of/on reality of what the self is. I reflect on values and prejudices of interdisciplinary methods (in my case, the use of neuroscientific methodology). With my writing of this research, I consider this to be an important act of reflecting on the new emerged knowledge (from my subjective experiences, and from the visual, aesthetic representations, and quality of the artworks) and acknowledge that the process of ‘putting new knowledge into words’ makes new unthought and cognitive unconsciousness more visible. The writing also has the function to present my findings, to distinguish what is new, and make visible to others.

My methodology framework revolves around the artist in the studio, but also in the laboratory, being both ‘the subject’, that researches, and ‘the object’ that is being researched on. In this context a number of significant themes such as artist and site of research (studio space), artist as investigator and investigated, material reality, objects of thinking, i.e., are discussed in more detail in the following section (1.4). I outline the methodological focuses (themes), issues and open questions I had at the time, which is an on-going process. I illustrate that the method framework is intertwined, dirty (in the sense not always transparent but intuitively hanging in there) and complex.
1.4.1 Remapping the Artist’s Studio

Considering that methodology refers to the systematic, theoretical and comparative analysis of methods (cf. Friedman 2002, Borgdorff 2006) I contextualize and (re)map my research through consideration of significant methods that reflect how the self is being approached and portrayed in art. In art practice these methods are very much related to the tools/instruments of art mediums and materiality/digitality being used6. I therefore articulate my own artist position in relation to the examples of other artists’ artworks about the self that are shown and discussed in Chapter 2.

I regard methodology as theoretical underpinning for understanding which method, set of methods or so called ‘best practices’ can be applied. The ‘tracking’ of my practice-led research through my experimental practice and artwork(s) process (including my research diary, lab lecture notes and participation observation where applicable) enabled my own theoretical premise to emerge, which is largely (but not only) embodied in the artwork. The artwork then bears the burden of research proof (cf. MacLeod & Holdridge 2005); artwork does this through ‘the enactment of thinking’ (Macleod & Holdridge 2005: 206), and as the artist Marcel Duchamp (1912) theorized as ‘the gesture of the artist’. Duchamp had renounced painting in 1912/3, rejecting what he termed the ‘retinal’, intending only to please the eye. Duchamp wanted to put painting back in the service of the mind (cf. Cabanne 1979: 42-43). In other words, he wanted to use art to serve the mind. Through his completion of ‘readymades’7, Duchamp provoked the beginning of ‘appropriation’, the deliberate use of something already in existence, by altering it slightly and presenting it as art, as for example the bicycle wheel (image 1-2). Thus art made by the gesture of the artist marked a radical new way of thinking about art practice, a logic that however subversively remains within the domain of the visual. What I take from this concept is the usefulness that practice can recontextualize whatever it borrows to create new work. In most cases the original ‘thing’ remains accessible as the original, without change. What fascinates me more than appropriation in our digital age seen in reproductions, reconstructions and remixes of all kinds that are being produced by artists and existing as artworks (i.a. works of Cindy Sherman, Gerhard Richter, John Baldessari, Elaine Sturtevant, Thomas Ruff, Pierre Huyghe to name a few artists) was learning about Duchamp’s desire to change and his unwillingness to repeat himself (cf. Nelson 1958, Interview with

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6 See Chapter 2 for a more in depth comparison and analysis of self-representation in art; focused on which medium was used to articulate sense of self, also aspects of the neuroscientific sense of minimal-self that I am concerned with in my own research.

7 A readymade is an ordinary manufactured object that the artist Marcel Duchamp selected and modified, as an antidote to what he called "retinal art" (Tomkins 1996: 158).
Duchamp). In this sense an anti-appropriation interests me to achieve non-repetitiveness in my artworks. Also, Duchamp was critical in attitude and approach to what art is or could be (cf. Bocola 1987). According to Duchamp, meaning is not inherent in the world of appearances. The writer and artist Sandro Bocola (1987) suggests that Duchamp identified with the unknown: that for Duchamp the ultimate reality is not a force and not a law to be discovered behind or under the appearances, but has its’ seat in man himself. Bocola (1987: 44, my transl.) argues that Duchamp leaves us with the new question about an absence, a negative: "How can the unknown be integrated into our worldview and thus be experienced as meaningful?" I ask myself a similar question, for the concept of what the self constitutes is still very insecure.

1-2 Duchamp’s Studio, 1916-17, with the 2nd version of Duchamp’s first known readymade, the Bicycle Wheel

Within my art practice in researching ideas around the studio, I felt the need to ‘remap the territory’ of the artist’s studio. What parameters are required for a studio to be more than a space? Has this self-defined-studio space changed with technology? I use technology, specifically virtual reality (hereafter VR) as a tool as well as a method in my art practice, and so how does space change in virtual reality? Does being within virtual reality extend space? How does the body function within a virtual reality space? How does identity, as a self,

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8 There is no existing image of Duchamp’s 1st version of 1913
function in conjunction with a VR-space? What orientates the body in VR? How does the body orientate in VR in order not to become lost? We humans have five traditional senses (vision, hearing, smell, taste, touch), plus sense of balance, and intuition, and other extensions of bodily (un-)consciousness. As an artist, with experience of observing and working with my own body and my senses in VR, a loss of orientation can become a desire that the artist would like to achieve, because, as with any manipulation or temporary loss of some senses, the body and mind often then has to learn how to perceive renew – such moments are when discoveries about the nature of the self can be made. A loss of orientation can however also be scary, because a sensory loss of perception and balance can affect where one might perceive the border of the body (and mind) to be. Where does rationality, sense (perception) and sensation of the self (both body and mind) conflict? Can such conflicts be portrayed in art? I attempt to give feedback and reflections on my experiences to such thoughts and questions where appropriate in the course of my three experimental studies and related processes of making artworks in Chapters 3 to 5.

In my pondering about what space is in VR, I am reminded that the philosopher Michel Foucault proposed new ways of thinking about spaces (particularly contemporary urban spaces then) and the relations and implications of such spaces to human behaviour. Foucault (1967/1984:2) pointed to the possibility that despite all the techniques for appropriating space, despite the whole networks of knowledge that enables us to delimit or formalise it, contemporary space is still not entirely ‘de-sanctified’. We live in the space of our primary perception, in the space of our dreams, in light, transparent space, as well as dark, closed-in space. We also live with the space from above, below, and in fluid, solid space, though fundamentally for reflexion and thinking about space in our time, space often remains an ‘internal’ space (cf. ibid). According to Foucault (1967/1984) the external space is the space that draws us out of ourselves. We don’t live in a void, and there are spaces that have: “a curious property of being in relation with all the other sites, but in such a way as to suspect, neutralize or invert the set of relations that they happen to designate, mirror or reflect” (Foucault 1967/1984 3).

Foucault differentiated 2 types of such spaces: (1) Utopias — which are sites with no real place; a fundamental unreal space, and (2) Heterotopia — this is a real place, but also a counter-site. Foucault suggested these heterotopia places are ‘outside of all places, even though it may be possible to indicate their location in reality’ (Foucault 1967/1984: 3-4). I discuss VR further in section 1.4.2.1 about technology and I analyse my attempts to locate myself within a virtual reality space in Chapter 4. I also discuss Foucault’s idea of an unreal
space again in the concluding remarks of Chapter 4 as the particular experimental study documented and discussed there deals with a real shift of space to an unreal one.

1.4.1.1 Post-Interdisciplinary Turn

Questioning and reflecting my art practice is a way I inform and educate myself. Instigated to examine the experiences I made, in (1) as the subject-object in the experimental studies I created, and (2) through the process of producing artworks, as the ‘artist in the laboratory’, I am embedded within an art-science landscape. Art-science research is interdisciplinary — I don’t regard this type of research as a manifestation of ‘culture in its totality’ (cf. Foucault 1972), nor as an “indicator of a generalized transformation in science and society” (Barry & Born 2013: 5) but more as “a particular configuration of programmatic statements, interventions and practices” (Foucault 1972, in Barry / Born 2013: 5). Interdisciplinarity is also an elusive, non-unified concept (cf. Klein & Newell 1997, Barry & Born 2013). The term interdisciplinarity is also fraught with anxiety, as science is still regarded as a favoured field where experiments take place with a methodology whereby we actually can learn about the world (cf. Gere & Gardiner 2010). But, also science, especially neuroscience is still very much bound to a materialistic view of the brain and that the brain creates the self and consciousness (cf. Ascott 2015, see also section 1.1.2 on the self, pp. 17-22), which makes artistic research much more able to imagine alternative realities of the self and construct them.

Interdisciplinary inquiry does however offer “tools of critical thinking, insight, creative problem solving and collaboration” (Condee 2016: 20). According to Professor of Theater and Director of School of Interdisciplinary Arts at Ohio University William Condee, critical interdisciplinarity strives at creating and fostering new clusters of knowledge by crossing over boundaries, disrupting known structures, seeking non-linear, unstructured problems, deconstructing, restructuring and forming new clusters (cf. ibid.). My approach is on a first level interdisciplinary – I develop insights into what I do and produce in artistic practice and my modes of thinking, by informing myself in two main disciplines: Art and Neuroscience. I aim at integrating new ‘useful’ knowledge from these two disciplines, in accord with Boix-Mansilla & Duraisingh (2007:219) to “produce a cognitive advancement — such as explaining a phenomenon, solving a problem or creating a product — in ways that would have been impossible or unlikely through single disciplinary means”.
I regard my method as a critical interdisciplinary one. Barthes (1977) pointed out that critical interdisciplinarity is ‘not the calm of an easy security’, because the seeking new ways of knowing, and drawing on many references and texts (both consciously and unconsciously) can easily result in multiple possible meanings, and the risk of not being able to see the wood for the trees (cf. Barthes 1977, Condee 2016). But risk is healthy and the uncertainty of life, even of work and ideas is common ground and a familiar risk for artists, as also Ascott (2015: 22) sums it: “All art is risk; all life even more so. We live in an entirely contingent universe, marked throughout by uncertainty”. Ascott argues that artists may “provide a bridge between the biophotonic information networks of our bodies and the telecommunication networks of our technological world” (2015:23).

I recognise I am **on a second level working within a transdisciplinary, moistmedia⁹ framework**, where I can deploy diverse but also marginalized perspectives at a number of levels, spatially and temporally (cf. Darian-Smith & McCarty 2017, Ascott 2019). Transdisciplinarity aims at going beyond the boundaries of disciplines, to impart new ways of establishing, correlating and interpreting knowledge and modes of thinking (cf. Blassnigg & Punt 2013, Darian-Smith & McCarty 2017). My field of practice is *technoetic* – Ascott defines this practice as convergent, and explores:

“consciousness and connectivity through digital, telematic, chemical or spiritual means, embracing both interactive and psychoactive technologies, and the creative use of moistmedia” (2015: 17).

*On a third level, I am involved in technoetic art practice* because I explore consciousness of the self and body, using immersive technology (virtual reality and video playback, i.a.) to interactively explore, in an intimate way, the behaviour of mind, body and connectivity with materiality and digitalism. I argue this third level of practice is post-interdisciplinary, for the new knowledge is a transformation of image, form and new consciousness, through which the emergence of new personal self-representations derives, with value and meaning (cf. Ascott’s 2015:19; principles of the technoetic arts).

### 1.4.1.2 Art as Research

I very much refine and continue my methodology in using ‘art as research’ and ‘art practice as research’. Art is also a product of time and place (Leavy 2009, Hawkins 2014). The artist is also the embodied performer/player situated within a social context (cf. Leavy 2009: 216.).

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⁹ Moistmedia is a term coined by Roy Ascott, and “emerges from the confluence of (silicon) dry computational systems and wet biological processes to produce a new substrate for creative work, consisting of bits, atoms, neurons and genes” (Ascott 2015: 16).
Therefore, art can act as a ‘barometer’ (Mills 1957) for societal change, as well as a ‘record-keeper’ and ‘communicative device’ (Warren 1993). Art transmits ‘ideology’ but also challenges, ousts and transforms notions and stereotypes (cf. Leavy 2009: 216). I situate myself clearly within visual arts — I draw, paint, as well as experiment and create visual and moving images with technology (photo/video camera, and virtual reality). The approach of visual arts research incorporates visuality (and process of visualization) as sources of data, as analytical or interpretative tools and as representational forms.

Every research approach has its specific strengths and weaknesses (Creswell, 2003). The music and aesthetics theorist Henk Borgdorff (2006) suggests we have to define when art practice counts as research, that we need to differentiate between art practice-in-itself from art practice-as-research by drafting criteria to help differentiation what the research is, involves and promises. There are always issues and doubts about whether art delivers new knowledge, and whether artistic practice research is good as traditional university research (cf. Elkins 2014). The historian Christopher Frayling (1993), inspired by Herbert Read’s (1943) ‘Education through Art text, was one of the first to distinguish between three concepts of research: (1) ‘research into art’, (2) ‘research for art’ and (3) ‘research through art’. Borgdorff uses these categories too, with a slight wording differences: (1) research ‘on the arts’ instead of into the arts, (2) research for the arts (in plural), and (3) research ‘in the arts’, instead of through the arts. I discuss these concepts in more detail below.

**Research into art/on the arts** involves reflection and interpretation from a distance between the researcher and the research object (art), according to Borgdorff (2006). This corresponds with Frayling’s (1993) categorization that such research includes historical research, aesthetic or perceptual research, and research into theoretical perspectives on art looking into social, political, cultural, ethical issues, i.a. The methods used in these research forms aim at making hypotheses and valid conclusions about art practice or object of research from a theoretical distance. Such methods are reflective and interpretative, hence Borgdorff’s suggested terminology that this research approach is an “interpretative perspective” (2004 in 2006: 6).

**Research for art/arts** is a category that Frayling (1993) found problematic and tricky. He considered it to be “the collecting of reference materials and artefacts rather than research proper” (ibid: 5). This form of research may also be regarded as more a visual or iconic communication. Borgdorff (2006) however strives for definition and suggests this research is not about objects of research but about its objectives. In other words, the emphasis is on how to gain knowledge, insights and instruments that can be employed in practices. Borgdorff
Ottinger, 2020

(ibid: 6) labelled this approach: an “instrumental perspective”, because the emphasis is on objectives such as material investigations – knowledge of something needed in the creative process or in the artwork.

**Research through art/in the arts** according to Frayling (1993) can comprise of research into materiality, and/or development work (i.e. using specific technology to do something never done before and impart the results). Or it is action research, which is a visual relay of experimental work done in the studio and contextualised through a written report. Borgdorff labels this category the most complex because it does not assume the separation of subject and object, nor between the research and art practice. Borgdorff (ibid, 6) named this an “immanent and performative perspective”. In other words, the artistic practice is a vital, central part of the research process and results in this type of research. Borgdorff suggests that this approach understands that there is no separation between theory and practice in art. What he means is:

“There are no art practices that are not saturated with experiences, histories and beliefs: and conversely there is no theoretical access to, or interpretation of, art practice that does not partially shape that practice into what it is” (ibid: 7).

In the artist-in-labs residency, I immersed and exposed myself (as subject) to neuroscientific experimental studies (detailed in Chapters 3-5); I painted, drew, took photos and made videos of experimental processes, as artworks also in themselves, all the while making field notes, sketches, reading and learning new concepts and participating in art-science discourse. I (as artist and researcher) therefore consider myself to function BOTH as interpreter and immanent performer. In accordance with Borgdorff (2006: 7), when ‘(c)oncepts and theories, experiences and understandings are interwoven with art practices (...), art is always reflexive’.

In assessing what concept my research follows, it is research through/in the arts. I am interested in examining the **relationship** between the artist and materiality/digitality (see also section 1.3.6), also the relationship between exploring the process of ‘doing’ and recording/creating imagery, also the relation between being the investigator and the investigated within an art-science framework, and in all that I am also sitting with my uncomfortable attempts to render my sense of self in the ‘site’, study (experimental situation), environment I put myself: in my aims to sense my self and my environment differently (cf. Hawkins 2018). Following Hawkins’ (ibid) observation, I agree there is productivity in such vexed, tense moments.

I make use of Borgdorff’s distinction between object, process and context (cf. 2006: 8) – I adapt and use as a tactic, as an operational methodology to keep track of what I do:
• **Object** stands for my artworks (intimate immersive performance, images, videos, recorded documentary material, texts) but also site/experimental set-up and materiality,

• **Process** is my exploring, intuitively playing/experimenting, my trials and errors, the actual making of art – a form of visuality. Process is also the gaps where time stands still, time I use become anxious, feel tensions, reflect on my unconscious and conscious reactions, read, learn, write and re-contextualize within my doing and thinking – I seek to articulate embodied knowledge through my creative process and artworks (object)

• **Context** denotes the ‘art world’, public reception, display, results (artworks and/or documentation) or response I make to outside of myself to the environment (culturally, socially and historically) about the new meanings and knowledge gained through this research. Experience (emotive) is very much part and parcel of all three roles or activities.

Whilst I recognise that my research process is not totally transparent, I am engaged in art practice as research and research through art, as methodology and practice. It is a practice that also involves temporalities of knowledge production, repetitions and differences; a *looping system forth* — which art making and research always will be (to quote Olaf Blanke in my interview with him, June 2015, see Appendix B).

1.4.1.3 Artist-as-Investigator/Investigated in the Laboratory

This thesis is constructed in two interlinked strands. One strand builds up on my initial experience and art practice as an *artist in the laboratory* for 12 months. An art residency, in accordance with Hawkins (2014: 155) *‘frames a set of questions about the artist’s relationship to a site of production’*. Indeed, the period of time allocated to engage and explore art in the context of neuroscience was for me personally a huge motivation for ‘site’; this was also a physical, regional change of place and room. The other strand draws on and is stimulated by theoretical reflection within the practice of researching about the self and how we perceive reality — this is exemplified by three experimental studies, in which were designed so that I could examine issues around bodily self, perception, and embodiment, with the aim to find out what the artist learns in the process — there will be new descriptions — the aim was to discover new aspects/perspectives and knowledge about self-representation. What if, as Cazeaux (2008) suggests, new, additional concepts fall between the two disciplines (here
between art and neuroscience? How does one define, and introduce such concepts? This could involve the method of creating/using metaphors (a Kantian model, cf. ibid.) and/or using material as metaphor or paradox, because as material and media such as virtual reality are phantoms: they do not have a precise location or reference. The term embodies a ghostly power — it refers to no reality, and is self-referential with presence everywhere, always pointed at (cf. Mersch 2006). Some of my artwork titles symbolically and metaphorically reflect my new conceptual thinking. I recognize I am still neck deep in unresolved issues — I don’t want to solve a problem, but rather reflect on artistic practice — it is a core dilemma and constant issue in art practice to know what counts as meaningful, new knowledge.

Spending time as an artist in the ‘laboratory’ situation (as opposed to my normal, typical situation of working alone in my art studio) was valuable for a number of reasons: (1) to gain a best possible objective insight to what is normally a subjective approach, (2) to create a hybrid discourse between art and science, also between academic and artistic communication, but also (3) to ‘experience’ myself, how I react in the specific neuro-experimental setup designed to disrupt bodily self-consciousness in room size architectural space and how this affects my own art making. For, and in accord with the artist Olafur Eliasson (cf. 2015), I am compelled to sense my surrounding and sense myself searching for sense. Eliasson (ibid.) wrote in his ‘Your Gravitational Now’ text about the method or technique of sensing and processing every day through awareness of his body and surroundings into felt feelings:

“I make my day by sensing it. Measuring by moving, my body is my brain. My senses are my experimental guides — they generate my innermost awareness of time while generously giving depth to my surroundings. Constantly and critically invested in the world of today, they receive, evaluate, and produce my reality. When I walk or drive through the Icelandic landscape, I sense the surroundings and sense myself searching for sense. This vast landscape is like a test site that nurtures ideas and helps me process them into felt feelings – maybe even into art. Exercising physical and perceptual means of charting out space, of becoming, is for me a way of speaking to the world. This method or ‘technique’ raises questions that might just as easily be asked at different times in different situations, removed from their art context. Depth, time, psychological and physical engagement, perception – topics abound for which the landscape welcomingly offers experimental conditions and material in Iceland and elsewhere. I continuously exchange my private being for a shared reality. I – sensorium, feelings, memories, convictions, values, thoughts, uncertainties – only am in relation to the collective”.

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10 Your Gravitational Now excerpt, 2015-06-23; [http://www.olafureliasson.net/current/page/41](http://www.olafureliasson.net/current/page/41)
I identify and relate to Eliasson’s words; I also use a method of ‘sensing’ to assess what’s happening in my reality and attempt to process my experiences into felt feelings and then into art.

Eliasson’s [The Weather Project (2003)] at the Tate Modern London, which I also experienced, illustrates well the subtle awareness of sensing. The public immersed themselves into the atmosphere of the space — they saw themselves seeing, while immersed in the light of a gigantic sun (1-3). This artwork and immersive experience is regarded as ‘a sublime landscape exposing human vulnerability’ (Albu 2016).
Being a test person demands a great deal of trust in one’s own perception or skills of observation, intuition and awareness (both inner and outer self-awareness), but also a trust in the ‘test’ circumstances or setting, that the set-up and process delivers results (benefits or insights, in this case, about the human nature of body and self). All neuroscientific experiments that were devised and ran in the lab were in accordance with the ethical standards of the Declaration of Helsinki and approved by local Ethics Committee (see Letter in Appendix A). The Declaration of Helsinki is widely regarded as the cornerstone document on human research ethics.

A risk of the ‘immersive’ approach, as the performance artist and academic Ana Vujanovic (2009) also suggests, is that the art produced might be regarded as artistic self-recording of one’s own powerlessness, because art, unlike laboratory experiments, cannot be verified as such. I am my own subject, my own lab rat, therefore my own object of study — I observe me, my self, in a test condition — this is a vulnerable place, decision and choice. Can I really be objective? Perhaps no (and maybe not so vital for the artist to remain objective as it is the subjective experience I search), and it is the test condition that is objective — the neuroscientist have specified how to use the condition. For me, there does remain a fear of not being able to sense — the risk of feeling nothing. It’s perhaps irrational but important to mention that this is a typical human fear loop (at least for me), and as Kant, also Heidegger (1962) have discussed, it is worth bearing in mind that nothingness is not nothing at all — it can be described as a gap between subject and non-subject. It was Heidegger who, in his Being and Time theory, regarded the non-subject-object (what he calls circumspection) as a form of precognitive intelligence that guides us to have an intuitive awareness that is present. In other words the human should strive to understand and form a most primordial or closest relationship with whatever we are doing in our surroundings — that means, also with our tools, equipment or technology in the world — and not to think too much, but encounter our world with a phenomenological, automatic sense of being: with a readiness-to-hand (Heidegger). Understanding can be regarded as an essential mode of being (Dasein). Understanding involves ‘becoming aware’ of the meaning of being. Heidegger (1962: 23) presupposed that Being is a universal concept, self-evident but also indefinable and also the “darkest of all” concepts. Heidegger (ibid.) presumes one inevitably goes in a circle — what

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11 Circumspection means: The “sight” of dealings, that is, the form of intelligence that guides our pretheoretical, prereflective, and mostly precognitive coping with paraphernalia and tasks (taken from the philosopher Prof. William Blattner’s Terminology http://sites.google.com/a/georgetown.edu/prof-william-blattner/heideggeriana/some-terminology-from-being-and-time

(*Paraphernalia means all the human involvement with all available equipment needed to carry out tasks and practices)
he calls ‘circular reasoning’ — “the circle in understanding belongs to the structure of meaning” (ibid.: 195). He writes (ibid.:195):

“What is decisive is not to get out of the circle but to get into it in the right way. This circle of understanding is not an orbit in which any random kind of knowledge may move; it is the expression of the existential pre-structure of Dasein itself. It is not to be reduced to the level of a vicious circle, or even of a circle which is merely tolerated. In the circle is hidden a positive possibility of the most primordial kind of knowing. To be sure, we genuinely take hold of this possibility only when, in our interpretation, we have understood that our first, last and constant task is never to allow our forehaving, foresight and foreconception to be presented to us by fancies and popular conceptions, but rather to make the scientific theories secure by working out the fore structure in terms of the things themselves”.

I discover and recognise in Heidegger’s’ words an encouragement, — that because I care and am curious about my being-in-the-world and within the experiments I try to grasp my possibilities for being and sensing what my self is, — that it is a mode of understanding that underlies and guides all methodical investigations, a hermeneutic phenomenological way of experiencing and interpreting what I sense. However I also am aware of the dangers how to translate my experiences and interpretations in words. As Wittgenstein (1964: 281) pointed out:

“The danger that lies in describing things as more simple than they really are is today often very overestimated. This danger does actually exist in the highest degree for the phenomenological investigation of sense impressions. These are always taken to be much simpler than they really are”.

Irwin (1972) noted: To be an artist is not a matter of making paintings or objects at all. What we are really dealing with is our state of consciousness and the shape of our perception’. Further, Wittgenstein, Husserl and Merleau-Ponty all make the point that: A significant impediment to the study of perceptual consciousness is our dependence on simplistic ideas about what experience is. It is also an observation being made in more recent articles where the need for a more rigorous phenomenology of experience is being felt (cf. Varela & Shear 1999, Pessoa et al 1998, Noe et al 2000). The philosopher Alva Noe (2000, 2004) suggests art can make a needed contribution to the study of perceptual consciousness, by furnishing philosophers and cognitive scientists with the opportunity to have a special kind of reflective experience. In this way then, art can be a tool for phenomenological investigation.

In the lab, I was very much aware of ‘oppositions’ between creativity and scientific evidence within this interdisciplinary collaboration. Evidence is what scientific method emphasizes — all theory must be tested against observation of the natural world, in experiments. Science is tied to a more comprehensive empirical codex, whereas art is more linked to a tactic, intuitive, inductive attainment/achievement, dependent on willingness of artist to be, in this case, in this research, to be subject and object, the investigator and investigated. I wanted that. I
found that thinking in such conditions, in neuroscientific experimental constraints and set-ups is outside conceptualization — and according to Elkins (2014: 119): “it is nonverbal, uncognized, tacit, extra-linguistic, nonconceptual”. My experimental studies and art making processes were therefore learning spaces. I realized (become aware) that I had been developing a strategy similar to that of The Becoming of Unbecoming — based on the theories of Deleuze and Bergson, out forward by Grosz (2005). The concept of The Becoming of Unbecoming is actually based on Bergson’s theory of difference. From how I interpret Bergson (1945), he defines difference as the temporal, but real immediate data of consciousness. In other words a difference is a duration (moment in time) but also a continuity of progress and diversity (multiplicity). Bergson demonstrated his concept of duration with the image of two spools (i.a.) — with a tape running through them, one spool unwinds the tape, the other winds it up. According to Bergson no two moments are identical. This means one never experiences the same again ever, no re-cognition, but rather always a difference. If we imagine the threaded spools, when one moment is added to the old moments on the spool representing the past (winding up), the next fresh, new moment occurring (unwinding from other spool) is added onto all the other ones plus the one that came immediately before. Therefore, no past nor present moment can ever be the same as the moment immediately before. So, to get back to Grosz’ exploration: if The Becoming is “the operation of self-differentiation”, then according to Grosz (ibid: 4) The Unbecoming is “the very motor of becoming”. When I continue to think of the spools, then unbecoming is the progress of unwinding a conscious duration and the becoming the process of winding up that duration. My understanding of what Grosz therefore is also saying is that this unbecoming functions as an intuition, as a method of judgement, insight and understanding, and allowing for past and present immersion of differences to be virtual (as ever-altering actuality). In my art creating processes (which is in many cases intrinsically tied up to being the test-subject in my own experimental study at the time) there were specific moments or durations where a difference, a form of knowledge emerged or actualized, whereby I felt stripped of a certainty of self, which at the same time opened up other possibilities of sense of self. I come back to this concept in chapters 3-5 where I describe my observations as a test subject and involved art making processes.

What I also discovered was a process that shows my thinking changed over time, with the effect of learning from seeing and from not-seeing (in some experiments I was having to perceive at the very edge of my eyesight). Through participating in my immersive experiments, and perception studies, my perception changed. It is no longer appropriate to concentrate on the traditional definition of self-portraiture as a depiction of a human figure, the artist, drawn, painted, photographed or sculptured by the artist him/herself. I expand on what I learnt, in
Chapters 3-5, where I describe each of the three experimental studies and resulting artworks in detail, and reflect on what new knowledge is produced in relation to the concept of self and self-representation in visual art. For me it became clear that the more I understood of what I was doing, the more quality came into the artistic practice and results (artworks) finally. What also comes out of this art-science research is my different kind of looking, a new different perspective of the self in the world and thus new resources to (re)construct the self, my self and in this sense, to remake worlds.

1.4.1.4 Experimentation: Towards the Art of Experiences

I hesitate to mention the term experience here for it is a huge field, indeed minefield and too huge for me to take on in this research — if doing art is also about making choices, then I have chosen not to analyse experience scientifically, because making or rather, living experiences (personal involvement and action) is what the artist does in practice. In my way of being creative, to make experience also requires a state of not knowing what is coming next, as well as partial knowing and preparation for specific ‘doings’. A form of blindness may be necessary in order not to get uptight or biased due to ‘too’ much scientific information — this applies to my way of being creative — it is a sensory approach — I act on what I experience, allowing the emergence of knowledge slowly. I also reflect on what experience is — that is, I turn my attention to encountering me, my ‘self’ in my world as I experience it (cf. Noe 2004). I strive for a rich description of my lived experiences. To understand creativity and the role of the artist (subject and object) and matter (materiality) I work with the notion of the self, with the question what the self is and how to represent it in art, integrating my experiences of what I am researching then as art. It is also daunting to say the least as well as fascinating to find what I will unexpectedly encounter, as experience always contains something unexpected and unidentifiable.

The historian of science Hans-Jörg Rheinberger (2013: 199) suggests that ‘experimental spirit’ is an important part of experimental structure. In other words, the interaction of the experimenter with his or her material lies at the centre. One has to be immersed and become overwhelmed with the material, otherwise there is no creative experimentation. When the material itself comes alive, the interaction can turn into a two-way exchange. Rheinberger calls this “a forming process and a process of being informed” (ibid.: 199). Rheinberger recommends the researcher to employ an inductive rather than a deductive attitude (ibid.).
he says: “the future is in the experiment, and experimenting is about handling and engaging” (ibid.: 200).

“Experimentation displays a very special kind of engagement. On the one hand, an experiment is designed to exclude the experimenter as a subject from what is going on. On the other hand, paradoxically, to be able to do that you need closeness in order to arrive at the point where you can efface yourself in the experimental process and delegate the interaction to the bits and pieces of matter you are working with” (ibid. 200).

Rheinberger (2013: 201) also refers to Polanyi’s 1958 notion of ‘tacit knowledge’

12, that one can’t make everything explicit and that there is always something that remains that cannot be logically resolved. Rheinberger goes further and suggests tacit knowledge is not a residual but of “prospective potential” (ibid.: 201).

My third experimental study (Feeling of a Presence)(see Chapter 4) was designed so I experience touch manipulation. The experience of ‘feeling’ is an intriguing area of experience phenomena. Donald Norman (2004), a former professor of Cognitive Science, describes that within the three levels of experience: visceral, behavioural and reflective, it is visceral felt experience arrives before reflective thoughts and functional behaviour. In other words our ‘gut feeling’, a subconscious level, reacts very fast — our sensory scanning of an experience is immediate and often beyond our control. I recognise this instinctive level of response in my own response to the unknown sometimes. Perhaps with the question of what is the ‘form’ of feeling, an interesting theory of experience is the theory of feeling (Theory of Prehensions) of the philosopher and mathematician Alfred Whitehead (1927-28 in 1978). Whitehead takes the temporal sense of the event into consideration. Also Debaise (2017) argues there are many modes and ways of experiencing, of feeling, of making sense.

The art historian Ernst Gombrich (cf. 1960/1984), a major influence on the psychology of perception with his book Art and Illusion, A Study in the Psychology of Pictorial Representation (1960), argued that observation is never innocent. Though artists desire to achieve their activity of doing art with a clean slate, clearing the mind of all what he/she knows (cf. ibid) and to paint with an ‘unbiased eye’, in other words with an innocence of eye, this is almost impossible. As Gombrich (1960/1984: 232) says:

“Whenever we receive a visual impression, we react by docketing it, filing it, grouping it in one way or another, even if the impression is only that of an inkblot or a fingerprint. Roger Fry and the impressionists talked of the difficulty of finding out what things looked like to an unbiased eye because of what they called the ‘conceptual habits’ necessary to life. But if these habits are necessary to life, the postulate of an unbiased eye demands the impossible”

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12 Tacit knowledge is attributed to Michael Polanyi who made the assertion we know more than we can tell.
Observation is a ‘mental set’ and is conditioned by expectation, desire and cultural conditioning (cf. ibid). Noe (2004) also cautions that great care is needed if we are to comprehend what sort of discovery the act of carefully looking is or might be. The artist has to turn the gaze outwards (not inward) to the world, as an active exploration.

The last decade has seen more interdisciplinary activity between the arts and neuroscience, often with scientists applying knowledge and methods from their own areas in order to gain new insights into how art is experienced, made and appreciated (Journal of Consciousness Studies, 1999, 2000, 2004; Zeki, 1999; Livingstone, 2002; i.a.). A few neuroscientists have worked closely with art historians to share ideas and approaches (Freedberg and Gallese, 2007; Onians, 2008). One of the factors motivating this new collaborative spirit is the realization that artists have long made certain discoveries about the way the human brain works that are only now being uncovered by scientists. And according to Zeki (1999, 2): “...most painters are also neurologists.” Cavanagh (2005), another eminent vision researcher, talks of “the artist as neuroscientist.” There are not many peer-reviewed papers that I am aware of by practising artists — an example is — Connecting art and the brain: an artist’s perspective on visual indeterminacy, by Robert Pepperell (2011). This artist collaborated on several scientific studies into the effects of art on the brain and behaviour, looking in particular at the phenomenon of “visual indeterminacy.” This is a perceptual state in which subjects fail to recognize objects from visual cues. Pepperell reminds how different the basic conceptual categories can be between the arts and sciences, a cultural divide, which he feels is still largely in force today.

“The difference is in part, I believe, born from the need for scientists to be explicit, analytical, and logical in their working and reporting processes. Quite often for artists the opposite is the case, their training and traditions having implanted in them a proclivity toward vagueness, synthesis, and irrationality” (Pepperell 2011, 11).

The Cubist painter Braque (1971) was fond of saying: ‘Art is meant to disturb; science reassures’. Science and art play significantly different roles in any relationship that can be forged between them (Goguen 2000). A key is look at the complex interconnections — the nature and relationship of art-science-technology is complex, and part of culture and society, which is rapidly evolving/changing at present. The neuroscientists at LNCO use and rely on state-of-the-art neuroimaging techniques and engineering-based approaches (virtual reality, vestibular stimulation and robotics) and computer science in addition to the standard neuroscientific techniques. In this connection I became interested in the use of virtual reality, robotics and brain-computer interfaces. I had started to reflect on the use of technology in my art practice and stumbled onto a minefield of theories about the posthuman condition:
the question what it means to be human. I introduce the term posthuman in the next section. The aim is to mark my position within the present time, this contemporary age of posthumanism in connection with the increasing influence of technology whilst exploring embodied subjectivity in a deep-seated way.

1.4.2. Posthumanism

The definition of posthumanism and the posthuman circles around the dissolution of boundaries and differences (dichotomies) between mind and body, self and other, animal and human, human and nonhuman, organism and machine, man and technology, nature and culture, men and women, conscious and unconscious, illusion and reality. Ihab Hassan (1977: 212), a literature theorist, first used the term ‘posthumanism’ and wrote:

“We need first to understand that the human form … may be changing radically, and thus must be re-visioned. We need to understand that five hundred years of humanism may be coming to an end, as humanism transforms itself into something that we must helplessly call posthumanism”.

Robert Pepperell, Professor of Fine Arts at Cardiff School of Arts & Design, analysed the posthuman concept in depth in his book: The Posthuman Condition (first published in 1995, hardback in 2003). He defines the ‘posthuman era’ as beginning where we are no longer able to differentiate between human and nature. Pepperell (cf. 2003) uses the word posthumanism to describe three fundamental concepts and issues at once: (1) It marks the end of a period of human and social development known as ‘humanism’, and hence it represents the period ‘after humanism’, (2) It converts that the human being is going through a transformation — one that is changing how we think about being human, and (3) the term refers to an increasing mergence of biology and technology — to the point where they are becoming indistinguishable. In this bio-techno connection Pepperell suggests the term posthuman is more appropriate than post-biological (these two terms are sometimes interchanged).

Already in 1985, the natural science historian and biologist Donna Haraway was one of the first theorists to explore the concept of ‘natureculture’ that re-framed the relationship between technology and the human body, particularly in terms of medical science. Technical advancements seem to be shifting our relationship between the human body and our surrogate – the lab animal, acknowledging that matter may no longer have a fixed meaning. Indeed, the chemist and postmodern literacy critic N. Katherine Hayles (1999:2) proposes:
“information lost its body” - this is almost like also saying: the self has lost its body (when we remember the concept that the self is information being constructed in the brain). Hayles’ statement has much to do with the advance and development of information technologies, virtual reality, autopoiesis, cybernetics, computer simulation and cognitive science. This is a huge complex subject that is impossible to take all into account, nonetheless technology is specific to my work (with VR, Mobile Phones, Robotics, Photographs, Videos) and so I discuss technology in more depth below in section 1.4.2.1.

With the steady advance of technology, and the qualitative shift in our thinking about what exactly is a basic unit of common reference for our species, and our relationship to all things and other inhabitants on this planet and even the cosmos and our need for science fiction and thinking about worlds beyond the stars, then humans are fast on the way to being posthuman (cf. Hayles 1999, Braidotti 2013, Negarestani 2008). Or as Hayles further specifies: “we have always been posthuman” (ibid.: 279). This is a viewpoint that the body is an original ‘prosthesis’, which we as selves have learnt to manipulate (cf. Hayles 1999). Thus, we are long already a prosthetic supplement or device, and so “extending or replacing the body with other prostheses becomes a continuation of a process that began before we were born” (ibid.: 3).

Fundamentally, posthumanism is grounded in critical poststructuralist, postmodern philosophy (cf. Luhmann, Derrida) whereby the subject has been decentralised and where ‘knowing the subject’ has become uncertain (which is in contrast to the ideas of Kant and Hegel that knowledge comes through experience and reason leading up to an understanding of the subject, which in turn is grounded in the teachings of Descartes). There are also more extreme, negative views (such as Fukuyama 1992) where the fate of humans is regarded as threatened by technological developments such as biotechnology, genetics and robotics. Guariguata however suggests we think of the ‘post’ in posthumanism not necessarily as post-biological embodiments, but as representing the heritage of humanism. Thus, the ‘post’ becomes a starting point.

Posthumanism essentially is about the end of a ‘human-centred’ universe (Pepperell 2003: 171). It is about the evolution of life, about the process and development of all aspects of technology and culture (cf. Pepperell 2003). Pepperell (2003) adds that posthumanism is increasingly about ‘how’ we live now, how we utilize ourselves, our environment and animal life. “It is about what things we investigate, what questions we ask and what assumptions underlie them” (ibid.: 171). It is clear that humans will enhance themselves with machine-like augments if it enables them to live more efficiently and with further improved quality of life.
I am fascinated by the posthuman term representing the dissolution of dichotomies between mind and body, between human and technology, and experience of a new paradigm of non-duality philosophy and consciousness which derives from a spiritual and scientific idea and understanding of non-separation and intrinsic oneness. While non-duality is a fuzzy concept, with roots in many religions (Hinduism, Buddhism, Taoism, Transcendentalism, i.a.), it refers to advanced or altered states of consciousness where a dichotomy of ‘I-other’ is no longer, or is transcended and the awareness is without a split into two (inside-outside, I-other, i.a.) and often centre-less. I am focused on research on altered states of consciousness, which also has to do with insight, enlightenment and illusionary non-dual reality and nature of the self. Recorded altered states are a means of knowledge, often interpreted as psychological states or (metaphysical) experiences. I come back to the topic of altered state of consciousness in Chapter 4 with my experiences with bodily illusions and out-of-body consciousness, because I had involved myself in a series of experiments, which attempt to displace the bodily consciousness of the self.

1.4.2.1 Technology

As already established above in Section 1.4.2 about posthumanism, matter and technology are merging, and the relationship between technology and the human body is shifting and also merging. As a constructed image the body is also part of the social body, and is a cluster of relationships (Zmijewski 2009). Art also provokes the body to exist because art appropriates it, imposes definitions on it, and pulls the body into emancipation discourse and narratives. Yet at the same time, art is a becoming a parallel discourse, detaching reality from itself and giving it autonomous rights — in this respect it is similar to science, which serves as a power base for operationalization and technologization of human life. In accord with the psychologist and theorist Sherry Turkle (1984, 2009, 2011) technology is affecting how we think and also how we see. Many new technologies, like robotics, neuroprosthetics, genetic engineering, biotechnology and artificial intelligence as well as the arts raise fundamental questions about selfhood, identity, community and what it means to be human. In Chapter 2, I investigate deeper and examine selected artists who use technology in different ways to question what the self and body is, as for example the performance artist Stelarc whose work focuses heavily on extending the capabilities of the human body (1-4).
Image has been removed due to Copyright restrictions

1-4 Third Hand, 1980, Stelarc

We are in an era where what truth is has taken yet another dent with recent concepts of Fake News / Alternative Facts — in other words, whether the news is fake or not is not as important as the provision of actionable information to the reader from his/her perspective. The cultural, political and societal situation right now also influences my thinking as an artist, because it changes the way we see the world and interpret information. In this line of thinking, we are also experiencing an emergence of neo-materialism, a new form of materialism in the arts, either as commodities or social processes materializing into things, which has validated a rethinking, or new form of thinking between humans and non-humans and objects. The emergence of new human-technological relationships within social, political and philosophical theories also makes us question the privilege given to humans in the human/non-human binary underpinning discourses of new materialism (cf. Barrett & Bolt 2012). My research involves the intersection of human with the technology of virtual reality, a materialism that has become contemporary due to affordability. I therefore attempt to understand what virtual reality medium is as a concept.

Virtual reality (VR) often refers to computer-generated simulation in which a person interacts within an artificial three-dimensional environment or world, using electronic devices, such as special goggles with a screen or gloves fitted with sensors. Virtual reality technology however
already begins with the creation and experience of an extended, enhanced environment in combination with VR goggles, within which objects seem to have a spatial location independent of the user and display technology (cf. Latta and Oberg 1994, Bryson 1998/2013). A fundamental objective of VR is to place a participant in an environment that is not normally experienced. The use of stereo-immersive “virtual reality” technology enables the perceiver to experience what it is like to be immersed in a stimulated environment. In my research, this is an immersed ‘virtual space’ of reality. In accordance with Davies (1995), the virtual space seems to act as a de-stable environment too, a dissolved boundary between the subject/object, interior, exterior, mind and body, self and other. Through drawing whilst in virtual reality, I cross over (back and forth) from the virtual plane to the picture plane (paper fixed on a wall), which is physically a real plane in space as well. My imagination is that the picture plane also acts as a ‘counter-environment’. McLuhan (1967: 165) named counter-environments “anti-environments”. He suggested that it’s the role of art to ‘make’ counter-environments. According to McLuhan environments are not just functional containers but also ‘processes’ that can change the content, meaning and significance totally (ibid). My understanding of McLuhan is in the sense that artists often create new environments – quasi new counter-environment and new anti-environments – which are often making something ‘new’ visible and conscious, hence they are initially “anti”-environments. After these anti-environments become established, and especially when we are socially conscious of them, they turn invisible (only the content remains noticeable) and they are then called “environments”.

Bearing in mind that McLuhan did not discuss VR in his time but rather the role of medium and role of art, he defined a medium as “any extension of ourselves” and broadly as “any new technology” (1964/1994: 7). He suggested that any medium “amplifies or accelerates existing processes” by introducing a “change of scale or pace or pattern” into human affairs and actions which result in psychic and social consequences (ibid: 8).

McLuhan further hinted in several of his writings that new media, and technologies create new environments, and that they begin as anti-environments. He suggested: “Technologies would seem to be the pushing of the archetypal forms of unconscious out into social consciousness” (1970: 31). Furthermore:

“All human tools and technologies ... are direct extensions, either of the human body or of our senses. As extensions of our bodies, tools and technologies give us new leverage and new intensity of perception and action” (McLuhan 1970: 38).
Virtual technology is increasingly being used to extend the manipulation of the human body in real space as well as in the virtual room. I re-examine my (our) relationship with technology virtuality and embodiment in my art research and document my interaction with digital media.

For artists, virtual and technological instruments may be contemporary versions of philosophical devices and philosophical toys\(^{13}\). Instruments such as kaleidoscope, stroboscope, stereoscope, i.a. all contributed to extending artists’ perception of colour, space, depth, movement and time. Tom Gunning (2012), film historian and theorist, states that these philosophical toys are intensively self-reflective, because they use a simple, yet effective technology, which while making a visual effect draws our attention to how that effect is generated. Today’s technological images and production of such images are very similar, though not always as demonstratively visible in their workings - technology is on one side becoming increasing micro and invisible to the human eye, and on the other side, manipulative and hallucinatory, tricking us into seeing something not otherwise visible (cf. Gunning 2012). Fact is, the increasing use of smart technology, also known as smart objects, or in Hayles’ words: cognitive assemblages is redefining and reshaping how we live.

The new virtual, physical and logical applications (in all formats) are capable of adapting automatically and modifying their behaviour to fit environment, sensing things with technology sensors (which we don’t see), providing data for analysis and even able to draw conclusions, learn, improve, anticipate and readjust accordingly. Such objects are even able to self-generate and self-sustain. One of these technologies, the mobile phone, practically all of us in developed societies have in our jean pockets, or bag or wherever close as we want to be able to reach it within seconds. We are becoming increasingly very interconnected with such technical nonconscious systems. Hayles (2017) (see also Hayles & Sampson 2018) put forth a fascinating concept of nonconscious cognition, the biosemiotics of human-computer interaction. With the concept biosemiotics Hayles means the process of meaning-making as a subject with a specific worldview (Umwelt) (cf. Hayles & Sampson 2018). She suggests this process of meaning-making occurs at every level, from the cellular level on up, therefore every level of human-nonhuman-environment interconnection has the potential to act as signs in biological processes as well as information systems.

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\(^{13}\) Term philosophical devices and philosophical toys was used in 19th century by the Inventor Charles Wheatstone to denote scientific instruments that have dual function to experimentally test a phenomenon and by producing a visual image and visual experience, they amused as a curiosity (cf. Dvorak 2013, Wade 2004)
In this field of digital humanities (as Hayles names it) is where I instinctively feel totally at home. I however read about Hayles’ theories shockingly late into my research that I regret to say, whilst I acknowledge this is where my thought are going in my future artwork making, it is too late to be inspired and incorporate her theories by making more collaboration between cognizers and non-cognizers within in my own creative work in this research. There is nonetheless interaction and interconnectivity between human and technical noncognitive systems in one experiment I did (*Feeling of a Presence, 2015*), which I discuss later in Chapters 5. I remain attentive to the fact that humans and technical systems are engaging increasingly symbiotic relationships (Hayles 2017) and remain mindful to analyse, interpret and understand how/in what way the situated human-technical relationship affected me as a subject/object — to describe what my user-experience was. Did (a) transformation(s) of the embodied phenomenology of user experience flow into my subsequent artwork(s) as a result?

### 1.4.3 Material Reality

In respect of ontology (the philosophy of the nature of being, becoming, existence and reality) artistic facts have their own intrinsic status than cannot always be combined with scientific facts. I will allow a syncretic method for overlapping differences between artistic and scientific reality. By syncretism I mean my attempted fusion of art and science ways of doing (applying theory into practice), within the experimental studies as well as in my art making processes. I try to be so very objective (scientific) yet my intuition often kicks-in (artistic practice) and takes over. Syncretism is also a form of eclecticism, meaning I don’t hold/refer to a single paradigm or set of assumptions, but rather I draw on multiple theories, ideas and materiality (styles) in order to gain complementary insights and knowledge into my question what the self constitutes.

A significant element of material reality is its immateriality (cf. Borgdorff 2006). More precisely, what is characteristic for my art processes, experiences and products is that, in and through the materiality of the medium, something is presented that transcends materiality. This insight recalls one to remember Hegel’s sensory manifestation of the idea (sinnliches Scheinen der Idee), which is also valid. I pay attention to both: to the materiality of art to the extent that it makes the immaterial possible, and to the immateriality of the art to the extent that it is embedded in the artistic material.
The artwork is material/form. Art is made of things: paper, paint, video/photo projection, metal, clay, bronze, sound, and so on. Art is a form of ‘material reality’ and in accord with the artist Paul Chan (2009), I think that art can represent an amazing level of tension that comes from the actual process of its production, even to the point of allowing the material to affect the outcome. Art therefore takes on a presence that hovers between appearance and reality, and artwork expresses both process and instant at once. I am intrigued by art’s potential to connect diverse bodies of knowledge with aesthetic concepts to produce ‘a kind of critical thinking in sensuous form’ (cf. ibid.). Thus, I use art as an instrument, and experience that as something that sharpens reflection as well as encouraging resistance.

When I speak of virtuality later (particularly in Chapter 4) I take the position that any form of virtual image needs material support to realize them. Technology is material as also is performance material. Performance may leave material behind, but the work will need a material frame (space, the performing artist(s) or viewer(s), props), all what is needed to make the performance an experience. Art is more than appearance, as Chan (ibid.: 2) describes: “art is more and less than a thing. And it is this simultaneous expression of more-ness and less-ness that makes what is made art”. I understand Chan to mean, art sometimes or often occupies and/or uses material in a way that experiencing art feels like a misunderstanding, a paradox, made with the wrong tools or wrong set of assumptions about what it means to exist (cf. Chan 2009). Chan states that for art to become art, it expresses an idea or experience or existence beyond the intention of the artist. And so, art shapes matter, which is real and yet unreal — to make art means to sensitively be aware of this content, of the tension involved to make ‘art’ — meaning sometimes material reality has to be attenuated so that matter can bind itself to forming its own reality. This also means that ‘artwork’ often is or feels ‘incomplete’ at the moment it appears to be finished. In accordance with Chan (ibid: 3), art is: “a tense and dynamic representation of what it takes to determine the course of one’s own realization and shape the material reality from which this self-realization emerges”. In contemporary art, artists are still taking responsibility to reflect on and manifest what life is, and Chan (ibid.: 4) formulates it well: “this is what art of the moment always tries to do: capture a flash of friction in time and make it burn as bright as the night is long”. I also see this as my role in making art within in this tense material reality — to make it become. Critical thinking is very much an integrated part of art today, especially in trying to mirror our expanded means of social, cultural and economic production, that art reflects also very pressing issues we have today — that there is perhaps no interior than the world — that we try to make everything join and work together, for better or worse, like the best and worst of contemporary art. I come back to this issue of quality and momentous pressure that contemporary art is under — in my own
art it remains also a burden of whether I have succeeded or not to overcome a superficial material reality that allows contradictions and tensions.

1.4.3.1 Drawing: Intelligence of Seeing

Drawing is a form of visual art that makes use of any number of drawing instruments to mark a two-dimensional medium. Instruments I used include graphite pencils, pen and ink, charcoal, erasers and markers. The support for my drawings was paper. The act of drawing is primordial and fundamental means to translate, document, record and analyse the worlds we inhabit (cf. Taylor 2012). Through recording what I see, drawing enables me to discover through seeing. Looking at another’s drawn record of an experience is a shared experience. Drawing is and remains for me a most suitable investigative, transformative and generative tool for the realisation and transference of ‘seeing’ (as well as of ideas). Drawing is also materiality.

The viewer benefits from a capacity to interpret and ‘read’ the drawing and to bring their own experience and understanding of language and perception to each drawing. In accordance with Taylor (2013:10), this literacy or fluency in visual language needs to be ensured, developed, nurtured, enhanced and challenged as an ‘equivalently important means of communication to the predominance of verbal and written communication in our educational systems and cultures’.

In my work on human perception and practice, I invent complex procedures of investigation whereby I also trick myself in order to ‘see’ anew. In one instant (Video Ergo Sum Series) (see Chapter 4), by using a specific neuroscientific experimental set-up, in which I draw, I actively integrate scientific attitudes into my art practice. This view ‘from within’ being drawn on paper is a first-person standpoint — a hands-on approach, actually mapping the situation and feeling-right-now, exploring the mind seeing and what I find through it, though I am at the same time documenting a third-person perspective because of the virtual reality level involved. I document how seeing the body in the virtual space can be phenomenological and natural at the same time. There is always the public in the private — the first-person is also a third-person (cf. Varela 2012).

In another instant (From Perception of Art to Art Making) (see Chapter 3) I draw with the non-dominant as well as with the dominant hand, exploring and left hemispheric contribution to
art style and perception. I examine the act of drawing and its’ relation to perception, in other words the translation of seeing (aided with technology) the brain and then back through the hand to recording on paper. This experiment was based on classical work on hemispheric specialization, where for example a lexical decision task using right visual field (RVF) dominance for word/non-word discrimination, is carried out. Olaf Blanke, Anna Sforza and I set up an experiment in which I drew selected images after a single visual exposure. The exposure time was 50 milliseconds and flashed to a point outside the fovea (> 10°). Images were presented to the right visual field (RVF), left visual field (LVF), and I drew the images with either the right hand (RH) or the left hand (LH). The RVF-RH and LVF-LH setups can therefore be considered to be “pure” left hemispheric and right hemispheric drawings. I describe and discuss these experiences more in Chapters 2 and 3. Through using drawing as a tool, I perceive and record the displacement; the shift in the body, the shift in thinking, and modality of consciousness.

What ‘seeing’ is and where it is located, and what is at stake in the act of seeing are questions guiding me throughout my artistic practice. The discovery of linear perspective, the system of creating an illusion of depth on a flat, 2-dimensional surface (thought to be discovered by architect Filippo Brunelleschi in ca. 1415 and documented by the architect and writer Leon Battista Alberti in 1435) and the invention of viewpoint means the onlooker/viewer/observer has the central place within the act of seeing. However, the Japanese philosopher Kitaro Nischida’s notion of seeing without a seer is also fascinating. This nullification of the self can be defined as seeing the self from ‘outside the self’ perspective, such as the perspective from the world onto the self. The type of consciousness the reflected plane may suggest or be linked to is one of nothingness, which contains or fundamentally merges self and world. Technology also has a special place concerning my sense of seeing. I come back to issues involved with technology directly when I’m confronted in the experiments (see Chapters 3-5). In the next section I introduce the first instance how technology is influencing my way of working.

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1.4.3.2 Objects of Thinking

An interrogation of thinking through artistic practice can demonstrate an epistemology of aesthetics; a self-reflective act that also can refuse to be a conscious perception, and so reveal (specific) raw, unconscious knowledge through actual making of art as well as in the artworks themselves. What I mean by a ‘perception refusal’ is that art practice often can evade control, and as Henke, et al (2020: 24) mention, artistic practices often are performative and as performative acts they take place in a temporal horizon. In other words, the perceptive knowledge derived within artistic practices “emerge from something as they point to future which they do not know and do not have access to”. Art practices for this reason often evade control. Reflexivity within practical (and not theoretical) artistic research is grounded in insight, perception, knowledge and self-referentiality which Henke, et al (2020: 24) suggest guarantees their (re-) visibility. This is a reminder to me that art practice can have the consequence of leading to side-effects which it did not intend, but which it is also not in a position to take back. And as Henke, et al summarize:

“No praxis is in control of itself, neither with respect to the future towards which it is moving nor to the past from which it emerges. This is also true of artistic practice, which can only manifest itself as art if it remains mindful of this dialectic in every moment”.

Hence, I strive at every moment to be awake and watchful of my processes of practice. This is what is leading me to suggest that my main “objects of thinking” should be mentioned.

Artwork and writing are two of my interrelated “objects of thinking” (cf. Macleod & Holdridge 2005). The notion that “Painting is also something we read… literature is also something we look at” (Butor 1993, my transl.) is a concept I take into consideration, because writing and words are also material of my artistic research. Writing is not a task that comes easy for me, but it is essential for my thinking process and allows objects of thought to push through. Words can point, oppose, negate, bait, confuse, and so support image without being pleonastic. Language and image are opposites in their mode of thinking and in their mental origin — these two pathways are intricate to this research study. I therefore consider my writing a ‘strategic contextualization to the realized artwork’ (Macleod & Holdridge 2005: 197). In writing I can both demonstrate what I did and question this demonstration. By reflecting I can speculate about the artist’s labour, about the value of subject/object, about the shifting relationship between the human body and the lab animal, acknowledging that matter may no longer have a fixed meaning, and precipitate notions of what the constructed subject/body is. Writing text has a ‘dual and antithetical logic’ - it precipitates speculation in order to address the validity of research proofs. The brutal reality is - what art offers, above
all, is speculation (ibid.: 198). But more importantly it is a live and intense scrutiny of the processes of creative practice research (ibid.).

There is a very particular relationship between the artist and artwork (object) and viewer, or in other words the relationship is the *encounter* type, which Duchamp characterised as ‘rendezvous’. However, I consider the interrogation of thinking through artistic practice will demonstrate a form of thinking that remains at the edges of what is utterable, where speech goes into its‘ other as well as into other kinds of thinking and evoke that which only *shows* itself (cf. Mersch 2015. i.a.). Dieter Mersch a philosopher calls this concept an epistemology of aesthetics. His concept assigns art-based research to an aesthetic mode of thought *beyond* the linguistic turn that does not need to and cannot be replaced by other disciplines — in other words — art thinks, and artistic work *shows*.

At the core of Mersch’s philosophical work is the relationship between ‘being’ and ‘event’. According to Mersch, ‘Event’ stands for the experience of boundaries that cannot be expressed by language or which cannot be articulated by means of distinctions and signs, but which nevertheless influences us, gives us positions and effects that are not to be missed. He suggests we should think of a ‘non-negotiable negativity’ as the beginning or cause of all thinking, and that this negativity comes before thinking, is conditional and therefore imperative. Mersch argues that this necessarily means a language of paradox, vexation, and excess is needed, in other words ‘speech’, which refuses to speak, and yet, continues to talk and squander. For Mersch, it is not just about cultivating an inauthentic or metaphorical speech, as it is not at all about literature as the language of philosophy, but about a consistent stay at the edges of what is utterable - where speech goes into its’ other and evokes that which only shows itself. In this sense, Mersch (2012, 2013, 2014, 2015, i.a.) claims such efforts are to be seen as a contribution to the criticism of philosophy and science, which aims in particular at the work of the arts as a ‘thinking of the other’ as well as ‘others of thinking” — this is in essence his concept (2015) of ‘an epistemology of aesthetics’. I include this notion of thinking and non-verbal ‘knowing’, probe it, question it and re-frame it in the context of my artistic research and resulting artworks made.
1.4.4 Concept and Method of Studying the Self

Self-portraiture is a recognised method in art and one used and further adapted in this research (and discussed in more detail in chapter 2.2). With a long interest and record of doing self-portraiture, central persistent questions remained constant throughout my artist-in-labs residency: What is the self? What is I/me? What is the body? How/why does a body sometimes dissociate? What is the body in space? What is the appearance of one’s own body? The feeling of being in your own body and to possess it, is a fundamental human experience and closely linked to our subjective first-person perspective of the world. But where the self originates and how it works, is very much an on-going research. These questions led me back to the importance of discussing and analysing the concepts of the self in the context of this research.

1.4.4.1 Self

According to the Concise Oxford English Dictionary (12th Ed., 2011) the word ‘self’ means: “a person’s essential being that distinguishes them from others, especially considered as an object of introspection or reflexive action” (Stevenson & Waite, 2011:1305). In other words, when I know the difference between my ‘self’ and others, then I have a self. The reality is however far more complex— the term Self is an extremely complex and paradoxical concept to grasp. The self is an inconsistent term, with different meaning variants depending on whether the focus is psychological or philosophical or sociological or otherwise. In the sense of self-reflection, for example, in relation to sensation of being a unified, consistent, feeling, thinking, acting entity, then the self serves to reflect, reinforce and emphasize the concept of ‘I’. The self is used as a centre of personality and consciousness.

A group of students at LNCO were asked what the ‘self’ means - all sorts of responses came back:

“The self is just a picture, it is the conscious and unconscious, the self only exists because of others, the self changes through history, the self is artificial, the self is the sum of different images that the individual makes of itself in different contexts, it’s hard to define the self when asked to do so, the self is a mixture of who we think we are and what others think we are, it’s a multisensory experience, it’s a picture of feelings, it is a convenient illusion emerging from multisensory experiences, it’s an adaption process that selects information, the self is presence, the self is adaption to the current environment, it is how you perceive your collection of memories, the self is not only what I perceive but also what I feel, it is an illusionary feeling of being an entity in space and time, it is something you cannot really measure”.

Ottiger, 2020
On one side we are familiar with our ‘self’, we have a consciousness of who we are, an ‘I’ and a ‘me’ with a past, present and future, and we can look and see our self in the mirror – this is who we are. We often talk about the self to be or to include all of the following attributes or categories: the ‘me’ and ‘I’, the ego, the individual and individuality, the subject and subjectivity, presence, the soul, body and personal feelings. When researching the term self in more detail, terminology extends to embrace the following: conscious and unconscious self, phenomenal self, private, public, social, virtual and artificial self, and all kinds of other selves such as spiritual self, existential self, dying self, narrative self, possible self, fictional self, delusional self, real self, biological self, adapting self, process-selective informative self, minimal self, mirror self, material self, extended self, non-self to name some words being used in philosophy and science. On the other side, ‘what the self is’ can easily be challenged to be an illusion, as the British Psychologist Bruce Hood (2012) pointed out in his book: The Self Illusion. The self is something one cannot really measure and is an (potentially) illusionary feeling we have of ourselves, each of us being attributes and a self-illusion (cf. Hood 2012, there is no ‘you’ inside your head).

When we think about all the influences that have shaped and are still shaping our self as long as we live – our parents, environment and hobbies, education, relationships, illness, profession, jobs, social and political media, every sphere of influence that is exerted onto us, we would be a chaos if something did not summarize and make a meaningful narrative out of all the influences bombarding us – that is what the self does. “The self pulls it all together” (ibid: 214). More precisely, it is the brain finally that deals with all these influences - fragments of information - and stores this data inside our brain. It is the brain (this is the main organ, besides the body) that is responsible for coordinating such influences, activities and for constructing models of the external world, combining the information together in a narrative that makes sense (cf. ibid.). Discussing what the brain does goes beyond the scope and competence of this research – it is suffice to say that complex brain processes are involved as carriers of our conscious experiences (cf. Metzinger 2008). Our brain connects our experiences into a meaningful and a very likely story which enables us to interpret and make predications – in other words: “our brain simulates the world in order to survive in it” (ibid.: xi). This means we have to examine our own information, in order to understand more about this concept. According to Hood (2012:214):

“The self illusion depends on stored information that has been acquired during a life time. These are our memories that are constructed as we interpret the world. That interpretation is guided by mechanisms that seek out certain information in the world but also by those around us who help us make sense of it all. In this way we are continually shaped by those around us. ... It is through this social interaction with other that we construct our sense of identity and ultimately our sense of self ”.
That we are constantly being shaped by our surroundings and all those around us makes total sense - most of us have memories of profound incidences which shaped our self in very definite moments in time. This aspect of the self - of being shaped by external influences - especially technology proves to be an important theme in my artwork, therefore I outline and analyse this aspect in section 1.4.2.1 (earlier on) and demonstrate the technological influence on the self in chapters 4 and 5.

It is impossible to outline and review all notions of self here, and beyond the scope of this research. My goal here is to introduce and highlight some key positions and theories of the minimal self in neuroscience that directed my thoughts, and influenced me, as well as having implications and meaning for my research about the self.

1.4.4.2 Minimal Phenomenal Selfhood

The philosopher Thomas Metzinger (2003, 2008, i.a.) researched intensively on the concept of subjectivity (see his book: Being No One. The Self-Model Theory of Subjectivity, 2003) and argues: “it is not just that we are unable to define concepts like “I”, “self”, or “subject”. The real problem is that these concepts do not seem to refer to observable objects in the world” (2008: 217). He suggests we should aim at understanding how “certain structural features of our inner experience determine the way we use these concepts” (ibid.: 217). This means we have examined “the representational deep structure of conscious experience itself” (ibid.: 2017). In outlining a conceptual framework of a Self-Model, Metzinger (2008: 217, i.a.) classified 3 higher order phenomenal properties of self-consciousness:

1. **Mineness**: which is an immediate, non-conceptual sense of ownership – my hand or leg is mine, and always experienced as being part of me, my thoughts and feelings are part of my own consciousness, my free will is always initiated by myself,

2. **Selfhood**: the feeling of being a self – I am someone, I experience myself as identical across time, and as a coherent whole self-consciousness,

3. **Perspectivalness**: my world has a fixed centre; I am this centre - being conscious means having and experiencing its own mental states from an individual first-person perspective in the world (an inward perspective).

Metzinger asks a vital question: “what does it exactly mean for such a system to experience the world as well as its own mental states from a first-person perspective?” (ibid.: 217), and puts forward a theory of minimal selfhood: the phenomenal self-model (PSM). To summarize, he argues that a conscious self – is a constant ‘integrative process’ (cf. ibid. 225). In other
words, any distortion, hallucination or disconnection (mental/neurological or physical) of mineness, selfhood and perspectivalness can cause a loss of subjective sense of ownership, as in schizophrenia (experienced thoughts are no longer my thought), or somatoparaphrenia and unilateral hemi-neglect (my leg is no longer my leg) or manic disorders (I am the whole world, and control events in the world by my own acts) and identity or depersonalisation disorders (loss of first-person perspective) (cf. ibid.: 225).

Subsequently in 2009, Olaf Blanke, Professor of Neurology and founding Director of the Centre for Neuroprosthetics at the Ecole Polytechnique Fédérale de Lausanne (EPFL) as well as director of the Laboratory of Cognitive Neuroscience at EPFL, and Thomas Metzinger wrote a leading article on the most recent research on body perception and self-consciousness, in which they discuss what minimal sufficient conditions are necessary for the elementary conscious experience of “being someone”, of being a self, what they call a minimal phenomenal selfhood (hereafter MPS) (Blanke & Metzinger 2009, 7). They put forward the concept that MPS is a phenomenal property:

“it is the experience of being a distinct, holistic entity capable of global self-control and attention, possessing a body and a location in space and time” (ibid.: 7).

They point out that the key ways embodiment and the bodily foundations of self-consciousness are being researched are through:

(1) “sense of ownership and identification with the body as a whole (phenomenally experienced ‘mineness’)” (ibid.: 7),
(2) “self-location (centeredness of the conscious model of reality)” ibid.: 7) and
(3) “the first-person perspective” (hereafter 1PP) (ibid.: 7).

They suggest that future research should continue to focus on MPS, the simplest form of consciousness, which is related to the concept of embodiment. The term ‘embodiment’ in cognitive neuroscience and philosophy underlines the subjective experience of having and using a body as well as the role the body has on shaping the mind.

1.4.4.3 First-Person Perspective

The first-person perspective is a term used in my research - I use the word as defined here: this perspective is the experience that I am ‘directed at the world’ (Pfeiffer et al 2016, cf. 16 See also Metzinger, 2007, Self Models. Scholarpedia, 2(10):4174: http://www.scholarpedia.org/article/Self-models
The multisensory mechanisms of 1PP are poorly understood, partly also because there is still a lack of experimental methods to generate systematic changes in 1PP under controlled test conditions (cf. Pfeiffer et al 2016). There is however a distinction made between a strong 1PP and a weak 1PP. According to Blanke & Metzinger (2009) having a strong 1PP is what makes consciousness subjective. They define:

“A strong 1PP appears when the system as a whole is internally represented as directed at an object component, for example, as a perceptual object, an action goal as internally simulated or perhaps the body as a whole. A strong 1PP is exactly what makes a consciousness subjective: the fact that a system represents itself not only as a self but also as “a self in the act of knowing” (Damasio 1999). This means the organism represents itself as representing in real time. It co-represents the representational relation during the ongoing process of representation: a phenomenal self as subject appears exactly when the organism possesses a phenomenal model of the intentionality relation (Metzinger 2003, 2008 i.a.)” (Blanke & Metzinger 2009: 8).

A weak 1PP in comparison is:

“A purely geometrical feature of a perceptual or imagined model of reality possessing a point of projection functioning as its origin in sensory and mental processing, but is not linked with theoretically more charged notions such as “subject of experience” (the conscious self) or “epistemic subject” (knowing self) (Nigro & Neisser i.a.)” (Blanke & Metzinger 2009: 8).

Blanke and Metzinger (2009) further demonstrate that a weak or weakened first person perspective, self-location and self-identification often occur with illusory body perception - in other words, in neurological disorders and abnormal situations (e.g. in near death circumstances) where one perceives the own body to be altered and abnormally in a different position as during:

1. **Out-of-Body Experiences** (often elevated illusory location and 1PP positions outside the physical body position), or
2. **Autoscopic Hallucinations** (tend to perceive an illusory own body in front of physical self but also a self-location and 1PP within physical body), or
3. **Heautoscopy** (often the bi-location of self, in alternation or simultaneous), as well as
4. **Experimentally Manipulated Body Illusions** (neuroscientific experiments such as the ‘full-body illusion’ which causes multisensory conflict of bodily cues with use of mirrors, video technology and virtual reality set-ups, (cf. Stratton 1899, Lenggenhager, et al 2007, Ehrsson 2007). In such experiments, until now, abnormal self-location or abnormal self-identification coincided with the weak visual 1PP (at the position of the camera, cf. Ehrsson 2009) or to the visual body representation (to the position of the virtual body, cf. Lenggenhager, et al 2007).

Blanke & Metzinger (2009, 12) conclude their article with the hope that: “methodological approaches using multiple audio-visual-spatial perspectives, multiple and spatially incongruent body positions will be explored, leading to greater experimental effects, where
the 1PP could be affected. Until now, the experiments have not yet managed to manipulate a strong 1PP). Metzinger (2008:235) proposes that bodily self is a functional anchor of phenomenal space because it is a low-level autoregulation that is an “enduring causal link in the brain”. In other words: “the body, in certain of its aspects, is the only perceptual object from which the brain can never run away” (ibid.: 235). The possibility that a neuroscientific experiment could affect my 1PP and sense of self-direction at/of the world fascinates me. Also that the bodily self is an aspect that stays totally linked to the brain, or rather that the brain can’t switch off this link makes sense and is a useful aspect of the self-portrait methodology. The first-person perspective is significant for my work in representing the self because in using art as a tool, I visually (with the aid of technology) research body representation of the ‘self’ further, in the first-person perspective and the out-of-body perspective. I follow up, refer to and discuss Lenggenhager et al (2007) Video Ergo Sum: Manipulating Bodily Self-Consciousness experiment later in Chapter 4 as it is a vital centre point of my own experiments with the bodily self-illusion.

Metzinger (ibid.: 235-36) also asks questions as: “what exactly is this deepest level of the phenomenal self? Why is it the origin of the first-person perspective?” How we function in body and mind leaves us with many unresolved questions. Tony Sampson (in Hayles & Sampson 2018), a critical theorist suggests some precaution in a time when neurosciences are laying down big challenges to philosophy and to bear in mind that also science is speculative when it comes to trying to work out how the self and consciousness functions. Though I acknowledge that neuroscience is not my field of specialism – I am inspired to understand to the best of my capacity, to take questions and concepts about the sense of self into the arts as a vital, healthy discussion basis for my artistic practice.

Shaun Gallagher, a philosopher working on embodied cognition, social cognition, agency and the philosophy of psychopathology adds another important dimension when thinking about concepts of self - he suggests a two-way collaboration between cognitive sciences and philosophy in researching concepts of the minimal self and an extended, narrative self might lead to a “more fully developed account of the self” (2000: 14). The concept of narrative self refers to a coherent self, or self-image, with a past, present and future in the stories we tell about ourselves. Gallagher points out two models of narrative self, (1) an abstract ‘centre of narrative gravity’, based on Dennett (1991)’s theory of self, and (2) an extended decentred and distributed narrative self (with reference to Neisser’s 1994 extended conceptual self-model and Gazzaniga’s 1995 factual and fictional sense of continuous self). A self that narrates makes experiences of self richer, more substantial and more concrete, for as Riceour (1992)
also pointed out: one’s own self narrative is always intertwined in the narratives of others. Daniel Dennett, philosopher and cognitive scientist argues *there is no self without engagement and awareness with others* (2000, in Hayles 2017: 48, her emphasis). The neuroscientist Antonio Damasio (1999) summarises that the features of core, minimal self and narrative (‘autobiographical’) self are also being subject to ‘constant remodelling’ under the influence of innate and collected dispositions but also socio-cultural environments (cf. Gallagher 2000). This also means that features of the core, minimal self is also being constantly reinterpreted by the narrative processes. Damasio (2000, in Hayles 2017:47) holds the view that the self has evolved and is still evolving, because it has a biological functional purpose to preserve and be well – this survival strategy (re)boots the self into action to make sure “proper attention is paid to the matters of the individual life”. And, yet, without a higher-level consciousness the self would not exist. There are theories explaining that higher-level consciousness acts as the brain’s ‘editing room’ or ‘workspace’ (cf. Hayles 2017) where past, present and future consciousness and memory form meaningful sequences together. There are also opposing theories that argue the sense of higher consciousness control is “largely illusory and that the inner narratives that create and sustain our selves are relatively impotent over information processes in other neural regions” (Bickle 2003, in Hayles 2017: 48). However it does seem that editing of the self helps to keep a coherent picture of the world. For as Edelman & Tononi (2000, in ibid.: 48) cleverly phrase: “many neuropsychological disorders demonstrate that consciousness can bend or shrink and at times split”.

I become aware of that the first-person perspective is an ‘egocentric perspective’. We are always visible to ourselves — we see parts of our nose, legs, hands, trunk, shoulders, even part of our back side, depending on how we are standing, seating or leaning (cf. Pepperell 2015). Pepperell points out, however: “we habitually omit the view we have of our own bodies from representations of the visual world” (2015: 424). It appears that we have a history of neglecting our own egocentric perspective. Pepperell suggests we might be too familiar with our bodies and thus become desensitized to the view of our own bodies. The scientist-philosopher Ernst Mach was one of the first to illustrate the ego’s point of view (1-5). Mach contended that the self is not separate from the physical world. Mach suggested: “The ego can be so extended as ultimately to embrace the entire world. The ego is not sharply marked off, its limits are very indefinable and arbitrarily displaceable” (Mach, quoted in Pepperell 2015: 425). In pursuing what the self is and can mean or represent, my art practice became very interesting - I started questioning my previous and existing knowledge about the self and the genre self-portraiture.
1-5 The Ego's Point of View, 1897, Ernst Mach
1.5 Contribution to Knowledge

My experimental research at the Laboratory of Neuroscience (LNCO) and resulting artworks are described and discussed in rich detail — this maps a trajectory, a path of deep phenomenological and artistic exploration to the subject what the self is, and constitutes — this is a new interdisciplinary starting point for others to continue. There is very little visual art research, and not much art-science research that so visually probes (and not illustratively meant) what self-representation entails. I therefore give insight into the specific non-verbal qualities of visual artistic research processes — it is more difficult to ‘read’ drawings or sculptures than scientific status reports. The non-linear character of art does not lend to communicate in a predictable way. I aim at contributing new knowledge by provoking inquiry and understanding by looking at a particular genre of art: self-portraiture — self-representation today.

One major output of this research is therefore new artwork — the practice-driven visual results (which means I have acted on my new knowledge to produce results). My art contributes new visual material, as well as experimental documentation to this highly complex field of research on the self, as also to artistic practice research within a scientific environment, for all its strengths and weaknesses that such a collaboration and experience working in such an environment creates. My artwork is also evaluated from an aesthetic and technical (material) viewpoint.

I demonstrate further understanding of what art perception involves and where the experimental limits might be pushed to — this is an endeavour to actively study and utilize knowledge.
2 LITERATURE REVIEW

It gradually became important to me to analyse the *selfie* phenomenon. I wanted to become clear about the difference and common ground between selfies and self-portraiture. Also I found myself preferring the term *self-representation*, which seems closer to *selfhood*. Selfhood is defined as (1) the state of having a distinct identity, (2) a fully developed self (with an achieved personality). In art, the cult of selfhood was fashionable in the 1960s, when female gender and the body became a big theme for women artists. I recognise this background, yet find myself more akin to and identifying with the issues of post-cyberfeminism, that is, with the changes that are happening with the interconnections between society, cyberspace and technology — from the blurring of subjectivity, to cyborgs not dreaming of social and family life and not recognising the Garden of Eden, to the threat of feminism dying out, and to possible extinction of humanity due to bioterrorism and environmental destruction. (cf. Braidotti 2013). In this sense, I am occupied with my human, (yes female), but moreover with an essential sense of self and selfhood — to explore, experience and create relevant artworks demonstrating my sensing my ‘self’ and the awareness stages in my journey of this research.

This chapter aims at showing where my theoretical (predominantly art-based) research took me and why I use the terminology I use. When I started my research in 2010-11, the word ‘selfie’ was on the increase and already in 2013 it was obviously so embedded in our day-to-day language that it became *word of the year* by Oxford Dictionaries. The sharp increase of such images is due to (1) the rise of smartphone with front cameras and practical preview screens, and (2) increasing availability of social media: internet platforms and apps such as Facebook, Instagram, WhatsApp, Twitter, SnapChat, i.a. which allowed convenient posting and sharing of photographs including self-portrait photos (cf. Sorokowski et al 2018). In 2014, Google estimated that at least 93 million selfies were posted on Android phones alone.\footnote{http://www.theguardian.com/lifeandstyle/2016/oct/24/selfies-make-you-happy-photos-addictive-unhealthy-mood}

2.1 The Selfie Phenomenon

If a *self-portrait* is a portrait or a representation an artist produces of him/herself that is drawn, painted, photographed, animated, sculptured, performed, to name a few possible end results, a *selfie* is a photograph that one has taken of oneself, usually with a smartphone or
webcam and shared through social media. Both forms of self-representations are essential tools of reflection. However there is talk that selfies have changed public behaviour because they have changed how we communicate visually, into a network where we have become concerned to show ‘who we are’ or ‘who we think we are’ and ‘where we are’ to those we think are watching (cf. Saltz 2014).

Jerry Saltz, an art critic published an article: *Art at Arm’s Length: A History of the Selfie* (first in the New York Magazine February 3, 2014, which reappeared in Vulture feed online) stating: “it’s become a new visual genre — a type of self-portraiture formally distinct from all others in history. Selfies have their own structural autonomy. This is a very big deal for art”. He also points out: “Genres arise relatively rarely” (ibid.) Artists don’t dominate this new genre but amateurs, who contribute excessively - it is the most popular genre. Distinguishing characteristics of this genre are: (1) the photos are typically taken from within an arm’s length of the subject, (2) bad camera angles predominate, (3) selfies are normally casual yet intense, improvised, personal/intimate, and fast but never accidental — they are approved by the sender before putting online, (4) everyone takes them, even the Pope and Obama, hence they are tools of communication rather than about narcissism, (5) selfies are about the ‘now’, and the location, ‘where’ we are when we take them.

Selfies are changing the meaning of photography (cf. Colman, 2010), from recording to remembering to one of communication and refashioning the self for a semi-public view (Batchen in Colman 2010). Technology plays a significant role in the development of the selfie due to the networked camera concept; use of smartphone and principle of sharing on social media networks (cf. Tiefentale 2016). Tiefentale was involved in an international project called: *Selfiecity*, led by Lev Manovich and his team at the Graduate Center, City University of New York — the objective was to find out whether there are significant cultural differences at play or if all selfies are the same everywhere. The team took a dataset of 3200 selfies that were posted to 5 global cities (Bangkok, Berlin, Moscow, New York and Sao Paulo) within 1 week in 2013 and analysed pose, facial expressions, guess mood, i.a. They did find regional differences but also that all selfies belonged to the same genre with its specific aesthetic representation.

Instagram is a natural niche for selfies because the image uploaded to Instagram will automatically take up the whole screen, with possibility to state the exact location, and add hashtags (words or sentences related to image). The flow on Instagram is live, chronological, and interaction is possible from other viewers — one can click on to the heart symbol to “like”
the image, post a comment, forward and re-post at any time. Cindy Sherman, a well-known artist for using herself as a model in her staged, often theoretically loaded, filmic or art-historical constructed photos, started posting selfies on Instagram from 2017 whilst recovering from a fall with a horse (cf. Sehgal, 2018). Her photographs until the Instagram selfies were not self-portraits. The Instagram photos are ugly, beautiful, photoshop-altered selfies — as Seghal (2018) writes: Cindy Sherman’s new self-portraits are her first pure protagonists: gloriously, catastrophically themselves (2-1 to 2-2). Cindy Sherman is one step ahead the rest of the art world when it comes to selfies — her selfies are vulnerable, soulful, hideous yet somehow a subtle rebellion of her age (65 and single again after 3 long relationships) and time.

2-1 Instagram @cindysherman (left photo posted on 12.05.2017, right photo posted on 13.05.2017)
2.2 Self-Portraiture

With a long personal interest and history of self-portraiture, I’m still fascinated by the challenge to represent the self as ‘art’. It is an attempt not only to localize the body (the outer appearance) but also the self (mind - seat of individual consciousness) as a source of insight. It is not my intention to historically examine self-portraiture, but to concentrate first on outlining what a self-portrait entails, and then to recapitulate where I’m coming from in my own art on the self. I conclude this section by touching on the neuroscientific aspect of self-portraiture — for some self-portraits done by famous artists suggest or indicate a changed self or (temporary) distorted self (due to neurological disorder or illness). This is interesting because it shows that self-representations may or do have the ability to give information about the state of self at the time of artwork creation.

In a self-portrait the artist renders the intimate representation of the own personal self and it may be regarded as a method of investigation on oneself, both physically and emotionally. While rendering a self-perception the artist extends the represented self beyond the
perceived self. In some painted and photographic self-portraits the painter is represented twice — a reduplicative phenomenon (cf. Blanke 2007), as the painting painter, by choice of technique and mode of expression, and, as the depicted subject the painted painter (cf. Bonafoux 1985, Pächt 1991). How the artist represents his/herself is ultimately the artist’s decision and therefore it does reveal self-consciousness. The painted artist is often depicted as having a vision that is both directed to the world, at one’s own appearance and as a source of insight (inner awareness). In virtual surroundings of today’s world (digital media) we are generating lots of virtual selves. In art representation a virtual self was always observed and recently it seems to have re-gained a figurative (bodily) element (I pick up this thread of thought again in Chapter 4, concerning the experimental Video Ergo Sum study).

It is also not so simple to discern today’s contemporary expression of the ‘artistic self’. The artist’s depiction of a ‘bodily’ reality or a body representation of him/herself in works of art, can be a self-portrait of the ‘seen’ self in the form of a painting. However today, contemporary self-portraits can be anything from a performance to sound installation to whatever is ascribed as ‘self’. — in other words: a contemporary self-portrait can perhaps be best described as artwork through which the self is fictionalized to transpose an autobiographical relation, but one that simultaneously points at, challenges, or displays the artist’s awareness of an external perspective on them – acknowledging social ‘frames’ which without doubt impact on how we perceive ourselves (cf. De Bloois 2007). For example, the artist Maurizio Cattelan’s remote-controlled avatar ‘Charlie’ (2003) at the 50th Venice Biennale, where the public saw a miniature version of the artist himself in his typical clothes riding on a tricycle amongst the other works in the exhibition. Charlie is a reflection on a childhood, at the same time cleverly displacing his own narcissism and challenging artists’ relevance in an increasingly media-hyped art world. Cattelan is good case in point of how diverse self-portraits can be - see also Super Us (2-4) — an artwork of 50 different views of the artist, presenting a multiple and fractured self rather than a unified, integrated whole) where he projected his own image as that of a criminal suspect — he had asked a police-sketch artist to portray him based on descriptions given by friends and relatives (see Spector 2011).
Though self-portraiture is almost a logical mode and outcome for Cattelan — his face being accessible, always available for use as material — nevertheless in the course of his artistic career a whole battery of lookalikes, mini ‘me’s, doppelgänger, and surrogates began to populate his work, as in We (2-5).
‘We’ is a double self-portrait of the artist that relies on a shift in scale, doubling, and theatrical presentation to present a surreal, psychological depiction. Wearing tailored suits - similar, but not identical, the almost 1-metre-tall likenesses lie on a small, wooden bed which covered with delicately embroidered sheets. Without touching, the different twins stare into space — each has a slightly different expression. The work depicts the artist much as he looks today,
perhaps a little older. The work appears mysterious, and is clever, maybe remains a puzzle, if it were not for the title of exhibition (Is There Life Before Death), which gives a clue to how Cattelan reflects about the art he makes. He himself has said (1999 in Spector 2011: 40) in connection to what role artworks have in society, and within biennials, the large-scale contemporary art exhibition events that happen every 2 years:

“What I’m really interested in is the notion of complexity, the idea that there are no fixed roles or definitions. Everyone is forced to change roles every single moment of his life… No one should be able to tell if it’s an artwork or a critical and curatorial statement. No one should be able to figure out where the artworks are, if there are any, or what the artists are doing there… What I am trying to say is that art is a collision of different systems and levels of reality. And I wish our biennial would reflect all this. On one hand, complexity is hard to grasp, so our project might turn out as a flop. Which is okay, because failure is closer to reality than art itself”.

Today’s self-expression clearly extends both autobiographical and art practice concerns, morphing into an incongruous double-edged position between being the object of review and the critic at the same time, as ‘visual autofiction’ (De Bloois 2007: 1). Visual autofiction is a term, and concept that the Cultural and literary critic Joost De Bloois came up with in 2007 and suggests should be used when considering contemporary aesthetic strategies. He built his concept upon the earlier concept of ‘auto-fiction’, which refers to a form of fictionalized autobiography, which the writer and literary theorist Serge Doubrovsky developed in the late 1970’s (cf. ibid: 1).

De Bloois (2007) points out that in being his/her own critic, the artist manoeuvres himself/herself within the unique position of being both inside and outside the field of artistic practice. This permanent parallel or double modus within self-reflection, which de Bloois (2007) regards as a new theoretical stratagem, presents us with new, potential and unique artistic subjectivities. I wonder if visual autofiction can be considered a contemporary trend?

Anna Poletti (2018: 1) an Associate Professor of English Language and Culture mentions that new forms of life writing have emerged in the digital age. Poletti discusses the use of the selfie in an exhibition of the Chinese Artist Ai’ Weiwei’ s work, #SafePassage, which ran from 16 September to 7 December 2016 at Foam photography gallery in Amsterdam. Ai took selfies with people arriving in Europe seeking ‘safe passage’ from war-torn countries. Polleti (2018: 2) suggests:

“By exhibiting such selfies taken with the men, women and children seeking sanctuary from political and religious persecution and safety from civil war in the art galleries of Europe, Ai Weiwei refuses to allow his own status as a political refugee in Europe to be interpreted as inherently different from the request for refuge issued by the hundreds of thousands of people arriving on Europe’s shores”.

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Ai Weiwei first became widely known outside of China as a design consultant for the Beijing National Stadium (also known as the ‘Bird’s Nest’) built for the Olympic Games held in 2008. His fame rose again in 2011 when he was arrested and held for eighty-one days in an undisclosed location by the Chinese government. His imprisonment was the focus of scrutiny in Europe, and many artists, curators, publishers and art institutions participated in campaigning for his freedom. After his release, Ai Weiwei’s passport was withheld by the Chinese Government for over four years. In June 2015, his passport was returned, and since then Ai Weiwei has been based in Berlin, and now in London.

Poletti proposes: “that we understand the selfie as an emerging norm of self-representation whose capacity to generate meaning is yet to be determined” (ibid: 2). I find myself on a similar train of thought as Cattelan, that complexity is hard to grasp, and yet I wish to work with the concept of visual auto-fiction (and do work with this), and include this notion somehow as a presence within my art. Sometimes complexity is that aspect that is very visual but remaining non-verbal.

In my own artwork, I began positioning myself within self-portraiture since 1993 - initially actively drawing rather classical self-portraits — see below 2 drawn self-portraits that affected and impressed me how physically drawing can capture a presence of body/flesh and 3-dimensionality in different light situations (daylight 2-6, candlelight 2-7). From 1998 I began to incorporate the reflex camera, and video medium which I had found inspiring for aspects of body and self in space/room/changing perspectives (videostill: 2-8) (see footnote for link to video work itself on my website)\(^{18}\) and also discovered the computer mouse as a funny-weird kind of indirect, extended drawing tool, which allowed and enabled me to work with spontaneous, crudely made lines (this was before the digital drawing pen was on the market) — the mouse had seemed emotional without being too much of a burden (2-9), and generally the computer became part of my art tool-set (Photoshop editing and video/sound editing).

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\(^{18}\) http://www.nicoleottiger.ch/Chronological/circumstance
2-6 Self-Portrait in Daylight, 1994, Nicole Ottiger
2-7 Self-Portrait in Candlelight, 1994, Nicole Ottiger
2-8 *Circumstance (Videostill)*, 2000, Nicole Ottiger\(^{19}\)

\(^{19}\) [http://www.nicoleottiger.ch/Chronological/circumstance](http://www.nicoleottiger.ch/Chronological/circumstance)
In 2002 I had created an art book as a work of art (called Squint/Silberblick) (see Vimeo link to video squint-book-flip in footnote)\(^{20}\) and looking back, it is a indeed first attempt to analyse my ‘self’, that I put together in a poetic, geological structure with self-portrait photos (2-11, 2-12), drawings, paintings, text, and created the centre-page as an tectonic index, consisting of: system (SYSTEM), collision-zone (QUETSCHZONE) and thought notes (DENKZETTEL) (see also link to photos on my website in footnote)\(^{21}\). I put in categories such as fault, reality splitters, suspicion, fiction, interference, periscope, shadow into SYSTEM, categories such as epicentre, fossil-zone, communications-field, atmosphere into THOUGHT NOTES, and angle of sight, and fracture into COLLISION ZONE — it was a personal yet analytical indexing of the self (2-10).

2-10 Tectonics (centre page), Squint/Silberblick, 2002, Nicole Ottiger

**System:** distortion, reality splitters, suspicion, fiction, axis rotation, interference, intimacy, shadow, daydream, telescope, paint box, static noise, target picture_black white, scopic drive, frictional heat. **Thought Notes:** affinity, sleuth, communications field, otolith, epicentre, sudden idea, perturbation, fossil zone A + B, Atmosphere I + II. **Collision Zone:** angle of vision, fracture.

\(^{20}\) [http://vimeo.com/331229505/cf376e8990]
\(^{21}\) [http://www.nicoleottiger.ch/chronological/ohne-titel-p1]
2-11 Squint/Silberblick (page 7), 2002, Nicole Ottiger
Since 1995 photography (from analogue and digital reflex cameras to instant polaroid) had become an integral part of my material infrastructure for experimenting how to capture my ‘self’ in earnest, and had a major impact on my artwork (for example, how to show/demonstrate something of the dynamic or conflict of inner world of feelings and outer portrayal of self, as shown in image 2-13). The networked cameras as my iPhone and iPad however only became integrated into this infrastructure only really from 2010 (my artist-in-lab days defined the beginning of my different usage of these tools).
I use the term self-representation to describe my research on the self, because it includes not only self-portraiture and selfies, but also mental pictures and ideas one has of one’s self — in other words, this term includes for me the realization the self is also a cognitive and social construction, and that we have, based on the psychologist Ulrich Neisser’s (1988) theory, an ecological self (which connects the self to experiences in the physical environment), an interpersonal self (connecting the self to others through verbal/non-verbal communication), an extended self (based on memories of one’s past experiences and expectations of the
future), a *private self* (which emerges from the knowledge that the own experiences are one’s own and not directly perceived by others and therefore to be communicated to be shared), and a *conceptual self* (a theory, a ‘self’ concept or schema about oneself, based on reflections of one’s own experiences within socio-cultural context).

In the international Dictionary of Psychoanalysis, self-representation is defined as: “the image the subject has of him or herself based on his or her own interpretation”\(^{22}\). However, before Freud the vast majority of European philosophers – from Plato and Aristotle to Kant and Descartes – regarded human beings as having an essence, to which they gave the name ‘soul’ or ‘self’. The main characteristic of this supposed entity, apart from it constituting our ‘core’, was that it was ‘the subject’ (cf. Watson 2004).

“The self was regarded as the subject of both our mental and our physical actions, i.e. the thinker of our thoughts, experiencer of our experiences, perceiver of our perceptions, feeler of our feelings, as well as the initiator of our physical actions, the agent. Combined with these two characteristics of being the essence and being a subject was the idea of being unitary, single, undivided over time. Thus the self can always be referred to by the word ‘I’ even when the latter features in such diverse contexts as moral judgements, inner sensations, sense-perceptions, intentions or physical actions (‘I deem that irresponsible’; ‘I feel a pain’; ‘I heard a bang’; ‘I plan to retreat’; ‘I kicked the ball’)\(^{ibid}:2\).

The neurologist Sigmund Freud however hardly used the terms ‘self’ or ‘subject’. Watson suggests that Freud was able to see though the concept of the subject as an entity, that he did not accept the existence of any single entity that could be put forward as an answer to the question ‘Who am I’ or ‘What am I’? The psychoanalyst Jacques Lacan (1949/2004) took a different approach and considered the subject can or is often caught in a ‘lure of spatial identification’ — and is referring to the ‘mirror stage’, where the own body is reflected in the mirror — the reflected image is therefore at the same time the own ‘self’ and the other (a smaller other).

Lacan proposed that human infants pass through a stage in which an external image of the body (reflected in a mirror or represented to the infant through the mother or primary caregiver) produces a psychic response that gives rise to the mental representation of an "I". The infant identifies with this image, which serves as a gestalt of the infant’s emerging perceptions of selfhood. However, because the image of a unified body does not correspond with infant’s still developing physical vulnerability and weakness, this imago is established as an ‘Ideal-I’ toward which the subject will perpetually strive throughout his or her life (cf. ibid, cf. Lacan 1966/2002).

For Lacan, the mirror stage establishes the ego as dependent upon external objects, on an ‘other’. As the so-called "individual" matures and enters into social relations through language, this "other" will be elaborated within social and linguistic frameworks that will give each subject's personality (and his or her neuroses and other psychic disturbances) its particular characteristics (ibid). The mirror stage is therefore a stage when and where the ‘I’ identifies with the image in the mirror but also where the subject becomes estranged from its’ self. The mirror stage is also referred to as the stage of self-construction (cf. Evans 2002) where the ‘I’ is structured like a symptom (because of its’ failure to recognise symbolic order of the subject). The ‘I’ is also site of illusions, and the source of resistance par excellence (cf. Evans). In accord with Evans (ibid.: 276, my transl.):

“Man is completely caught in the mirror stage: this is the basis of the power of the imaginary in the subject and explains why man projects the image of his body onto all other objects of his environment”.

Lacan’s mirror stage has been critiqued as a theory that cannot be observed in practice and contradicts observations about human identity and personality (cf. Tallis 1988). Lacan’s theory however puts forward the concept that the self finds herself only in confrontation with others, or the Other, that is constituted by the external world. Stockholder remains cautious and suggests: “For Lacan the ratiocinative self is a grotesque mask, behind which lurks the true subject, which is beyond thought” (1998: 362).

I treat Lacan’s theory as awareness that as a human we probably still act as if we were trapped in a mirror stage from time to time. I consider this knowledge as a caution and hope to act with precaution — the aim to be as aware as possible of what I am doing within my art making during experiments. Lacan’s mirror stage theory seems to contradict Heidegger’s precognitive conscious philosophy of ‘Dasein’ which relies on a fundamental primordial knowing in the mode of ‘being’ (see also section 1.4.1.3, p.39, where Heidegger’s ‘concept of being’ is also mentioned). Heidegger’s Da-Sein concept is based on German; ‘Da’: there, here; ‘Sein’: to be, to exist and Da-Sein: being-in-the-world and as existence of be-ing. Heidegger examined the ontological base of Dasein primarily in its historicity. In other words, ‘Dasein’ is always in the world with its being fallen-to-world and it is an effective Being which responds to the question what is ‘Being’ in the historical structure with its’ past, everydayness and future. Lacan summed Heidegger’s theory as: “History is not the past. History is the past as long as it is historicised in the present. The way of restitution of subject’s history takes the form of a search for the restitution of the past” (1975: 25). In other words, Dasein is an activity, being-in-the-world, which is anxious about Being in the world, and so it is a praxis of asking questions.
about “being”. Heidegger (1962) attributed an ontological meaning to anxiety as integrity, which is the precursor of all phenomenological existentialist situations.

I wonder if I am more a complicit of Freud’s theory of Fort-Da. Fort-Da is the name for a game that Freud’s 18-month-old grandson played involving a cotton reel which the boy would repeatedly throw out of his cot, exclaiming ‘Oo’ as he did so, forcing his mother to retrieve it for him, at which he would utter an appreciative ‘Ah’. Freud interpreted these noises as babyish approximations of ‘fort’, meaning ‘gone’, and ‘da’, meaning ‘there’. The significance of the game, which Freud discusses in ‘Beyond the Pleasure Principle’ (1920/2010), is that it shows the child transforming an unhappy situation, one in which they have no control over the presence of their parents, into a happy one in which the parents are at the beck and call of the child. Freud also interpreted it as a kind of revenge on the parents, a way of saying to them that they aren’t so important. This theory has also been linked to the compulsion to repeat.

I don’t mean a certain repetition is necessary but rather our relationship to objects is of significance. Without analysing myself here, it suffices to say that thinking with the object (cf. Van de Vijver, et al 2017) — to allow myself to be surprised by an event and object/presence of something — causes tension within the body, which is a knowledge and form of understanding, in the sense we humans subjectivize through handling with objects (cf. Lacan 1978, Freud 1955, Van de Vijver et al 2017). Objects are finally mental representations (the object being a set of movements, intentions, repetitions, motor patterns that cause mental representation)(cf. Van de Vijver et al 2017). In analysing what constitutes the mental Lacan suggests the mental apparatus is the subject of unconsciousness and therefore a specific kind of object with the desire to repeat (Lacan 1978). Within this loop I sense my task is find out more about the unconsciousness mental self-representation — that is the self-position I want to reflect in my artwork.

2.3 Self-Portraits and Neuropsychology

Historically in painting, neurological ‘entity-interferences’ between the self and the body are abundant and well documented as ‘artworks’ within the genre of self-portraiture. An entity interference is a disturbed form of self-identity. Some discussion of such artworks has been carried out in neuroscience, more specifically under neuropsychology, studying how artists depicted their face, or body in specific self-portraits after a one-sided stroke for example,
which can cause (often only temporary) visual distortion (hemispatial neglect) in one visual field (see Blanke, 2005, 2006, 2007, Blanke & Ortigue 2011). In 2011 Olaf Blanke, together with the psychologist Stephanie Ortigue (now Cacioppo) published a vital book about the brain, stroke and creativity (Lignes De Fuite. Vers Une Neuropsychologie De La Peinture), in which they discuss 5 artist cases in art history and 1 contemporary case, and the respective hemispatial neglect artworks in detail. Hemispatial neglect is a neuropsychological condition in which, after damage to one hemisphere of the brain is sustained, a deficit in attention to and awareness of one side of the field of vision is observed. It is defined by the patient’s inability to perceive and process stimuli on one side of the body or environment, where that inability is not due to a lack of sensation. Hemispatial neglect is very commonly contralateral to the damaged hemisphere, but less common instances of ipsilesional neglect (on the same side as the lesion) have also been reported.

The right-handed German artist Anton Räderscheidt (1892-1970) was a leading painter of the new objectivity (a German post-expressionism movement). He did a lot of works in the 1920s, also a number of self-portraits, either alone or with a woman or female model where the reality of his studio and fiction merged (2-14). He suffered a right-sided cerebral stroke in September 1967, which led to moderate left-sided paralysis (hemiparesis) in the left arm, and a severe lack of vision in left visual visual/hemifield (left hemianopia)(cf. Blanke & Ortigue 2011, Butter 2004). Around 3 months after the stroke, from December 1967 he began to paint his experiences of this neglect (2-15). Between January and June 1968 he painted and drew well over 60 self-portraits in front of a mirror, protocolling his condition (Blanke & Ortigue, 2011). These portraits are some of the most well documented empirical examples in the neuropsychology of art.
2-14 Painter with Model, 1926, Anton Räderscheidt
The picture from 1967 shows how he saw himself and the world after the stroke, and the picture from 1968 shows improvement, though still some distortion in his perception remained (the left shoulder is still missing for example).

Blanke (2007) put forward a highly interesting classification of self-portraiture, based on neurological classifications of illusory own body perceptions. He focuses on three major types: (1) **visual self-portraits** showing characteristics of autoscopic hallucination, which is defined as the experience of seeing a double of oneself in extrapersonal space without leaving the body — no disembodiment (ibid.: 15), (2) **disembodied self-portraits** where subjects feel that their self is located outside the physical body and somewhat elevated, like an out-of-body experience, and (3) **corporeal self-portraits** where one experiences their self as embodied, often still localized within the physical body or in the double, like doppelgänger (such as heautoscopy; seeing a double in extrapersonal space)(cf.ibid).

Blanke also ‘hopes’ that neuropsychological analyses of visual art will grow and expand into rich study material for art historians and philosophers examining art. We are not quite at that stage yet. Art historians still tend to stay firmly on the side of aesthetic descriptions of the artwork in discourse, and prefer to re-raise if anything issues of definition of self-portraiture as a sign or representation. And as mentioned earlier, at the beginning of section 2.2, it is not so simple to discern today’s contemporary expression of the ‘artistic self’ — I turn to looking at self-representation in contemporary art. The number of artists who address this subject is
exhaustive, and so I limit the scope to influences that I consider important, and who contributed to my thinking on how to represent the self.

In the following section I therefore analyse artworks that have awed me, and where I can identity questions and aims to further representation of the self or body self. I attempt to find a pattern and evidence of self-positions, which may also correspond to different stages of self.

2.4 Self-Representation in Contemporary Art

There are many different levels of messages that artists are delivering about their own self-image or of their own ideas what this entails. Also in the materiality, the variation is enormous. I cover here a range of depictions from classical to virtual, from man in his environment to an avatar pixelated on screen in artificialness. The boundaries (materiality and aspects of the self) are not always so clear-cut — I concentrate on the messages and on virtuality (often in connection with technology) and ideas of own self-image, as there are different levels of representation. What ties all artwork examples I introduce in this chapter are connections in artists’ conscious effort to explore how we perceive ourselves, and our relation to the body and world — and the probing question of what the self is, all the while staying aesthetic as is also an aim of visual art to demonstrate knowledge and command of materiality through materiality (materiality being virtual and real at the same time). In doing so, I create a personal, subjective extension of self-positions linked to theory from philosophy, neuroscience and psychology. In the following section 2.3, I discuss the challenge that lies ahead of me how to depict my own self as imagery in art — also considering that this research is not my first attempt to create timely self-representations, but a new attempt to extend my perception of self with the aid of neuroscience and technology.

(A) The Body in Space

The philosopher Maurice Merleau-Ponty (1945/cf. 2012) wrote that space is essential, and that existence is spatial, thus the human being, the self, is fundamentally related to space. The body itself is or rather it inhabits space; it is not just in space. According to Merleau-Ponty (ibid.), for us to conceive (understand and feel) space, it is necessary that we have been first thrust into it by our body. In some of my experiments (as Video Ergo Sum or Feeling of a Presence) I re-experience perception of space. In this sense, experiencing space as an objective system (by being introduced to space through my body again) I am able to re-
represent my sense of self in-itself (which as I understand it, is a more imaginative space of representation).

The philosopher Jean-Paul Sartre relates consciousness (and phenomenology and intentionality) to a theory of imagination, which was then a more radical departure to prior conceptions in psychology. Sartre suggests that the body is more invisibly present, because it is lived rather than known (cf. Sartre 1948/2004). The body is not just an object of experience but is a principle of experience (cf. Gallagher & Zahavi 2012). To understand our ‘lived’/embodied body is very much a theme in neuroscience. Gallagher and Zahavi suggest that to know true reality, we should aim at describing the way the world is, not just independently of its’ being believed to be a certain way, but independent of all the ways it happens to present itself to us — which would mean we should try to perceive ourselves outside our own perceptual space, for “the body inhabits its own kind of space, while at the same time being the origination point for the perceptual space within which the things of the world appear” (ibid.: 159-60). This means as humans we have and can differentiate between different kind of spaces, therefore we have a number of spatial frames of reference — allocentric space which is purely objective space such as global positioning system and mapping, and compass directions), egocentric space is perspectival space related to my perceiving or acting body/self — for example where I am situated in relation to my computer and the car outside — conditions which can change when I turn/move my body 90 degrees. Egocentric space is an experimental spatial frame of reference — this is lived space. Merleau-Ponty however also refers to a third kind of space, neither allo- nor egocentric, but one of proprioceptive awareness — an innate, intrinsic, sixth-sense position, which is also not independent of the subject’s experience. As a self-position, I place the artist Antony Gormley’s artworks of the self in a category what I would suggest has to do with ‘Bodily Self’. In cognitive neuroscience bodily self has to do with embodiment and bodily self-consciousness. Bodily self is the association with the feeling of owning a body, i.e., body ownership or self-identification (Tsakiris et al. 2007, Salomon et al. 2012), and the feeling of being located at one specific position in space, i.e., self-location (Schwabe & Blanke 2008, Blanke & Metzinger 2009).

Antony Gormley23 often uses his own body as a template to make sculptures of his own bodily ‘self. His technique is to make moulds of his body in plaster and wrap them in lead, or cast them in iron (see 2-16). He increasingly situates his sculptures in the environment, which gives us the opportunity to study different perspectives on ourselves because his bodies (artworks)

23 http://www.antonygormley.com/
are human bodies – we can identify with them (see 2-17 & 2.18). In his Matter in Mind (2015) text he states:

“Sculpture’s central purpose in confronting the materiality of the body with another materiality is to engage the imagination, to make links with all that lies beyond the palpable and the observable, deep in space or deep in the unconscious mind”\(^{24}\).

He also says:

“In a time when art has become commodified and institutionalised and where we go to museums to experience "Art", I believe in the ability of sculpture as a first-hand experience to move us and shift our goal-orientated consciousness somewhere deeper and wider. Art has always been for all, in Gilbert & George’s words. The making of art is an act of hope and sculpture in particular a talisman for continuance. I like to think about the idea that there will be some people, some intelligence in the future that will connect with these gestures of human manufacture and understand that they do not fulfil the desire for comfort but the need of the imagination to have both catalyst and testimony. Art is what we do to express life beyond life. The objects’ existence in time becomes part of our lives, even if their meaning is not clear to us or their story obscure, they become part of our story, a tribute to the need for mystery in the heart of the known (Ibid).”

I come back to Gormley’s reference that sculpture, though a very old art form, gives us instruments with which we can think about our own experiences, and contexts in the world, because in Chapter 5, I change my materiality, and after spending considerable time producing 2-dimensional drawings, videos and photos, often from virtual situations, I turned to 3-dimensionality and starting producing in silicone again (I had done some silicone objects in 2010-11) but retook this up again only in 2018. Gormley is very aware of our technological advancement. “We spend much more time now with human-made artefacts than we do with natural elements,” (Gormley in Interview with Sayaj, 2016). Further he is convinced: “Firsthand experience is becoming a luxury” (ibid.)

I experienced at first hand his Blind Light installation (2-19) at the Hayward Gallery in 2007, which was an immersive experience. The installation was designed to make the visitors lose their sense of location and awareness. One does lose that security of knowing. Blind light undermines protection from darkness and uncertainty, because one is very quickly submerged, swallowed up in the white, dense mist — one can lose one’s self in that space for visibly is greatly reduced — one becomes as Gormley\(^ {25}\) points out: “the immersed figure in an endless ground, literally the subject of the work” and “inside you find the outside”. With simple effects (dense mist, special lighting, and specific room) Gormley demonstrates how our own bodies can be instruments of art and self-experience.

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\(^{24}\) [http://www.antonygormley.com/resources/essay-item/id/147](http://www.antonygormley.com/resources/essay-item/id/147)

\(^{25}\) [http://www.antonygormley.com/projects/item-view/id/241#p0](http://www.antonygormley.com/projects/item-view/id/241#p0)
2.16 *Learning to See I, 1991, Antony Gormley*

2.17 *Learning to think, 1991, Antony Gormley*
2.18 Another Place, 1997, Antony Gormley

2-19 Blind Light, 2007, Antony Gormley
Gormley’s use of self as art appears to be defined by body consciousness and plays in relation to otherness — the other can be the surroundings, as space, architectonic room or the nature, with/within the interaction with person(s). I pay attention to my awareness (or lack of) the different spatial references in my Video Ergo Sum experiment.

(B) Prosthetic Self

Stelarc, a performance artist, remains one of the most remarkable artists to date to incorporate technology as extensions of or within his own body. His artworks focus on extending the capabilities of the human body. As the Philosopher Brian Massumi (2002) also described, Stelarc is not a conceptual artist and is not interested in communicating concepts about the body. What he is interested in is experiencing the body as concept. “He thinks of his performances, which involve minutely prepared, ‘austere’ probings of the functional limits of the body, as a direct ‘physical experience of ideas’” (Ibid: 88) (see 2-20 as an example). One could argue Stelarc attempts to understand the limit of bodily self and strives to extend the bodily self:

“Stelarc’s art starts from and continually returns to a point at which idea and body have not yet split or at which they have re-joined. His medium is the body as a sensible concept. Problem: In what way is the body an idea and the idea bodily? In what way can probing one extend the other? How is it that the body thinks itself” (Massumi 2002: 89).

2-20 Ear on Arm Suspension, 2012, Stelarc
Stelarc’s Ear on Arm Suspension (2-20) was a performance that took place on Thursday 8 March as part of the SUSPENSIONS exhibition which was from 7-31 March 2012 in Armadale, Australia. This performance involved 16 stainless steel hooks being inserted into Stelarc’s body, whilst he laid on the *Ear on Arm* sculpture. After the cables were connected the body was winched up approximately 50 cm above the sculpture. There, at that height, the body spun one way and then the other for approximately 15 min. When it stopped spinning, and in the correct orientation, the body was then lowered down. A journalist in the audience, Ashley Crawford (2012), who wrote an article, in the daily newspaper of Melbourne, about the performance describes the performance as painful:

“The pain became almost unbearably obvious, the assistants shaking with the force necessary to bury the hooks deeply. The veins in Stelarc's forehead were pulsing and the flesh where the hooks are inserted became inflamed. It is an agonisingly slow process as the skin began to stretch and his right hand involuntarily clutched at the sculpture and then, in a moment of surreal beauty, The Body was aloft. He floated, twisting languidly, at times seemingly guided by a shift of arm weight. There was utter silence. When the last hook was inserted, he groaned and smiled. Then, at 3.36pm, he ordered the Suspension to start. At 3.52pm the spinning stops and he orders the descent. When a sudden excruciating jolt causes a gasp from artist and audience, at least one experienced curator turns away, ashen. The assistants gingerly remove the hooks and there is only one wound, on his thigh, that bleeds. Ten minutes later, bandaged and in his kimono, Stelarc is shaking hands and joking”

Stelarc (2018 in Trebuchet Art Magazine) himself stated:

“The nude and silent body at least in its static suspensions is an image of suspended animation. An anaesthetised and pacified body that is obsolete but not yet extinct. That has desires but does not express them. That feels pain but remains silent and stoic. A body that neither thinks nor expresses emotions”.

One of Stelarc’s more recent projects and also a longer (over 12 years) work-in progress projects that demonstrates his use of technology to extend body functions was to develop a third ear on his left arm to connect the senses to the internet (2-21). ‘Ear on Arm’ is Stelarc’s longest performance, which so far has involved two surgeries. It took him 10 years to find surgeons that agreed to his surreal proposal. The first surgery, in 2006, consisted of implanting a skin expander, a process to create excess skin in order to accommodate the ear. Stelarc suffered complications due to necrosis – a premature death of cells in living tissue. In second surgery a miniature microphone was positioned inside the ear. However, it had to be removed due to an infection. Stelarc has said that he is planning a further surgery that will transform the ear-in-progress into a functional organ: “The earlobe will be partly grown using my own adult stem cells. Such a procedure is not legal in the USA, so it will be done in Europe.” (Stelarc quoted in Rodriguez Fernandez 2018). Stelarc’s Ear in Arm project is just one manifestation of his vision of a future where nanotechnology will take on a more invasive role and perhaps even recolonise the body (cf. Lawler-Dormer 2018).
Stelarc declares on his website (www.stelarc.org):

“I have always been intrigued about engineering a soft prosthesis using my own skin, as a permanent modification of the body architecture. The assumption being that if the body was altered it might mean adjusting its awareness. Engineering an alternate anatomical architecture, one that also performs telematically. Certainly what becomes important now is not merely the body's identity, but its connectivity- not its mobility or location, but its interface. In these projects and performances, a prosthesis is not seen as a sign of lack but rather as a symptom of excess. As technology proliferates and microminiaturizes it becomes biocompatible in both scale and substance and is incorporated as a component of the body. These prosthetic attachments and implants are not simply replacements for a part of the body that has been traumatized or has been amputated. These are prosthetic objects that augment the body's architecture, engineering extended operational systems of bodies and bits of bodies, spatially separated but electronically connected”.

Stelarc has been performing with his body as the medium for over 40 years now. I am in awe with the intensity Stelarc gives his art projects. Stelarc is correct when he says the body has physical limitations:

“The body is highly inadequate. It can't do minutes without air, a month without food, if it loses 10% of its body fluid, it's dead, if its internal body temperature changes between 3 and 4 degrees it’s in serious danger” (Stelarc quoted in Lawler-Dormer 2018).

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2-21 Ear on Arm, 2016, Stelarc
(C) Floating above One’s Self

Hiroo Iwata, Professor of Engineering, Information and Systems, created a clever immersive, interactive experience, which he called ‘Floating Eye’ (2-22). He installed a wide-angle camera (convex mirror and video camera) in an airship/hot-air balloon, which hovers over the participating viewer and takes a bird’s eye view of his/her image and surroundings (2-23). The image is transmitted wearable dome screen. The airship can be moved by pulling a string and so the slightest wind/breeze is felt and seen in image distortion — the viewer is thus also interacting with the atmosphere too.

This strange visceral experience of floating above one’s body is like an out-of-body experience (the participant sees his/her own body at a distance) — it is an apt expression of one of art’s intrinsic themes: the search for sense of self and identity. Separating the eye from the body opens up new possibilities of self-awareness, a new style of self-recognition, and form of self through interaction, with the string, one can guide oneself to interaction with the surroundings, and thus one gains self-knowledge through that experience. This work of art, using technology to separate vision from the body is a poetic one, subtle too as the viewer can decide him/herself where/when to move and can move freely. The device is in this sense very playful, and aesthetically pleasing - this artwork achieves an experience of being out-of-body without it being a dark or scary one.
Image has been removed due to Copyright restrictions

2-22 Floating Eye, 2001, Hiroo Iwata
The words ‘art’ and ‘aesthetics’ have many different roles. Despite the dictionary definition of art as ‘a conscious use of skill and imagination’, *Art* can hardly be explained. Instead art is the subject of constant contention and almost ‘refuses definition’ as the philosopher Theodor Adorno (1969) once explained. He claimed ‘nothing concerning art is self-evident anymore, not its inner life, not its relation to the world, not even its right to exist’ (ibid.). Yet, as Adorno also rightly suggests: ‘art’s autonomy remains irrevocable’ (ibid.). It seems any attempt to essentialize what art is, what an image is, must remain a speculative endeavour. While image means ‘idea’, which stems from Greek ‘to see’, and shares a root (im-) with ‘imitate’ therefore with the act of ‘mimicry’ (mimesis), aesthetics is also more difficult to define. Aesthetics has to do with the creation and appreciation of beauty and aesthetic taste; more scientifically defined as the study of sensory or sensori-emotional values or ‘judgements of sentiment and taste’ (Kant 1790, Zangwil 2003). Even though the term ‘aesthetics’ was introduced in 1750 by Alexander Baumgarten to refer to a science of sensuous cognition (in Seeley 2011), the field of empirical aesthetics dates to a book published in 1871 by Gustav Fechner called, *On Experimental Aesthetics* (in Seeley 2011: 1). Fechner is regarded as the father of a rigorous transcendental aesthetics, which includes understanding that aesthetics and pleasure is also immediate psychophysical affect - a shock to the brain beyond judgment and indeed beyond
thought itself (Hetrick 2011). Indeed, art today aims at questioning beauty as much as aiming to be pleasing to the senses.

While there is no unique or individual aesthetic object, there is a continuum of cultural forms and experiences, which may signal as art; the *Floating Eye* artwork is one such experience. This piece also nicely demonstrates *Art as Experience*, a theory that the philosopher and psychologist John Dewey produced in 1934. Dewey (1934/2005: 59ff, 201ff) attempted to shift understandings about the art process from ‘its physical manifestations as/in an expressive object’ to the process in its entirety (cf. Ibid: 72ff, 85ff). The artist in this process is a ‘*live creature*’ (ibid: 14) — emphasizing the vital biological sensory exchange between man and the environment. The *Floating Eye* artwork achieves this exchange as well as allowing the participant to experience a form of displaced or disembodied self.

In my art experiments, which I discuss later in Chapters 3 to 5, I attempt to achieve complete experiences of when I experience a loss of self. In some resulting artworks I am more successful than other in combining experience with artistic expression. Dewey also stressed that artistic expression is not spontaneous but is an *Act of Expression* — an act that requires long periods of activity and reflection, and only comes to those absorbed in *observing experience* (cf. Dewey 1934/2005). And, for activity/experience to convert/turn into artistic expression, there must be excitement, turmoil and an urge to go from within to outward (cf. Ibid.: 153, 235ff). Dewey is convinced there is artistic expression when present and past experience comes together and a complete or full absorption in the subject is achieved.

**(D) Seeing Double**

The artist William Kentridge’s *Seeing Double* exhibition at Marion Goodman’s Gallery, New York in 2008 was titled ‘seeing double’. Many works in the exhibition involves seeing twice - seeing the image in one form, and then reconstructing the image either in a mirror, or through another optical device, for example using a stereoscope (2-24). William Kentridge constantly challenges how we think we see — he studies the construction of seeing. In taking sight as a subject, it is *double vision*, the formal construction of how we construct images in our brain, which intrigues William Kentridge. His drawings illustrate the vibrant sense of what visual art can do — that it is a moving-thinking-feeling and very visual form (cf. Stern 2013, Massumi
Ottiger, 2020

2011). Stern (2013: 26) defines the strength of visual art and artists do as follows: “Artists compose lines, shape and colour, to craft the experience of time and space, without time or space”. This makes visual art a powerful abstraction of the experience of what we see at the very event of seeing. Visual art is therefore “a kind of perception of the event of perception in the perception” (Massumi 2011, in Stern 2013: 26). Kentridge’s drawings often show such moments of seeing and leave behind traces of contradictions, ambiguity, movement, memory and affect (2-25).

Image has been removed due to Copyright restrictions

2-24 Drawing from Stereoscope (Double page, Soho in two rooms), 1999, William Kentridge

Seeing is an active, embodied, both actuality and virtuality at the same time. Kentridge shows in his way of working — labour intensive drawing, erasing, re-drawing, walking back, looking (at drawing)(at body, at camera), walking towards paper again, adding new marks — a constant moving, viewing, thinking, making process (cf. Stern 2013). I always aim at moving, thinking, feeling visually with my material, with the content, in context as the work develops in the making. The challenge is to be able to do so also in test-setups and conditions. As a self-position, drawing often has an affinity with Doppelgänger, with a double of oneself that one tends to see or regard from a distance, can also be associated with the fleeting self (in movement, videos) and with one’s one Alter Ego.
Drawing is not only a way of seeing but also a crucial power like literature to generate imagination (cf. Birge 2012). Art, in this case drawing might be best viewed as a method and a technology for self-exploration. Birge (2012: 100) mentions that: “affective registers and imaginative reconstructions are as essential to understanding the experience of consciousness as identifications of neural correlates”. I discuss my way of drawing further in Chapters 3 to 5 — drawing is a backbone of my visual artistic practice.
(E) What is Real?

The concept of *Symphony of a Missing Room* (2009-2014) was designed and developed by the duo artist-team Christer Lundahl & Martina Seitl (2-26). Lundahl & Seitl26 are pioneers of an immersive antidisciplinary practice within contemporary art and performance. They construct site-specific situations in which the boundary between perception and action is re-negotiated with a given relation to technology and art history or culture. I had the opportunity to experience this very work (*Symphony of a Missing Room*) of Lundahl & Seitl’s when it came to London to The Royal Academy of Arts in 2014.

Symphony of a Missing Room is a guided museum tour where the visitors go on a collective (as a group) and a very personal, individual journey. With wireless headphones and goggles, a voice takes visitors, led by performers, on an exploration that spans layers of physical and imaginary architecture of the museum and its curatorial space. The astonishing but simple effect does not come from virtual reality goggles but blind, whitewashed, opaque goggles — reality is milky, blinding, isolating, straining and yet sharpening the senses to the intensified edge of our perceptive capabilities and what we know. During the tour, the visitor, the participant experiences visions, hallucinations, realities — we think we see things, pictures, spaces, sculptures, museum workers, rooms one have never visited before (archives) and

some experiences (sights, smells, noises) become exaggerated, heightened and: “you can’t help but sense you’re on the verge of something . . . of some unfamiliar form of cunning artfulness, which feels as if it is about to cave in around you” (Jones 2014:3, Essay for London presentation of Symphony of a Missing Room). As a visitor one has autonomy and a certain freedom to choose or decide what is real or imagined or perceived. What and how one experiences is well summed up in the surreal and mystic drawing that Christer Lundahl did, of the performance (2-27).

2-27 Drawing of Symphony of a Missing Room — archive of the forgotten and remembered, 2014 (Royal Academy of Arts, London), Lundahl & Seitl

There in the fairy tale surrealism lies perhaps the only danger — that of banality. Trueman (2014) suggests the experience is:

“a generic fairytale quest that relies on recognisable archetypes — and it starts to feel like a string of effects, rather than a deliberate narrative. It leaves Symphony’s meaning rather banal: a vague meditation on absence and art’s ability to transport us — a simplistic understanding that can’t accommodate abstract or linguistic work. We “wake up” in the gallery’s vaults, surrounded by artworks in storage, filed away and forgotten. It’s not long before this experience — so ticklish in the moment — goes the same way”.

Lundahl & Seitl’s work has fairytale inflections because of the auditory dominance, the emphasis on sounds, for example horses’ hooves galloping in the background, voices whispering sentences from known stories. The listener is always a body; the process of hearing
involves skin, flesh, and bone. And in the visual blindness of opaque goggles, our associations grasp at memories we have. It is hard to pinpoint specific archetypes during the performance, yet as blinded participants we feel guided to know a visual symbol, or unconsciously recognise what a voice is saying, regardless whether its’ all true or not. The audience as participants experience the performance as a ‘quest’, to physically get from A to B to C – guided by voices and helping hands touching our hands in a gentle way.

Christopher Booker, the author of “The Seven Basic Plots – Why We tell Stories” (2004) mentions that i.a. ‘The Quest’ is a typical story archetype based as on Jungian Psychology, as also ‘Voyage and Return’ and ‘Overcoming the Monster’. Lundahl & Seidl’s work is enriched through our associations to archetypes.

It is however a risk of all art to verge banality — I fear my artwork could be ordinary, because I don’t use clever special effects and yet, I hold to the knowledge that I take position of my ‘self’ systematically, with a methodological slowness — time produces knowledge through the power of unconsciousness accessing its way to visuality and language. As a self-position I put this kind of self-representation into the category of a virtual self, for though it has many aspects of the real, the virtual or non-real self is also experienced and often is best presented in a performative way.

(F) Multi-Realities

(F-1) Sondra Perry27 is a black female African American artist who I only got to know about in early 2019 — she has ever since stayed in my mind, because she constructs timely narratives that explore imaging (especially blackness), and often takes her own life (and self) as a point of departure. She questions current productivity and efficiency culture and explores the role of digital technology in the formation of African American identity as well as how shifts in technology and identities are entangled in our society today (using found footage from the internet and 3D Avatars, i.a.).

The *Graft and Ash for a Three-Monitor Workstation* Installation is a stationary exercise bike outfitted with three video screens positioned above the handlebars (2-28 & 2-29). The exercise bike looks like a rowing machine but Perry herself calls it a bicycle workstation. The

27 [https://sondraperry.com/](https://sondraperry.com/)
workstation is a DIY machine — just as Perry manipulates technology, she also makes/creates an exercise workstation that is not typical. “Ghostlike voices issue from a video of a purple ocean, conjuring the Middle Passage”\(^{28}\) (Korman 2017: 1). A bald avatar (2-28 & 2-30), based on Perry’s portrait, delivers a monologue on contradictory definitions of success as offered by contemporary capitalism: “We are DIY, not all a representative thing. Makes being a being impossible,” the avatar says (Korman 2017: 1).

The avatar repeats sentences, but also appears to act as a form of political resistance with sentences like: “We are a problem to be fixed, and if we resist being that problem, we will become that problem to be fixed” (in Muñoz-Alonso 2018: 2).

Perry appears in her ‘Graft and Ash’ installation in metaphysical form, as an animate head that hovers in and out of virtual space in the displayed monitors (see 2-28). Although Perry based the avatar on her own image, the visible avatar is a collective and ideal we, through what she, the avatar, says aloud (cf. Saint-Louis 2018). Thus, we separate the avatar from the “real” Perry. The avatar addresses the viewer in automated spoken word and movement, its eyes and head traverses three screens arranged as a triptych (cf. ibid). “The multiplicity of Perry’s form reveals an underlying struggle to be embodied, to become grounded in a physical self that eventually finds itself disrupted and undermined” (Saint-Louis 2018).

\(^{28}\) The Middle Passage (1990) is a historical novel by Charles R. Johnson about the final voyage of an illegal American slave ship.
Image has been removed due to Copyright restrictions

2-28 Graft and Ash for a Three Monitor Workstation, 2018, Sondra Perry

Image has been removed due to Copyright restrictions

2-29 Graft and Ash for a Three Monitor Workstation, 2016, Sondra Perry
Sondra Perry’s work is complex, and maybe not ideal to analyse here, but it reminds me of a future, of the possibility to open up my research on the self, to use avatars, and adapt technology, within present day context(s) of the self-reference. Her work tells me that there are many present-day issues that affect the self not addressed in my research. My research is based on a physical, neuropsychological, perceptual level of the bodily self — my focus is on the fundamental level of human self-representation.

(F-2) The artworks of the artist and painter Maria Lassnig (†2014) is perhaps an opposite example to Sondra Perry, of the artist’s ability to not only construct her ‘self’ again and again, and also to integrate what she felt as well as perceived. Her body perception was introspective, but she remained anchored within the exterior world. She examined reality and body awareness in all her works. On the one side she said: “you paint the way you are” (Lassnig 2017: 7) (2-31).
On the other she also was astute — she observed that:

“the camera often goes further than the human eye, e.g. mounted on a wire and inserted into the intestines or the stomach. But it can never enter my mind, never penetrates to where thoughts emerge, because not even scientists have been able to find out where that is. You can take pictures of the microcosm of millions of neurons in the brain, but not of how they work. Painting them is a different story. No camera can ever enter my neural pathways, but I can leave them” (ibid.: 168) (2-32).
It is a contemporary issue to be concerned with multiple narratives of our selves — our ‘second lives’ on social platforms for example depend on us constructing and re-constructing ourselves (fictional and real) time and again. For my own art research, although I am aware the attempting to position the self in a number of ways as a construct’ is a necessity, I hope to be authentic and still add new material to the vast, complex topic of what self-representation is. I feel I have not yet found the vocabulary to define what I am going through in this research process. It is also a constant challenge to stay true to myself, to make sure I
stay authentic, and depict my own self and sense of self. I discuss some of these challenges in the following section 2.5.

2.5 Challenge of Depicting Own Self as Imagery in Art & Rethinking the Sense of Self in Posthuman Era

It is clear that posthumanism is about the end of a ‘human-centred’ universe, and that the boundaries and differences between the human and technology are dissolving. It is and remains a challenge to assimilate the knowledge gained about theory of what the posthuman era is and to incorporate it into artistic practice. Cybernetics is an area that had not been touched on until now, because it is a vast topic, with many subtopics and opens up many new questions. In 1948, the Mathematician and Philosopher Norbert Wiener defined ‘cybernetics’ as the scientific study of control and communication in the animal and the machine. I recognise that as control systems, cybernetics is very connected to technology in the posthuman era and with man’s strive to have/keep control and power over the environment.

Though I work with technology in my art research to perform tasks, the operation of these machines (technology; i.e. HMD camera, master-slave robotic system) can still be directed by a human (manual control) — it is a lower level of technology than completely automated thinking machines. However, there are challenges in understanding the relationship of interfaces between man and technology. I attempt to discuss in the next section what occupied my thinking whilst doing the artistic research.

The theorist and director, of the International Arts Centre Prague, Louis Armand (2018) considers Lacan’s engagement with cybernetics and refiguring of Freud’s theory of unconsciousness as a basis for posthuman subjectivity. He puts an interesting thesis forward that with the advance of technology the subject (the human) gains materialism: textuality and symptom. Armand (2018:17) refers to Lacan’s reference to Joyce’s writing mechanism, which manifests as “a textual ‘body’ that writes or signifies upon its own surface, yet which defies analysis. This body assumes the function of both an agent (something that acts) and a thing”. The Joycean body or “thing” adopts a position that returns out of the realm of the Real (cf.

29 See also section 1.4.2 about posthumanism and technology
— a realm that the philosopher Slavoj Zizek also mentions and calls the obscene realm and inscribes subjectivity as a fantastical interface (ibid.: 17). Kunkle (2016) considers Zizek’s realm of the Real as one that short-circuits Lacan’s realm because reality emerges in so far as it can get into material reality that it inverts into itself and runs wild/berserk (cf. Kunkle 2016). This exposure — and a kind of appearing to appear fits with the posthuman era and issues at hand with technologization — that is, one of necessary incompleteness. Gödel’s incompleteness theorems of impossible possibilities can be regarded as a universal ethic for now, and so the universe of the subject and sense of self must therefore necessarily be incomplete (cf. ibid.). Nonetheless in our fragile temporality we are able to experience existence and come into being and construct that existence. It is there - here I find the task art has in the posthuman era, with technological tools — to construct the self where the subject emerges — at that interface — which is fitting when we remember that the human is a prosthesis of technology in the posthumanism era (cf. Armand 2018).

Though Lacan (1975/2015) suggested the subject is doomed because the subject is no-on, the fact that we have always been posthuman as Hayles (2008) has characterised is a way forward (also see section 1.1.2 where I lay a foundation and my position to the term posthuman). In Ecrits, Lacan defined subjectivity as the subject’s sense of ‘sense of life’. Lacanian’s sense of life is grounded in the way things seem to each of us as individuals — Experience is a process where one determines how objects/things/people and so on appear through one’s own interpretation of immediate reality. Subjectivity is in constant flux — we all experience, perceive and understand certain situations differently to other subjects.

It appears that it is no accident that post-human discourse engages with scientific rationalism and method of knowledge and technologism — this thinking was already familiar to Freud, Joyce, McLuhan, even Nietzsche with his ‘metamorphosis of the individual’. And as Armand points out, the metamorphosis of the sense of self is not meant as a transformation, but as a break with the concept of self-identity (the principle of individualism) to a ‘technicity’ of self-identity (ibid.: 19). What I find fascinating is that Armand spins a thread between Joyce’s use of the word ‘paralysis’ — not as an inertia, but as a perversion of the body, as something bound, of a fixed materiality in which the subject is confronted with a radical insufficiency or superfluity (cf. ibid.: 21). The self/subject is like the undead, playing dead, waiting, in order to return and communicate something unsayable (something obscene?). Within this paralytic situation is a tangent where the subject inscribes itself into the reality of its’ own actions. Armand goes as far to suggest a post-effect of technicity is similar to:
“a human eye turned upon a kind of afterlife, where consciousness seems to live on after death, to be omnipresent, to speak from a kind of abyss, so that through “it” we may bear witness — paradoxically - to our absence, as the (dis)embodiment of a kind of thinking that may be said to bear witness to the end of thought, to the unthought (2018: 24).

If posthumanism is a symptom of attempt(s) to merge all material including communication, then I slowly understand what I unconsciously created in my last series of artworks (2018-19) — I discuss this in more detail in Chapter 5.

Judith Roof (2018: 40), lawyer and professor of English, put forward the idea that posthumanist thinking has to compensate somehow conceptually for the loss of metaphor (for its being, for itself), by “erecting an even more extensive perspective in place of the human”. Roof (ibid.) suggests:

“posthumanist thought perceives the human from an imaginary point beyond the human, which in turn both produces and denies the illusion of subjective humility, while transforming the subject into the object of its own gaze, and ironically empowering its vision by denying its perspective as inescapably human. The sleight-of-hand that produces this instant egalitarianism operates by displacing an imaginary detached perspective away from the human subject so that the human subject can envision itself from a perspective imagined to constitute an improved, more masterful scale of vision, at the same time eliding the fact that the source of the perspective is a still specifically human — and a human whose perspective is now markedly extended. This imaginary shift in perspective results in a doubled mirror stage, the subject now standing between the reflecting mirrors of its two perspectives seeing itself into infinity. Posthumanism transplants Humanist values — ethics, rationality, insight, with an added dose of false humility — into the imaginary of this enlarged context, defined by systems that iterate the binary imaginary of digital universes, and that install a continued human aegis in the denial of its aegis — the obverse of the feedback loop that appears to center human users while they are being used”.

It would appear that collapse or displacement of metaphor produces a delusive one-way process of subjectification. Posthumanist ways have not yet replaced nor succeeded Humanism. Posthumanism and Humanism co-exist today, and both struggle to allow the human subject to become its own object.
3 PERCEPTUAL GLITCHES

“Image is sorcery” (Jorge Luis Borges)

Perception is the organization, identification, and interpretation of sensory information in order to represent and understand the presented information from the environment. All perception involves signals and processes that go through the nervous system, which in turn result from physical or chemical stimulation of the sensory system. For example, vision involves light striking the retina of the eye, smell is mediated by odour molecules in the nose, and hearing involves pressure waves in the ear. On one side our senses are the gateways between the outside world and our brain. But not only, because perception is not just a receipt of sensory signals, it is also shaped by our learning, memory, expectation, and attention. So, though perception means the ability to hear, see, smell, taste, feel, or be aware of something through the senses, normal perception is a kind of blindness — we often only perceive what we attend to. All perception involves a co-experience of the self with the environment, and can be split into two processes: (1) processing the sensory input, which transforms low-level information to higher-level information (e.g. extracts shapes for object recognition), (2) processing which is connected with a person's concepts, expectations and knowledge, and selective, restorative mechanisms (such as attention) that influence perception. The topic of perception in general goes beyond the constraints of this research — here I would like to take a look at visual perception — for, how I look onto the world, as an artist, is visual experience, and therefore a form of visual perception, which I transform or try to authentically reproduce.

The act of ‘seeing’ is a complex experiencing of the spatial relations of subject-object within the environment — focusing on faces, on (background) objects, depth, colour, shadow, light-dark contrast, sound, smell and touch cues for example, all happening within the bottom-up (low to high level) processing of sensory information in the nervous system and top-down effects of learning, memory, expectation and attention. But most of us have experienced optical or visual illusions at some point in life. Most famous experimental image illusions ask us what we see: Do you see a rabbit or duck? (see 3-1), Is it a vase or face in profile? (see 3-2), Is that an old or young woman’s face? (see 3-3) Such perception tests make us realize, that what we see — the images — might be as the neuroscientist Richard Gregory (2001) suggests: meaningless out of context and mere shadows of things until we give or realize the significance. He even proposed: “we live in two worlds — perceptions of experience alongside conceptions of understanding — both based on knowledge and assumptions that may be wrong” (2001: 21).
3-1 Rabbit-Duck Illusion

3-2 Vase-Face Illusion

3-3 My Wife and My Mother-in-Law Illusion
Artists like to test where the edge of perception is. For example, the artist Carsten Höller invited visitors in his 2001 solo show “Instrumente aus dem Kiruna Psycho Labor” at Gallery Schipper & Krome, Berlin to see the world ‘anew’ and inverted by wearing “upside-down glasses” within a Light Wall installation (3-4, left image), and again in 2015 at the Hayward Gallery for example (3-4, right image). One can observe in the 2 images (3-4) that between 2001, and 2015 time has not stood still, Holler has changed the type of goggles the viewers use, and probably the effects change slightly — each apparatus affects the outcome in its own way, besides the expected effect of seeing upside down. Using his training as a scientist in his work as an artist, Carsten Höller’s main concerns relate to the nature of human perception and self-exploration. He has undertaken many projects that invite viewer participation and interaction while questioning human behaviour, perception, and logic. His “laboratory of doubt” at the Hayward Gallery in 2015 embodied in objects ranging from carousels and slippery slides to upside-down goggles, often containing playful, hallucinatory or darkly humorous overtones in order to provoke experience and reflection. Viewers experience colours that have been displaced/shifted, images that refuse to register in our mind/eyes, bodily sensations as if stepping out of body, or sense of unexpected movement — He disorients the senses and by doing so, achieves or stimulates precognitive moments of pure sensation within us.

The Surrealism artist René Magritte (1898-1967) was also a master of perception and visual deception in his artworks. Magritte does not actually leave out, nor conceal anything visually as such, and yet much remained hidden, left to our imagination to finish the story or solve the potential mystery - we are often left looking at his images wondering at the mystery and what the visual input that comes across actually means. Magritte himself is reported to have said:
“everything we see hides another thing, we always want to see what is hidden by what we see” (Radio Interview with Jean Nevens in 1965)\textsuperscript{30}. I show a particular artwork of Magritte’s in Chapter 4.

The art of seeing — vision and visual perception — to know what is where (cf. Marr 1982) is an extremely important sense for everyday life, for getting things done, as well as for me in my art, hence, in the remaining sections of this chapter I focus on two outcomes of my research on wanting to understand more how sight — perception — brain — left/rightness — hand — drawing — making art function and are connected (or not). This chapter on visual perception of art is a prelude to my deepened research on the self and self-representation. I feel this perception research is a vital pre-stage and setting to the rest of my research in the INCO lab. I say pre-stage though in reality this ran partly parallel (2010-11, 2015-17) to my research on the self (2010-2011, 2015, 2018-19).

3.1 Perception of Art within Neuroscience

Much art perception research in neuroscience is concentrated under Neuroaesthetics, a term which originally introduced by Semir Zeki in 1999. The field now covers a wide range of attempts to investigate the human perception and the experience of beauty and appreciation of art in terms of colour, line, shape, symmetry, style, spatial orientation, motion effects, even levels of abstraction and realism, arts and/or aesthetic appreciation (see Nadel & Pearce 2011, Chatterjee 2010, Mamassian 2008, Peretz 2006, Patel 2007, Kawabata & Zeki 2004, Zeki 1999, 2002, i.a.). The scientists in this field also explore and attempt to measure how the brain functions and how mental states relate to the concept of ‘creativity’. For example, the website \textit{International Network for Neuroaesthetics} \textsuperscript{31} declares that their scientists are conducting ‘stimulating research on the biological basis of aesthetics’ and states it is a new field of research emerging at the intersection of psychological aesthetics, neuroscience and human evolution. These are big claims and not without controversy. While this field has boomed over the last decade, even to the point of becoming a science with empirically testable hypotheses that uses visual images (not necessarily always art) to learn more about neurobiological foundations of human visual processing and how the brain processes images.


\textsuperscript{31} \url{https://neuroaesthetics.net/}
Eric Kandel, a medical doctor specialised in psychiatry, neuroscience, biochemistry and biophysics suggested that especially since the Vienna ‘Inward Turn’\textsuperscript{32} from 1900 (cf. Kandel 2012), studies have been undertaken on the fascinating nature of how artworks, mostly paintings, depict brain or body or psychological illness. However, most studies stem from the later, for example Rose (in 2004) analysed particular artworks like Hieronymus Bosch’s The Cure of Folly (1475-80) or Francisco Goya’s Los Caprichos (1799) or Vincent van Gogh’s Self-Portrait with Bandaged Ear (1889, see Rose 2004). Similar studies continued and were carried out amongst others for Giorgio de Chirico’s Autoportrait (1922, see Bogousslavsky 2010), Paul Klee’s The Eye (1938, see Suter 2010).

There are also detailed studies of how neurological disease and disorders affect artistic ability, in particular of famous artists i.a. Lovis Corinth, Federico Fellini, Joseph-Maurice Ravel (see Alajouanine 1948, Rose 2004/2006, Bogousslavsky 2005, Zaidel 2005, Blanke 2006/2007, Dieguez, et al 2007, Blanke & Ortigue 2011, Blanke & Pasqualini 2012, i.a.) and contrary, non-artists’ emergent creativity (Miller et al 1996, Finney & Heilman 2007, Drago et al 2008, Schott 2012). These studies could be extended to include the participation of patients with depression such as those with personality/bipolar disorder. In 2013, the neuroscientists Luciana Ricciardiello and Pantaleo Fornaro presented and discussed the potentials that creativity may reside upon a continuum with psychopathology, in a fascinating, unconventional approach. They think that this information could be used within observations of bipolar disorders. Previous to this concept, Chen, et al. (2008) thought that it was worth exploring aesthetic appreciation with schizophrenia patients. His team examined whether persons with schizophrenia appreciate visual art. They found the modulation of basic visual signals, which are often used for vivid and dynamic expressions in art may be under-appreciated in patients with schizophrenia.

From my own experience of being an artist-in-residence with Blanke and his team (in 2010), these scientists also argue for a need to combine laboratory studies with visual artists as subjects in standardized experiments (cf. Blanke & Pasqualini 2012). I address that need.

As an artist who reflects on process and contemplates what the ‘self’ is, I am sceptical whilst admiring scientists’ ambition to understand how the brain and evolution makes aesthetic experiences possible. It is of debate whether aesthetic experiences predate art as a human activity (cf. Nadel et al 2011). Scientists in this field also explore and attempt to measure how

\textsuperscript{32} Vienna Inward Turn is a reference to the culture of Vienna during the period 1890-1918
the brain functions and how mental states are related to the concept of ‘creativity’. I, on the side of art, was wondering how does the artist utilize ‘seeing’? In LNCO I had been doing some drawings (see 3-5) and video works - see Vimeo link to video The Fine Art of Perception (3-6), and EyeID (3-7) - and was becoming aware (again) that seeing is complicated. Furthermore, ambidextrously, I sometimes play drawing with my left and/or with my right hand, as each hand sees and draws differently and that also fascinates me (3-5). The figure (the artist herself) in the left of the drawing (looking at drawing from viewer perspective) was done with my right hand, and the other with my left hand — I visually show the difference it can cause in body behaviour too — I intuitively hold my left hand to my eye in a different manner than with my right hand.

3-5 Eye of the Beholder, 2010, Nicole Ottiger

Olaf Blanke had commented, in a weekly discussion we had in LNCO, why would an artist want to draw with her/his non-dominant hand? (I discuss dominance in the next section 3.2). We

33 https://vimeo.com/331232417/01ba033272
34 https://vimeo.com/331918849/300f156b22
had also been discussing art images that some brain damage patients had done after right hemisphere strokes where a spatial neglect can be seen in the post-stroke drawn images. I had just learnt and read about hemispheric specialization, and about some of the purposes of the left and the right brain (I mention more in the next section 3.2). This discussion kicked off a series of experiments (From Perception of Art to Art Making) to explore and discover what right and left hemisphere may contribute to visual art making. In the following section I describe and discuss one particular experiment (Hemispheric Interaction in Art Making) in detail and one resulting artwork series (Shooting Stars).

3-6 The Fine Art of Perception (Videostill), 2011/13, Nicole Ottiger
3.2 Experimental Study 1 — *Hemispheric Interaction in Art Making* (2010-11)

Using the artist and her tool: art making, in this case drawing, and ability to make a visual work was instrumentalized to learn more about hemispheric lateralization and art perception. Before defining this *art-making* experiment, initial studies included learning more about *Perception of Style* [1. Drawing Hand-Left/Right & artist], [2. Epoch-early/late cubism & artist] (see Appendix A for a summary of these studies and the results).

3.2.1 Introduction

The human brain is divided into 2 hemispheres — left and right, which themselves are divided into 4 major lobes: frontal, parietal, occipital and temporal. The frontal lobes are involved in the ‘higher functions’ — such as attention, language, movement, planning. It has been described as like a “master control unit that helps integrate information and govern what the rest of the brain does” (Gibb 2012: 37). The parietal lobes are focused on allowing us to
perceive the world and our place in it and so process much of the sensory information. The occipital lobes deal primarily with vision — here the visual information is transformed into visual representations. The temporal lobes focus on language and sound, memory formation and retrieval. What also is interesting is that sensory information is processed on the opposite side of the brain from the side of the body from which the information comes from. In other words, the right side of the brain processes signals from the left vision field, left ear and left-hand, and the left hemisphere is fed information from the right side of the body. In the visual domain, the contra-laterality rule describes the projection of visual information presented in the left visual field on the right primary visual cortex and projection of information of the right visual field on the left primary visual cortex (cf. Blanke & Ortigue 2011)(3-8).

3-8 Right and left visual fields.
The stimuli of the right visual field (fish) are projected from the left and right eye into the occipital cortex of the left hemisphere. The stimuli of the left visual field (apple) are projected from the left and right eye into the occipital cortex of the right hemisphere.
The left and right side of the brain are therefore not equal — this is what is known as *lateralization*. Once inside the brain, however, all information is processed and *shared* between the 2 hemispheres — thanks to corpus callosum, a bundle of nerve fibres that act as a bridge between the 2 brain halves. Very simplified, generally the left side of the brain is responsible for controlling the right side of the body. It also performs tasks that have to do with logic, such as in science and mathematics. On the other hand, the right hemisphere coordinates the left side of the body, and performs tasks that have to do with creativity and the arts. However, according to Zaidel (2016: 4-5):

“... art and language share the same human cognitive endowment, namely symbolic and abstract thinking. Art can be infinitely combinatorial, too... Both art and language are modes of social communication that rely on abstract expressions”.

There are many open questions in this field of study: Is art really a right brain skill? Conventionally, the right hemisphere is specialized in creativity, and the left hemisphere in language and detailed organization. But Zaidel (2016: 15) amongst other neuroscientists suggests art is a ‘whole brain production’.

The brain is complex, and it would go beyond the scope of this research to go into more detail, therefore I concentrate on what fascinated me — which was learning about *fragmented consciousness* — this is the phenomenon of a spilt brain. Some people have, due to injury or surgery, lost half of their brain or had their corpus callosum severed, leaving the 2 brain hemispheres isolated from each other. Such ‘spilt-brain’ patients are able to function fairly well in normal situations because their brain will compensate for the lack of communications between the 2 hemispheres. Neurologists often refer to the ‘dominant’ and ‘non-dominant’ side of the brain — dominance is predominantly derived from the location of the language functions and this can vary. Almost all righted-handed people are dominant for language on the left side of their brain (which controls right side of the body). But many left-handed people also have dominance for language in the left-brain — only 20% has right side dominance (Al-Chalabi, et al 2006). The dominance becomes important in certain diseases for example as strokes. A stroke affecting the left side of the brain is more likely to affect language ability than a stroke on the right hemisphere, unless the patient happens to be one of the 20% with right brain dominance.

Roger Sperry, a neurobiologist and neuropsychologist (also together with the psychologist Michael Gazzaniga, and neurophysiologist Joseph Bogen) conducted research in the 1960s that led to a greater understanding of functional laterality. They were able to demonstrate that the two hemispheres have different functions, specialized abilities and are almost two
different, distinct personalities of the brain (cf. Wickens 2015). They found out that the speech centres of the brain (Broca’s and Wernicke’s areas) are in the dominant hemisphere (usually the left side), and so in a spilt-brain patient if the communication between visual cortex (in occipital lobes) in the 2 hemispheres is cut off, problems can arise such as the words in a book would mean something in one visual field but be meaningless in the other — the gap in information causes such patients to create a different reality and consciousness. Such patients might no longer recognize certain words, or no longer able to identity certain objects but they construct a different system in order to function. In other words, the hemisphere that is still working in split-brain patients forms its’ own consciousness; perceiving, thinking, remembering and reasoning according to its’ information — it might not be the total reality, but the half consciousness becomes a working, functional reality.

Through the spilt-brain research it was also found out that there is actually a power play involved within the brain — the dominant hemisphere likes to exert an influence over the non-dominant one. In split-brain patients, if the dominant hemisphere is unable to exert its’ influence, then some such patients even experience the alien hand syndrome. This is bizarre phenomenon of experiencing the actions of one hand beyond conscious control, as if directed by an external influence (cf. Gibb 2012). In other words, the behaviour of the ‘rebel’ hand seems to be in opposition to what the dominant hemisphere is intending to do — it might undo buttons on a shirt that the other hand had just done up (cf. ibid.) Gibb suggests: “most probable is that the less dominant hemisphere is simply trying to join in the current activity but, in the absence of precise instructions from the dominant half of the brain, acts like a dancer walking halfway through a performance they have no prior knowledge of — it improvises” (2012: 91-92).

The aim of the present study was to study and learn more about hemispheric lateralization involved when an artist uses the dominant and non-dominant hand to draw the images (art) he/she sees flashed to the edge of the left or right visual field. The experiment was designed in LNCO in discussion with the neuroscientist Prof Olaf Blanke and the psychologist Dr Anna Sforza. Being the participant, I was excluded from some of the preparation in order to be unaware what to expect in the actual test.

The experiment was based on classical work on hemispheric specialization, where for example a lexical decision task (i.e. right visual field [RVF] dominance for word/non-word discrimination) is carried out, or like for example, a facial decision (which is LVF dominance for facial discrimination) would be applicable. Zaidel (1985, 1989, 1994 i.a.) has applied this approach to art perception and judgements. We also wanted to help elucidate the perceptual
experience as reflected in a cognitive process, that is, analysis of how artists construct and manipulate mental representations of the external world (see Crozier & Chapman 1984).

3.2.2 Materials and Method

One right-handed artist took part in the study. Eight images of artworks had been pre-selected, and converted into a suitable format for the testing program - ExpyVR - on the lab’s computer. ExpyVR is a graphical tool to create and edit an experiment (and accessible to non-programmers). The images were arranged so that they could be presented on the computer screen for 50 msec at a time - the images were presented to either the right visual field (RVF) or the left visual field (LVF) at a position outside the fovea (> 10°)\(^{35}\). During stimulus presentation, the artist was instructed to focus on a fixation point (a ‘cross’ symbol), which would be either on the far left or far right of the computer screen, and instructed that though a selected image would present itself for a very short time (one single visual exposure) at the edge of sight, one should stay fixed on the cross. Immediately after the presentation the artist was instructed to draw what he/she ‘saw’ with either the dominant (right-hand) or non-dominant (left) hand. Images were also presented to central vision field (CVF) with a presentation time of 50 msec as well as 10 sec.

The artist used A4 transparent and white paper (21 x 29 cm) and assorted soft and hard lead pencils, coloured pencils and felt tip pens.

3.2.3 Results and Discussion

In all, there were 5 test sequences, each sequence consisted of 8 images presented and drawn after a single visual exposure. As a result, a total of 40 images were drawn. The first sequence consisted of 4 different art images, which were shown twice (once in each in visual field — left and right) — as a result each image was drawn ‘twice’. 2 images were drawn with the right hand for both visual fields and the other 2 with the left hand for both visual fields (3-9a, 3-9b). The RVF-RH and LVF-LH drawings were considered as “pure” left hemispheric and right hemispheric drawings.

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\(^{35}\) The fovea is the central pit at the rear of the retina, which has the densest concentration of cones — the fovea is responsible for the sharpest, detailed vision.
From the artist’s position: to do the first sequence was strange for me. It was a completely new and different experience to what I have ever had or done before. I had been aware of my ‘brain’ struggling for more information than it had actually received. If one looks at the raw data, the actual images (3-9c) then the drawings in 3-9a and 3-9b clearly demonstrate that there were (many) gaps in my visual processing.
3-9a First 4 Drawings made in 1st Test Sequence (left 2 made in LVF, and right 2 made in RVF, the upper two with left hand, lower two with right hand)(The drawings that are marked on top left hand corner with a “>” indicate the pure hemispheric drawings)
3-9b Second 4 Drawings made in 1st Test Sequence (left 2 made in LVF, and right 2 made in RVF, the upper two with left hand, lower two with right hand)(The drawings that are marked on top left hand corner with a “>” indicate the pure hemispheric drawings)
3-9c Art Images presented in 1st Test Sequence
The second to fifth sequence had a similar presentation structure, but only one art image, was used – the same image was presented four times, alternately to the left and right visual fields, and artist was tasked to draw alternately with the dominant or non-dominant hand. After that, the same image was presented to the central visual field, and I was asked to draw again with alternate hand what I saw (3-10 to 3-12 & 3-14). Again the RVF-RH and LVF-LH drawings were considered as “pure” left hemispheric and right hemispheric drawings.

Particularly in these further 4 test sequences (1 image pro test sequence), I learnt that my left and right visual field see differently, and I learnt that my right and left hand interpret or transfer/process the information from the brain differently. I also felt with each visual exposure that I was getting closer to the ‘real’ or ‘whole’ image – but often I felt either (1) the brain still couldn’t grasp or better, couldn’t process the information because of the missing bits, or (2) I felt I was receiving more information that the brain could actually digest or interpret. It was a tricky, tough line not to let the brain try to bombard ‘me’ (her) with false memories. I tried to draw simply what I appeared to have seen – this was best achieved by drawing quickly and intuitively, (1) without thinking too hard about what I think I saw, and (2) without doubting what I drew.
3-10 Drawings made in 2nd Test Sequence (top row: left 2 made in LVF - LH + RH, and right 2 made in RVF - LH + RH, middle row: 2 images made in CVF - LH + RH, bottom row: again in CVF - LH + RH (The drawings that are marked on top left hand corner with a “>” indicate the pure hemispheric drawings)(Art image stimulus was the ‘old man’ image in 3-9c)
3-11 *Drawings made in 3rd Test Sequence* (top row: left 2 made in LVF - LH + RH, and right 2 made in RVF - LH + RH, middle row: 2 images made in CVF - LH + RH, bottom row: again in CVF - LH + RH (The drawings that are marked on top left hand corner with a “>” indicate the pure hemispheric drawings)(Art image stimulus was the ‘urban footbridge’ image in 3-9c)
3-12 *Drawings made in 4th Test Sequence* (top row: left 2 made in LVF - LH + RH, and right 2 made in RVF - LH + RH, middle row: 2 images made in CVF - LH + RH, bottom row: again in CVF - LH + RH (The drawings that are marked on top left hand corner with a “>” indicate the pure hemispheric drawings)
3-13 *The Vexed Man*, 1771-31, Franz Xaver Messerschmidt (Art image presented in 4th test)
3-14 Drawings made in 5th Test Sequence (top row: left 2 made in LVF - LH + RH, and right 2 made in RVF - LH + RH, middle row: 2 images made in CVF - LH + RH, bottom row: again in CVF - LH + RH (The drawings that are marked on top left hand corner with a “>” indicate the pure hemispheric drawings)
In summary, this experiment illustrates what it is like to have a split-brain. It shows that the left and right brain process visual information differently. Though I was aware that I did capture some aspects of the art images I had been flashed, it is clear the test was successful in demonstrating that there remained a tremendous amount of information which I (my brain) didn’t have access to. I agree with Berlyne (1974, in Crozier & Chapman 1984: 19) that: “the arts are highly complex phenomena with many dimensions”. Further studies should continue
this fascinating lateralization within series of drawings provided by more artists than just one, for I might not be a typical dominant right-handed artist. A continued variety of approaches will be necessary in order to elucidate psychological processes underlying the perception and making of art. The dominant field of experimental aesthetics should give way to more process-oriented experimental and artistic approach and to include more cognitive psychology or art.
3.3 Shooting Stars (2015-17)

"Nothing is more difficult than to have a sense for precisely what we see" (Merleau-Ponty)

3.3.1 The Art Process

Since the hemispheric lateralization experiment, “seeing” was no longer quite that totally to be taken-for-granted process. And yet, I wondered, how long would it take me in that previous test situation to actually see an art image for what it really is? How many exposures would I need? I had ExpyVR (the graphical tool to program, create and edit experiments) set up on my laptop and after adapting the previous neuroscientific run test, I used it to run an unknown art image as a single visual exposure of 50msec again and again until I decided when to stop. Olaf Blanke chose 4 art images for me to work with (we had agreed they should be paintings – art masterpieces, see images 3-17 by Meindert Hobbema, 3-19 by Giorgio de Chirico, and 3-21 & 3-23 both by Charles Le Brun), and a fellow neuroscientist in LNCO installed these images into ExpyVR on my computer so that I could remain unaware what the images were.

I had already decided to go large, to be generous with my brush strokes, and so it was clear I would paint on canvas (1.20 x 1.05 m), using colour (oil colours). I also remembered being impressed how each hemisphere sees not only form and lines different but also colour (see my drawings of the urban footbridge – my brain had given me conflicting signals about colour)(see 3-11). I did a first set of 4 such paintings in this way. Again I focused on a fixation point to the far right or left visual field and used only either my left or right hand to paint. I was amazed and learnt it takes a tremendous amount of clicking – a lot of single flashes - for the brain to grasp information coming from outside the fovea, and to one visual field at a time. I thought I would count how many times I had the image flashed – in reality, I lost count. Even at the end, after deciding there was a moment: I’m done, I had not ‘got’ the full picture. After that final decision, after arriving at the point of no turn (where I declared my work art and not just an experiment), I would look at the original images – and yes, I was still astonished at the original artwork “appearance”, sometimes even shocked at what kind of details within the image I had still missed or failed to see.

The artworks, Shooting Stars I to IV (3-16, 3-18, 3-20, 3-22) are presented below as follows: the top row illustrates work-in-progress, 2nd and 3rd stages, and the bottom row shows the

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36 I suffered an unspeakable, tremendous loss of computer data in 2016 — Shooting Star artwork images were affected; I no longer have documentation of first stages.
finished artworks. So, *Shooting Stars I* consists of two paintings finally – I have two, because I produced one canvas pro image (there were 4 images as raw material for the flash sequences) in 2013, until I got to a point where I couldn’t continue – I needed to process what I was doing, and why was I doing this art – could I call it art? And I liked the images at the moment I had decided to stop (these images are the top row left images). Then subsequently in 2014 I started a second canvas pro image (keeping to the same set-up of using same hand for the specific fixation cross and visual field)(these are the top row right images). From 2015 to 2017 I fought to understand what the images were to become – whether as art they needed to become more? More of what? Or if I wanted to tap into the fascination of perception, before an audience, how could I present such images? I didn’t want to be didactic. How could I stay playful or even stay simply sensory, fleshy and aesthetic? At some point doubt had crept in, I no longer felt these images were mine at all. The desire to re-conquer the images sent me on a path of changing the images (as seen on bottom row, left and right) – to give the canvases and images more depth, more space, more feeling of a room or rooms, setting/context. I attempted to “position” or rather, give the painted material a place to be, of belonging, within the canvas. With that, came additional interactive elements - creatures (such as hyena, fish, a snake, a drone) and text – words, such as *eventful blindspot, speechless soul, meeting point, mating call*, i.a.), that represented a level of bodily consciousness that I felt was missing.
3-16 Shooting Stars I, 2015-17 (RVF-RH)(Top row, 2nd & 3rd stages, bottom row, finished artworks with text: Bloody Wildness Eventful Blindspot in left painting, Blind Angle Highwayman’s Home in right painting)
3-17 *Landscape with Watermill, 1664*, Meindert Hobbema (Art image of shooting stars I)
3-19 *Piazza d’Italia, 1913*, Giorgio de Chirico (Art image of shooting stars II)
3-20 *Shooting Stars III*, 2015-17 (RVF-RH)(Top row, 2\textsuperscript{nd} & 3\textsuperscript{rd} stages, bottom row, finished artworks with text: *Engulfed Shock*  *Actual Blindspot* in left painting, *Blind Angle*  *Mating Call* in right painting)
3-21 XVII l'Effroy (Dread), 1668/1727, Charles Le Brun (Art image of shooting stars III)
3-23 XVIII La Colère Aiguë (Sharp Anger) 1668/1727, Charles Le Brun (Art image of shooting stars IV)
3.4 What Kind of Knowledge is produced in Art-Science Research?

3.4.1 A More-Scientific Progress Report

This *Shooting Stars* series of 4 pairs of images gives the viewer (the uninitiated) an idea that perhaps these images are art-scientific disputes. The title ‘shooting stars’ refers to the observation of a specific object and in a predetermined way for scientific purposes for the study of how perception functions, how vision functions, and how the brain functions. The title is also a reference to the (my) memory of wishing to see shooting stars in the sky – to see visible parts of small dust or rocks from space as they burn up while travelling through the Earth’s atmosphere.

One also recognizes the added interventions (i.e. creatures and/or text) for the artistic processing of the scientific "raw products". Abstract representations, which can be seen in all bottom artworks, were deemed necessary, and were added as interventions or ‘override’ the science of the image. Such representations were (1) virtual frames (i.e. crosshairs, markings), (2) virtual space (grey, angular painted surface area) and all finished artworks bear the term either *blindspot* (optic nerve head) or *blind angle*. Depending on the image, the term blind spot was given an adjective (Repeatedly, Evergreen, Actual, Eventful), and, depending on the image mood or reference to the original image, a further description (Speechless Soul, Metaphysical Pillar, Engulfed Shock, Bloody Wilderness). They appeal intellectually and mystically. More concrete ‘word’ representations, were also added – and meant to show a realistic, sensual, figurative world and so depending on the mood of the picture, they are given an appropriate term (Pool of Sorrow, Meeting Point, Mating Call, Highwayman’s Home) and a figurative (as a sort of advocatus diaboli) attribute (fish in the net, snake, drone, two hyenas). They are narrative and fairy-tale like.

No situation (no artwork) shows the reality. The reality would supposedly be the original images, but are they really real? We now see new, current representations (3-13, 3-15, 3-17, 3-19).

The collaboration between art and neuroscientific research proves that very interesting, unknown practical, and also unknown knowledge, fields can be discovered – as here with the hemispheric lateralization study. But these two knowledge "practices" (using art as a tool in
science, and the knowledge of science to further understanding in artistic research processes) is not always enough for the artist involved in creating “artwork” – sometimes there is too little 'motivation', or a lack of enthusiasm and emotion trigger missing – it is something I had to constantly fight against in this perception of art study – against the doubt seeping in and the voice in my head asking what I aim to achieve from this study. The outcome (if it is to be art) was not obvious, not aesthetic and not clear at all.

Knowledge of this kind of perception of art research will help assure (and encourage) that arts continue to look not only at how the human self functions and ‘visually’ processes art information, but also at stimulating and advancing art-neuroscience learning on critical issues involving brain processes and art.

3.4.2 When the Artist Breaks Away

I had collected a wealth of data, but "something" felt missing, something like the ‘meat on the bone’ felt wanting. From the artist’s perspective during this perception of art study reveals a (typical) dilemma that artists have to show a different kind of aesthetic, material result that is theirs alone. Often such art-science experimental studies are held to be of value and are appreciated, also by those who carried out the research – I gained valuable, unexpected knowledge as well as the opportunity to further my “scientific” knowledge about how sight functions, how complex visual information, and brain processing is. I consider the study of perception of art an important, integral part of my learning about what the self is.

But also I suffered, I had gained less knowledge about where my art or artistic expression was leading. Or so I thought. Time is a huge, underestimated factor in this super-instant ‘must-be-now’ culture – time gives way to a deepened reflection and allows for unconsciousness thought to find its way into material (I pick this thread up again in Chapter 5).

I always escaped like a yo-yo reel into a more artistic-output experimental work on my core research theme: the self, and the boundaries of the self and the body. I had learnt in the lab that the ‘self’ is aware and indeed experiences itself in certain situations outside the boundary of the body or rather the body boundary does not define the limit of self-being. This concept of the self-awareness extending beyond the boundary of the physical body was the subject of my next experiment, which I describe and discuss in the next Chapter.
4 DISPLACED BODIES

How we perceive our self and our body is in any case extremely complex. We normally experience our conscious self as localized within our body (see my field notes: 4-1). A normal feeling of self is that I experience seeing the world from my first-person perspective – I see other parts of my own body first and I don’t see my own face (unless I actively look in a mirror). My experiences are subjective. Self and body ownership is connected to first-person perspective, self-location (being aware of where I am or having a sense of belonging within my body and in the world), and self-identification (this is a concept and knowledge about one’s past, present and future self).

However, in certain neurological conditions such as out-of-body experiences, this spatial unity may break down leading to a striking disturbance of self-consciousness (Lenggenhager, et al 2007).

4-1 Field notes: I am My Body (left image), Self-Made Condition (right image), 2010, Nicole Ottiger
Experiencing an out-of-body circumstance and describing that experience is tricky and a fine line between reality and imagination (the power to create in one’s own mind), an experience so strange, and new perhaps that the affected person almost doubts his/her judgement.

Goethe, a German writer, poet and scholar had a kind of out-of-body experience, which Dr. E. Menninger-Lerchenthal takes up in an article in 1932. Menninger (1932) describes how Goethe was one of the first to recognize and describe the connection between right hemiplegia and aphasia and that Goethe himself mentions in his 11th book: Autobiography. Truth and Fiction Relating To My Life (written between 1811-33) about a peculiar experience and sensation he himself had. Goethe had been riding his horse, on a footpath, after an emotional goodbye to a dear woman friend, when he saw himself appear before himself, in the opposite direction of movement to which his horse was riding – so it was as if a large mirror appeared across the path, a few steps before his horse in which Goethe saw himself in his vision-space and had what Menninger calls an inimitable hallucination, a perception in the absence of an external stimul (cf. ibid.). Goethe himself described it as an odd foreshadow or premonition. This difference in describing the same experience fascinated me. Also, the fact that Goethe in describing, said he saw: “not with eyes of the body but of the mind” (ibid.: 486, my transl.). What makes Goethe’s overwhelming experience very likely to be a hallucination is the fact that the strange illusion of one's own figure put everything else in the background.

I attempted to draw (each 1.5 x 1.5 m) what I imagined Goethe experienced twice: the 1st painting Goethe’s Hallucination is somewhat more factual and the 2nd drawing An Odd Premonition of Goethe’s is a more poetic dramatic translation) (4-2).
4-2 Goethe’s Hallucination (top image), An Odd Premonition of Goethe’s (bottom image), 2010, Nicole Ottiger
Reading about Goethe’s experience had made me keen to read of other such experiences and beside Oliver Sacks who is famous for documentary mind-baffling realities of humans, I stumbled on to literature about ‘feeling unreal’ – all about depersonalization disorder and the acute loss of the self. Simeon & Abugel (2006) a psychiatrist, a leading investigator in this subject and a journalist who experienced a loss of self researched this subject deeply and reflect what is it like when “the mind is its own place ... and in itself can make a heaven of hell and hell of heaven” (Milton in Simeon & Abugel 2006: 5).

4.1 Loss of Bodily Self

I make a distinction between loss of bodily self and a loss of sense of inner self. The second, inner loss of self is more connected to the psychological disorder schizophrenia, and as I mentioned when introducing the word self in 1.1.1, the self-concept is on a healthy level vitally linked to the body. It would go beyond the scope of this research to include discussion about the increased understanding that schizophrenia may arise from distortions of the self. However what seems clear, is that schizophrenia has to due with a reduced, diminished sense of self-presence, which is connected to “the manner in which the sense of subjectivity can affect itself” and experience difficulty to acknowledge its own presence (Taylor 2011: 1230). A suggested causative factor in schizophrenia is an excess or deficit in various neuromodulators, which are a biochemical underpinning and is not my topic of research. In the next sections (4.1.1 to 4.1.3) I therefore look into different kinds of loss of bodily self: the depersonalization disorder (which includes no-self), phantom ownership, and out-of-body phenomena, for to understand the self-concept it is necessary to understand the opposite.

4.1.1 Depersonalization Disorder

Depersonalization disorder is a condition and illness that is “deceptive and contradictory”, and yet, what prevails are “the common threads of a sense of unreality and the loss of the independent, individual self usually persist throughout its duration” (Simeon & Abugel 2006: 201). Symptoms associated with depersonalization are: emotional paralysis, super-sensitive over self-observation, changes in how the body is experienced, absence of body feelings such as thirst, hunger, and so on, changed perception of time (to be at a standstill, or the present feels like the past) altered perception of space, and feelings of not being in control of one’s own movement (loss of agency), loss of memories, images and thoughts, and the general
inability to concentrate and sustain attention (cf. ibid.). Depersonalization is therefore a very disturbing, loss of connection with one’s own mind, self, body and a disconnection from others and the most indescribable feeling of un-realness, and in its extreme even disownership towards one’s body (feeling that their body does not belong to them). Depersonalization can be classified as a dissociative disorder, or as a neurotic disorder. It is not a form of psychosis because the depersonalized person is still able to distinguish between their own internal experiences and the objective reality of the outside world. They may or may not experience being out-of-their body – often depersonalization is described as detachment from one's surroundings (often depersonalized people report to feel as if they are viewing themselves as if watching a movie). Individuals experiencing de-realization may report perceiving the world around them as foggy, dreamlike/surreal, or visually distorted. Selfhood, and the depersonalized person’s relations to the outer world can deteriorate to the extent that a sensation of no-self is experienced.

There is newer phenomenon called digital depersonalization (cf. Bezzubova 2018). This is based on the concept that today we have become ‘digital’ creatures, that on one side we live in material world, and on the other, we are increasingly citizens and dwellers of a global, cyber-world, and that our selves can get lost in between these 2 worlds, the real and the virtual. Today digital devices such as the smartphone, iPad, laptop, i.a. are extensions of the self and body – Bezzubova suggests the first thing we touch in the morning is more likely the iPhone and not a partner. Dissociation between the real “I” that looks in the bathroom’s mirror and the virtually-constructed “I” posted in Instagram or Facebook for example can result a sense of blurred identity or unreality (cf. (ibid.). Without doubt, our relationship between the real self and the virtual appearance is frighteningly complex, as I also got to experience in my next experiment in dealing with a projected virtual self as well as the real self (section 4.2).

4.1.2 Phantom Ownership

The phenomenon of a continued feeling of a presence of a missing limb (limb ownership) and sometimes also a remaining feeling of pain of the absent limb is known as phantom limb (cf. Anderson 2018). It is the sensation that an amputated or missing limb is still attached. This suggests that the body remembers, and therefore a bodily memory remains, long after the limb is no longer. Phantom limb experience is not just a hallucination or mis-representation (ibid.), but a visual knowing that the limb is missing (the patients see their limb is missing, also
can feel that a limb is missing (that they have a stump) and yet in certain circumstances they ‘feel’ the whole extended, full limb (Anderson 2018, Ramachandran & Blakeslee 1998). Such patients therefore encounter conflict between knowledge and experience, and may be described as a complex, ‘oddly-mixed state of consciousness’ (Anderson 2018: 218).

Bodily Ownership is however not something that can be taken for granted. Normally we experience and accept our limbs and body as our own, but there are conditions such as autopagnosia, which is inability to localize body parts, and hemineglect (discussed in Chapter 3) is a visual impairment, which causes patients to ignore objects and body parts on one side of the visual field. Body ownership or ‘embodiment’ is also a sensation that can extend beyond our physical body under certain experimental conditions, such as in the Rubber Hand Illusion (see Tsakiris 2010). The Rubber Hand Illusion is a controlled manipulation of experience of body-ownership. In short: watching a rubber hand being stroked simultaneously (synchronously) to one’s own unseen hand causes the rubber hand to be attributed to one’s own body, to ‘feel like it’s my hand’ (Botvinick & Cohen 1998 in Tsakiris 2010: 704). The illusion does not occur when the rubber hand is stroked asynchronously to one’s own hand. To investigate a more global sense of body-ownership for the whole body, Full-body illusion experiments have also been carried out – one such particular study was by Lenggenhager et al (2007) at LNCO. It is this study I use for my 2nd experimental study, therefore I describe this study in section 4.2.

There is also the phenomenon of disownership – this can be the feeling of disownership towards one’s body as mentioned above in 4.1.1 in depersonalization disorder, or a denial of ownership of one limb (also known as alien hand sign or somatoparaprenia), often a result of brain lesion or epileptic seizure (de Vignemont 2011). The sense of disownership can be so severe that the person experiencing such, attribute the foreign limb to another individual and in tragic cases want to amputate a perfectly healthy limb because it feels so alien (also known as body integrity identity disorder).

To summarize, the experience of disembodiment after de Vignemont (2011: 90) involves: the feeling of unfamiliarity (body parts feel abnormal), feeling of unreality (real limb is missing, real limb is fake/dead), feeling of uselessness (body part is worthless, or useless), and feeling of disownership (body part feels alien, does not belong to their body).
4.1.3 Visual Doubles

There are only few things that are more intimate that we identity with more closely than our body. Bodily experience is private (as the self) – only “I” experience my own bodily sensations. Bodily experience is also a proprioception (sense of self-movement and body position) and vestibular (sense of balance and orientation) experience that tends to be in the background. Bodily signals are constantly present, and so bodily self is an important link between the body and self. Neuroscience is concerned with bodily self-consciousness because of the disorders that exist, including illusory own body perception that affect the whole body. Illusory reduplications of the human body are known as doubles – these are “complex manifestations during which human subjects experience a second body or self in the environment” (Blanke et al 2008: 429). The 2nd body or self is referred to as a double – doubles may be seen, heard, felt or even concern an inner organ. The main forms of doubles are visual (ibid.).

The key elements of visual doubles (*) are: (1) autoscopic hallucination - I see my body outside, but with a normal self-location (AH), (2) heautoscopy – I see myself from a self-location outside the body (HAS) and (iii) out-of-body experience (OBE) I see my self and perceive the world from an abnormal body ownership, disembodied, often elevated perspective. To understand what these doubles could be like, I painted (acrylic on wood, 22.5 x 27.5 cm) myself in such situations (4-3)(4-4)*.
4-3a An Autosopic Moment, 2010, Nicole Ottiger
I turned my focus to the out-of-body experience and phenomenon, because my next experimental study was based on experimental research designed to induce multisensory disruptions and the experience of seeing double in healthy subjects in order to learn more about visual illusions of the entire body. For neuroscientists, if they can reduplicate visual full-body illusion in healthy subjects, then they are steps closer to understanding the mechanisms of corporeal awareness, embodiment, and self-consciousness (ibid.).
4-4 Different Types of Full-Body Visual Illusions

(A) Autoscopic hallucination: the experience of seeing one’s body in extracorporeal space (as a double) without disembodiment, from the egocentric visual perspective (left figure),

(B) Heautoscopy: the subject sees their body and the world in an alternating or simultaneous extracorporeal perspective and from their bodily visuospatial perspective (often subject is not sure if their self is localized in their own body or in the double,

(C) Out-of-body experience: the subject appears to “see” themselves (bottom figure) and the world from a location above their physical body (extracorporeal location and visuospatial perspective (top figure). The self is localized outside one’s physical body (disembodiment).

The directions of the subject’s visuospatial perspective during the experience are indicated by the arrows (Blanke 2004 in Blanke et al 2008).

4.2 The Out-of-Body Phenomenon

During an out-of-body experience, people are awake, and feel that their ‘self’ is located outside the physical body and somewhat elevated. It is from the elevated extracorporeal location and position that subjects experience seeing their body and the world. Typical reports of such experience are:

“Suddenly it was as if he saw himself in the bed in front of him. He felt as if he were at the other end of the room, as if he were floating in space below the ceiling in the corner facing the bed from where he could observe his own body in the bed. […] he saw his own completely immobile body in the bed; the eyes were closed.” (Lunn 1970, in Blanke et al 2008: 430).

An out-of-body experience can therefore be defined as the presence of the following: (1) the bizarre feeling to be outside one’s physical body, (2) the presence of a distanced and elevated visuo-spatial perspective, (3) and seeing one’s own body from the elevated perspective (Blanke et al 2008). Interesting is also that neurological, clinical case studies reports suggest that subjects seem to experience their body position and visuo-spatial perspective at a distance of
2-3 metres, and rotated by 180 degrees in respect to the actual physical position (ibid.).

About 5% of the general population is estimated to have experienced OBE (Blackmore 1982 & Irwin 1985, in Aspell & Blanke 2009).

Aspell & Blanke (2009) formulate the OBE as “effectively a breakdown of the bodily self.” (74).

It is therefore that the study of this phenomenon can lead to insights into the bodily foundations of self-consciousness.

4.3 Experimental Study 2 – *Video Ergo Sum* (2010-11)

With this 2nd experimental study, I attempted to artistically record (tools: drawing on large sheets of paper, and video recordings) what I experienced in a scientific experimental designed set-up to disturb the location of the self (-consciousness).
4.3.1 Introduction

Olaf Blanke and his (LNCO) researchers were one of the first groups of neuroscientists to conduct empirical studies of the bodily self in healthy subjects. Lenggenhager et al (2007) *Video Ergo Sum: Manipulating Bodily Self-Consciousness* in Lausanne (LNCO), and Ehrsson (2007) *The Experimental Induction of Out-of-Body Experiences* in Stockholm, independently of each other, both designed an specific experiment, whereby they “developed novel techniques to dissociate (1) the location of the physical body, (2) the location of the self (self-location), (3) the location of the visuo-spatial perspective, and (4) self-identification” (Aspell & Blanke 2009: 78). Both groups used synchronous and asynchronous visual-tactile stimulation to alter the above-mentioned 4 aspects of bodily self-consciousness.

The idea and aim of the study was to “mislead subjects about where they experience their body and/or self to be, and/or with what location and which body they self-identity with” (ibid: 78). To do this, a visual (real-time video) image of their body was presented to subjects doing the test, via a head-mounted display (HMD) that was linked to a video-camera that filmed their back from behind (4-6). They therefore saw themselves from an ‘outside’ or third-person perspective “as though they were viewing their own body from the visuo-spatial perspective of the camera” (ibid.). In Lenggenhager and team’s (2007) study, subjects viewed the video image of themselves (the ‘virtual’ body) whole being stroked on their back with a stick. This stroking was therefore felt and seen – the seen stroking was either synchronous or asynchronous with the felt stroking, i.e. the touch was seen on the same part on the body as where it was simultaneously felt, or was asynchronous with it (when a video delay was added).

The result was that: (1) the illusion of self-identification with the virtual body (i.e. global ownership, the feeling that ‘the virtual body is my body’) and (2) the referral of touch (‘feeling the touch of the stick where I saw it touching my virtual body’) were stronger when subjects were stroked synchronously than when they were stroked asynchronously (Lenggenhager et al 2007). In other words, during multisensory conflict (visual, tactile, proprioceptive and vestibular), participants felt as if a virtual body seen in front of them was their own body (ibid.). Participants also mistakenly localized themselves towards the virtual body and thus to a position outside their own bodily borders (ibid).

(A) Participant (dark blue trousers) sees through a HMD his own virtual body (light blue trousers) in 3D, standing 2 m in front of him and being stroked synchronously or asynchronously at the participant’s back. In other conditions (study II), the participant sees either (B) a virtual fake body (light red trousers) or (C) a virtual non-corporeal object (light grey) being stroked synchronously or asynchronously at the back. Dark colours indicate the actual location of the physical body or object, whereas light colours represent the virtual body or object seen on the HMD. [Illustration by M. Boyer]
4.3.2 Art Adaption of Scientific Method & Set-Up

A version of the Lenggenhager et al (2007) previously discussed experimental tool and set-up, designed to use conflicting visual-somatosensory input in virtual reality to disrupt the spatial unity between the self and the body, was adapted and “I” the artist used it to explore the virtual nature of the self during the art making process.

“I” as the artist wore a virtual reality (VR) setting — VR-goggles37 connected to a video camera — that immersed me into the body of my avatar while drawing my self-portrait. The body of my avatar is my external self from behind, in 3D, projected in front of me, in the VR-goggles, creating the impression “I” (my virtual self) was standing 2 metres in front of myself during the art making process.

Drawing paper (sized 1 × 1.5 m) was fixed on the wall, which was ca. 30 cm in front of my physical body in the set-up (4-7), and more paper was already prepared on the side. Pencils (all kinds of thickness and soft-, hardness), felt pens and charcoal sticks ready, were at hand, on the ledge attached to the wall. The lab’s black cloth was often used to wrap around my head to avoid distraction of peripheral sight (4-8).

Wired up to VR-goggles (with an angle limitation of 35 degrees, and connected to a transmitter that is synched to the image frame rate, or in some settings, this was changed to asynchronous, which meant a time delay of 32msec) and a video camera, I stood in the upright position, and drew on paper, which hung on the wall in front of me. I was free to move and turn around in whichever way I wanted (some restrictions to due the length of cable which attached my VR-goggles to the transmitter/video camera). During the actual physical act of drawing I always only saw the view of myself from behind, projected in front of me, at a distance of two meters (the abided distance between the position of video camera to myself, as stipulated by the neuroscientists who devised the original experiment). This particular distance of 2 metres was chosen because people who have had neurological out-of-body experiences reported being at distances of at least 2 meters outside of their real body.

I was allowed to draw as many times I felt like. I could repeat the session as desired.

37 V-Real Viewer 3D SVGA
4-7 Experimental Set-Up of Video Ergo Sum
4.3.3 Results and Discussion

During each session I did on average 2 to 3 drawings, and in total some 15 drawings. The sessions took place in 2010 and 2011. I videotaped my drawing processes, generating too many recordings and images rather than too few – I also had in mind that video recordings can be useful study/observational material. The Video Ergo Sum recordings have been edited to 5 significant sequences where new perception/information/knowledge took place during the act of drawing – see video links to Vimeo where the sequences can be played\textsuperscript{38}. The drawing process in one particular setting took somewhere between 10 and 30 minutes on average.

I started with synchronized stimulations: see drawing Third Person, no. 3 (4-9) – this was one of the first drawing results. These synchronous sessions were strange, exciting and yet sometimes very quickly accepted as a “normal non-normality”. This synchronized setting can be considered a stage further in realization, in comparison to the painting of Rene Magritte’s called Not to be Reproduced (1937) because it is three-dimensional in space, pixelated and

\textsuperscript{38} Sequence 1: \url{http://vimeo.com/192775088/ff42315e6d}
Sequence 2: \url{http://vimeo.com/192775563/069d405706}
Sequence 3: \url{http://vimeo.com/192775965/ea27c2w285}
Sequence 4: \url{http://vimeo.com/192776207/1887331c8db}
Sequence 5: \url{http://vimeo.com/192776581/087ba0720c}
perceived in real-time. Magritte’s oil painting (La reproduction interdite), which hangs at
Museum Boijmans Van Beuningen in Rotterdam, is an artwork that depicts a man (backside
view) standing in front of a mirror that sees his own self incorrectly reflected as the backside
view again (the book on the mantelpiece is however reflected correctly)(4-10). I felt as if I was
performing the situation in Magritte’s above-mentioned artwork, making me question my
perception(s) of reality and calling for self-reflexivity.

With my head often wrapped up all in black cloth to avoid peripheral sight, I felt strangely
cocooned in the virtual projected room, and somewhat detached from the rest of my body
(although I could see my body in front of me) — it was as if my blind spot had shifted and
situated itself to the space in front of my visual field. My field of vision within the virtual plane
on the inside of the VR-goggles is an artificial LED, white and subtly pixelated, which affected
the choice of my drawing material. At first I used a pencil to draw but since the video camera
is projecting visual material to the artist from two meters away it was almost impossible to
see the actual strokes in the first drawing attempts.
4-9 Third Person, no.3, 2010-11, Nicole Ottiger
Repeating the drawing experience again and again set off a re-familiarization but interestingly also a growing awareness for the complexity of the basic idea behind the virtual reality set up.

It took the time-delayed asynchronous setting to push me into a ‘different perceptive mode’. Being familiar with one’s own first person perspective harbours a certain danger of “knowing”. I therefore tried to outsmart myself by using a time delay of 32 msec to attempt to see “anew”. A time delay is an equivalent to an asynchronous condition where you see yourself as a non-
real perceptual illusion. I experienced body-time movements (my physical body movement and my drawing motion) that were not in synch with the visual input (virtual body). I therefore had to adapt to abnormal constraints by, for example, deciding “how” to draw in a time delayed condition where the visual information was lagged. Drawing in this asynchronous mode I found myself in a permanent state of being slightly incorrect – this is noticeable also in the asynchronous drawings – the arm limbs are deformed or reduced to extremities, see Third Person, no. 4 (synchronous setting) and Third Person, no 5 (asynchronous setting)(4-11). In this condition I had felt not only estranged from the first person, but also from the third person, the virtual self.

The American art historian Peter Eleey (2009) suggests a link between the Video Ergo Sum experiment and the American concept artist Bruce Nauman’s Live-Taped Video Corridor artwork (consisting of wallboard, video camera, two video monitors, videotape player, and videotape) - in which the viewer-participator sees him/herself at the end of a long corridor from the rear. At the beginning of the corridor one sees oneself as a normal figure, but then as one walks into the corridor to reach the monitor, the image of one’s self in the monitor reduces/shrinks in size and almost disappears (1970)(4-12). Nauman reported that a dream about being in a long, dimly lit corridor had inspired him: “I had the dream many times and I kind of figured it must be part of myself I hadn’t identified. It seemed important to objectivity myself” (Nauman 1989, in Lewallen 2007: 89). More importantly:

“The viewer is assaulted with sound, frightened with foreboding narrow spaces, and cornered by video cameras recording her every move. Recorded images, moreover, are instantly played back to the viewer, whose body is often reduced to a partial fragment or fleeting shadow, resulting in a sense of corporeal dispossession. Physically and psychologically, the viewer continually confronts a collapse of identification between her experience as a body/subject and her image or representation” (Kraynak 2003:22).

That is similar to how I felt in the asynchronous mode.
4-11 Third Person, no. 4 (synchronous setting, top image) and Third Person, no 5 (asynchronous setting, bottom image), 2010-11, Nicole Ottiger
Image has been removed due to Copyright restrictions

4-12 Live-Taped Video Corridor, 1970, Bruce Nauman (Videostill)
In one session I was asynchronously stroked whilst drawing led to a fixation; localization around the physically “felt” touched area but it also led to a concentrated overworked zone on the visual level in the drawing (4-13) (see also video on Vimeo)\textsuperscript{39}.

\textbf{4-13 Third Person, no. 14, 2010-11, Nicole Ottiger}

In Session 7, I spontaneously added a small hand-sized mirror as a visual aid, a tool that no one in the LNCO Lab at that time had thought to put to use, to be able to look at myself from the front within the Video Ergo Sum setting. I was curious to see if anything would change with this added feature and this is what happened: I was immediately able to record my reflex, my response to this stimulus, which was a reversal of the first person perspective. Normally the camera shows just a specified- angle look onto a space, but the mirror allows a lot of flexibility, a reflex-ability for me as an artist, who now not only “sees” the actual front, but also the rear-view and other aspects of the room, and also the position of the camera that I am drawing. In this mirror-sequence stage of drawing, in spite of seeing the unfamiliar back view of myself projected “in front” of me, I felt unexpectedly closer to something at a distance,

\textsuperscript{39} \url{http://vimeo.com/331874292/e888e4b898}
behind myself — I would go as far as to say, I felt closest to that position two meters behind me (4-14)(see also video sequence 5, in Vimeo – link in footnote below)⁴⁰.

The mirror unexpectedly became an important accessory/tool in this experimental study. Foucault (1967)⁴¹ defines the mirror as follows (and I still find it an appropriate description of what the mirror effect entails and it is what I feel to have experienced:

“There might be a sort of mixed, joint experience, which would be the mirror. The mirror is, after all, a utopia, since it is a *placeless place*. In the mirror, I see myself there where I am not, in an unreal, virtual space that opens up behind the surface; I am over there, there where I am not, a sort of shadow that gives my own visibility to myself, that enables me to see myself there where I am absent: such is the utopia of the mirror. But it is also a heterotopia in so far as the mirror does exist in reality, where it exerts a sort of counteraction on the position that I occupy. From the standpoint of the mirror I discover my absence from the place where I am since I see myself over there. Starting from this gaze that is, as it were, directed toward me, from the ground of this virtual space that is on the other side of the glass, I come back toward myself; I begin again to direct my eyes toward myself and to reconstitute myself there where I am. The mirror functions as a heterotopia in this respect: it makes this place that I occupy at the moment when I look at myself in the glass at once absolutely real, connected with all the space that surrounds it, and absolutely unreal, since in order to be perceived it has to pass through this virtual point which is over there”.

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⁴⁰ [http://vimeo.com/192775581/087ba0720c](http://vimeo.com/192775581/087ba0720c)
To summarize: In the drawing process itself I was somewhat tactical and seemingly blind at first, then increasingly more familiar, able, playful and adaptive of the situation — I intuitively familiarized myself with the situation by trying things out: How far can I lean/turn towards the camera to gain the absolute maximum of the available sight? And what do I achieve with this strategy? If I turn into the camera, observe and study the visual space, then turn around and draw from the remaining image repressed on the mind — is that a form of irrational intuition? Or is it bodily consciousness guiding my hand? To what degree does or can memory consist of perceived information? Is it reliable? What happens if I use a mirror as well? And so the mind begins to question everything and deconstructs its confidence in “seeing” as a truth. There is an interface (an interference almost) — a transfer point or transition between what the mind sees and what the body knows it is seeing/not seeing that the artist eventually experiences.

The translation of this experience into an image requires more than perception, it demands a subjective re-localization.

What the Third Person artworks themselves exert onto a viewer is an important part of art perception, and provides clues to the type of self-portrayal. The resulting drawings are representations of my “Self” that I saw through a device, a machine, in other words through an extension of the self. The drawings are also inevitably interpretations, and not just pure studies portraying the outer appearance of my bodily self. The artistic realisation and translation of what one sees, into a visual entity on paper, goes through the body. The body consciousness shapes what we see into something more. The drawn results also include “clues” about the emotional state at the time of experiencing, and a curiosity for what I, as the artist, was aware of, as I perceived the self and the body within the virtual space at a particular point in time, bearing in mind that virtuality is both a space and a non-space. Irrational and immaterial awareness is made visible though pen strokes, along with the varying contrasts, and through the composition of the artworks themselves.

Through this previous experiment with the virtual self, I was aware of my attempts not only to localise the body and my outer appearance, but also my self-consciousness, looking within myself as well. It also led me to want to attempt to make a visual essay, an art essay conveying some of the reflections the art making and artwork resulted in. I discuss the further artwork in the next section 4.4.
4.4 Visual Space has No Owner (2015)

It is not so simple to discern today’s artistic expression of the self-portrait, because representation is also about the method and/or technology, which often cause a shift in the representation. The contemporary style of artistic depiction of a bodily reality sees the self, fictionalized to transpose an autobiographical relation, one that simultaneously points at, challenges, or displays the artist’s awareness of an external perspective on him/herself. This self-expression extends both autobiographical and art practice concerns, morphing into a devious contradictory, double-edged position between being the object of review and the critic at the same time (de Bloois 2007: 19). Cultural and literary critic Joost de Bloois (ibid.) points out that in being his/her own critic, the artist manoeuvres him/herself within the unique position of being both inside and outside the field of artistic practice which I often felt in the laboratory as well as in the experiments. In my experience, this permanent parallel or double role within self-reflection, which de Bloois observes as a new theoretical strategy, provides us with potentially new artistic subjectivities (ibid.).

The artwork Visual Space has No Owner is a response to my unconscious and conscious reflections of the 2nd experimental study. I further edited the raw material (video recordings of the Video Ergo Sum sessions and added voice recordings (my voice) I made from my thought-notes, which were also inspired by re-reading some writings of the philosopher Ludwig Wittgenstein (Tractatus-Logico-Philosophicus and Philosophical Remarks) and produced a video essay of 14.24 min (see 4-15 and off-voice notes 4-16 to 4-17).
A self-portrait is a method of investigation on oneself.

4-15 *Visual Space has No Owner, 2015*, Nicole Ottiger (Videostill)
NICOLE OTTIGER – VISUAL SPACE HAS NO OWNER (off voice)

1. Out-of-body
The world is everything that is the case.
The total reality is the world.
The picture is a model of reality.
The picture is a fact.

The camera is a part of my body.
What is visual space?
It feels like a leap into the unknown, like a first encounter with one’s virtual existence.

2. Self-reflection
How is reality generated?
Something prevents me from clearly seeing.

What is the self anyway? What is I? And what about the body?
We have a bodily consciousness.

It’s a kind of rigour and lucid dreaming at the same time. Not precise, yet true.

What am I producing? What am I reproducing?
I consider it a stage further in comparison to the wonderful painting of René Magritte which is called ‘Not to be reproduced’.

Drawing a portrait from behind seeing just my back, seems to produce an image of an image.

A self-portrait is a method of investigation on oneself, physically and emotionally. One is subject and object at once.

And then, there is even a third layer, a third element. Maybe this is the superego - that critical, self-checking perspective - a consciousness and ego ideal.

The picture is linked with reality. It reaches up to it. Memory and reality are in one place.
Image and reality is one space.

What about when we close our eyes - we don’t stop seeing.

3. Double Body (left/right)
I feel strangely cocooned in the virtual projected room. I am at the edges of my vision, but sometimes we are blind to what’s immediately in front.

Do we have more than one self?
In visual space there isn’t an eye belonging to me and eyes belonging to others.

I want to know what’s going on behind me, I want to turn round.
The detached, immovable eye doesn’t have an idea of space all around it.
4. Time delay

The experience of body-time movements that are not in synch with the visual input catapult me into an unknown place.

A particular method of symbolizing may be unimportant, but it is always important that this is a possible method of symbolizing. And this happens as a rule in philosophy: A single thing proves over and over again to be unimportant, but the possibility of every single thing reveals something about the nature of the world.

The exceptional position of my body in visual space derives from other feelings, and not from something purely visual.

I do not see the past, only a picture of the past. But how do I know it’s a picture of the past? We have a feeling that the present disappears into the past without being able to prevent it.

5. Mirror perspective

Everything starts to feel indirect, translated, even though I draw from the seen. There is an interface, an interference almost - a transfer point or transition between what the mind sees and what the body knows it is seeing or not seeing.

Vision must be thought of in terms of a ‘delirium’, an ‘ecstatic state’.

Like taking a ‘selfie’ - it’s not only about preserving an image, but also about the fictionalization and the outside view of the self.

Translation of this experience into an image requires more than perception. It demands a subjective relocalization.

These co-ordinations are as it were the feelers of its elements with which the picture touches reality. And if we penetrate to the essence of this pictorial nature, we see that this is not disturbed by apparent irregularities.

On the film strip there is a present picture and a past picture and future pictures: but on screen there is only the present.

You can only search in a space. For only in space do you stand in relation to where you were not. And so the mind seeks to question everything and breaks down it’s confidence in ‘seeing’ as a truth.

Visual space essentially has no owner.
4.5 Concluding Remarks: Representation of the Self in Art — Attempts in Localization

In thinking about localization, it was Foucault (1967)\textsuperscript{42} who also suggested that ‘site’ today has been substituted for extension, which has replaced place and space. He also suggests that the anxiety of our era has to do with space. I found myself thinking about space and how I would place a future self-representation within a space. I found myself producing the following artworks, Portrait of an Artist I to III (4-18 to 4-20).

4-18 Portrait of an Artist I, 2011, Nicole Ottiger

\textsuperscript{42} http://foucault.info/documents/heterotopia/foucault.heteroTopia.en/
4-19 Portrait of an Artist II, 2011, Nicole Ottiger
Foucault points to the possibility that despite all the techniques for appropriating space, despite the whole network of knowledge that enables us to delimit or formalise it, contemporary space is perhaps still not entirely ‘de-sanctified’ – it is still somewhat a pure or
treasured place (sanctuary). We live the space of our primary perception, in the space of our dreams, in light, transparent space and dark, closed-in space, space from above, below, fluid, solid space, while fundamentally for reflexion in our time remains internal space. However the external space is the space that draws us out of ourselves (Foucault 1986). We don’t live in a void. However, there are spaces that have ‘a curious property of being in relation with all the other sites, but in such a way as to suspect, neutralize or invert the set of relations that they happen to designate, mirror or reflect’ (Foucault 1967)\textsuperscript{43}. There are 2 types of such spaces: (1) Utopias - which are sites with no real place; a fundamental unreal space, and (2) Heterotopia – this is a real place, but also a counter-site. Foucault suggested these heterotopia places are ‘outside of all places, even though it may be possible to indicate their location in reality’ (Foucault 1967)(see footnote 37). I found that I was unconsciously occupied with sanctuary, how to depict inner space of my self.

To conclude: within the scientific environment I found that “staying true” to my artistic values was important and indeed a double action. On the one hand, I was using artistic practice as a visual tool to explore some neuroscientific ideas of my bodily self, self-location and perception, and on the other hand, I purposely deployed specific neuroscientific methods to inspire myself, and initiate further reflection on perception through experimentation and exploration in art, which did not always appear to have scientific reference at first glance. Sight/vision and “how” we perceive is dominated by our mind rather than by the eye. The question still remains: “What goes on, within vision itself every time we perceive something?” (Alloa, 2007: 40). According to Merleau-Ponty “vision must be thought of in terms of a ‘delirium’, an ‘ecstatic’ state” (ibid.: 40), which I believe is an interesting and necessary notion for art making that often captures some hidden and obscure element of an ecstatic or transformed moment within the complex processes between mind/brain, perception and self-consciousness.

I continued to pursue the self and found my focus turning more inwards to the essence of mysterious: the shadow, the hidden presence of other entities (ghostly presence), the unconscious and paradoxically also the prosthetic - this is the subject of the next chapter.

\textsuperscript{43} http://foucault.info/documents/heterotopia/foucault.heteroTopia.en/
5 ESSENCE OF SELF-EMBODIMENT

The essence of the natural self maybe also lies in the feeling of a presence – there is much literature that addresses the fascination and strange sensation of someone being close by (a ghostly presence) though no one is actually present and cannot be seen. An example is Reinhold Messner, a climber, who in the Himalaya, on Nanga Parbat (a 4000m mountain), “experienced the kind of expanded state of being that occurs on two levels of consciousness, the kind that can easily lead you to believe that the brain is suffering from insane delusions” (Messner 2003: 11). At some point while he was descending, Messner felt a third climber:

“descending with us, keeping a regular distance, a little to my right and a few steps away from me, just outside my field of vision. I could not see the figure and still maintain my concentration but I was certain there was someone there. I could sense his presence; I needed no proof. Certain sounds seemed to confirm his presence: a creaking of the ice, a noise of some kind. He did not speak; he was simply there. He stopped when I stopped; he climbed when I climbed. Maybe I was being followed by a ghost. Whatever it was, I was sure it was there and the mere presence somehow helped me regain my composure. So now we were three. I never stopped to ask myself how that could be; it just was. Later I told myself no, it could not be; it was just the two of us, Günther and me, on our own; that I had been seeing things; that the figure could not have been there. Then, suddenly, there it was again, climbing down alongside me and maintaining a regular distance from us” (ibid.: 229).

Also there must be translations of such experiences in the arts, but no detailed report as such exists to my knowledge. I stumbled on to an oil painting (5-1) called the Abstieg – “Descent” (my transl.), by the artist Neo Rauch, which reminded me of what the climber Reinhold Messner felt – maybe Neo Rauch had a similar experience (I could find no mention of it). There has also been similar feeling of presences, and yet different in that the presences have been described as felt to be a relative – a daughter, or shadow or black person, besides the presence being a typical unknown identified person as Messner mentioned, recorded and described in neurological patients (particularly those suffering from epilepsy and those have had strokes), also psychiatric patients (often those with schizophrenia or acute psychosis) and healthy individuals in different situations (cf. Blanke, et al 2014). The neural origin of such feelings of presence is unknown and “it is not yet understood how the phenomenon is triggered by the brain” (ibid.: 2681).
5.1 Experimental Study 3 — *Feeling of a Presence* (2015)

This development of an experimental robotic system to explore the phenomena of chimera, apparition or uncanny mysterious, ghostly experience in 2014 fascinated me – I had seen a mini video clip of the study\(^4\) where one sees the arm tied to cables, a hand and dominant finger extending to and fro, almost like drawing in the air.

Blanke’s research team in LNCO specialize already since many years in experimenting with body signals, using computers and robotic supplements, to find out more how the self and brain functions. It has been shown that these very basic biological signals are interspersed in specific brain circuits, such as the temporal parietal cortex and the frontal cortex, so that they can produce a solid, body-based representation of the self. The brain possesses more than one representation of the body in space. In normal conditions, it is able to assemble a unified self-perception of the self from these representations, but when the system malfunctions because of disease or psychic disorder – or a robot as in this new experimental design (which I describe in 5.1.1) – this sometimes creates a second representation of one’s own body, which is no longer perceived as ‘me’ but as someone else, a ‘presence’ (cf. Giulio Rognini in Interview, see footnote 38.)

5.1.1 Introduction

Through understanding specific brain mechanisms LNCO hopes to develop a robotic system or a robotic treatment program that can be exploited in an emergency, where one can down-regulate a disturbing, altered state of self-consciousness (as in schizophrenia for example). The lab constructed two robotic systems, a *master device* that measures movement, and a *slave device* that returns the signal so that an impossible sense of touch can be created (cf. Blanke, et al 2014, Hara, et al 2014). One moves the robot by means of the extended finger and sends this touch to the back at the same time – so you feel “a touch” at the same time on the back. By using such a touch-sensitive robotic device one has everything completely under control. Also, the robotic master-slave system can generate specific sensorimotor conflicts, which enabled the lab to induce a feeling of a presence (FoP) and related illusory own-body perceptions experimentally in normal participants. While one cannot see the presence, the FoP can be as real as the awareness one has of one’s own self.

5.1.2 Method and Materials

A Master-Slave Robotic System was provided – this system needs that someone (a scientist) is controlling it and deciding when to send the “conflicts” sensorimotor commands to the robot. In a typical session, while standing and blindfolded, “I” the artist moved my arm and therefore moved the master device (via my inserted right index finger) in front of me. My movements were sent to the slave robot, which applied tactile stimuli in real time to my back (see 5-2 & 5-3).
I was allowed to move the master for 3 min while I received tactile cues on my back (by the slave robot) and my right index fingertip (by the master robot). Stroking was applied either synchronously or asynchronously (500 or 900 ms time delay) with or without somatosensory force feedback at the hand (2 x 2 factorial design). The design was adapted so that I not only (1) could draw what “I” or the robot was feeling, but also (2) that what I draw – visually – could
give me a feedback onto my back; as if my back were a canvas. In the 1\textsuperscript{st} series the back was the canvas but the robotic drawing (data) was captured by the computer, and turned into an image (scatter plot), and in the 2\textsuperscript{nd} series I used my back as a “real” canvas as well - water soluble oil paint was added to the robotic device which touched my back (5-4) - as well as what (the movements) the robotic stick did was recorded by robot master-slave computer and translated into an image (scatter plot) for each “time” I drew.

5-4 Artist Nicole Ottiger as test subject in the Feeling of a Presence (FoP) experiment (2\textsuperscript{nd} series), Geneva (2015)

Drawing paper (120g) was prepared that could be taped to the small area where the index finger moves around in – ca. 10 x 9 cm in size. For the 2\textsuperscript{nd} series, I organised also water-soluble oil paint and suitable back open top that I could wear during the experiment.

5.1.3 Results and Discussion

It had been a curious experience - I had enjoyed the “surprise” effect of what the Lao-tse robot finger produced, as well as testing my drawing skills under the pressure of yet again under different experimental conditions. The prodding sensation in my back had been weird –
sometimes I felt I supervised/regulated this touching and sometimes I felt controlled by another presence, a third hand.

I conducted the experiment twice in 2015 – the 1st session took place in the LNCO lab in Lausanne, and consisted of 3 sets of tests – (A) in the first I drew in air, blind, from mind my self-portrait, hence no drawings in this sequence, (B) here I used a mirror, and observed my face while I drew, and (C) was the same as B, but here I used the robotic finger’s technique of ‘poking’ as my drawing technique – and so I drew dots (see 5-5 for the whole set of images). I had been advised to try poking movements as opposed to my normal fluid movements when drawing, because the computer system would sometimes jam-up with the too fluid movements. The visual results of the computer recording the robotic finger movements had to be mathematically translated to ‘picture language’ (see 5-6) – this was not so easy for the scientist to achieve, and he said he wanted to try a different way in the 2nd session. I agreed as I had also wanted to try out something ‘new’ – namely ‘live’ drawing of the robotic finger on my back (I had also been disappointed with these computer images).

The 2nd session took place in the new lab in Geneva and again consisted of 3 sets of tests – (A) where I was blind and drew my ‘self’ (face portrait) on paper, the movement of which, together with the movements of the Lao-tse robotic finger was being recorded by the computer, (b) here I could see, had a mirror and drew again my self-portrait, and (C) here we tried the full-body illusion, and so I drew blind and used the whole possible range of movement available (5-7). Again the scientist produced computer plotted images of what the master Lao-tse took in of the experiences in each test (5-8) – these images were much more closely related to the real situations and strikingly apt.

I produced a mini video to demonstrate what goes on in this FoP experiment (see link to Vimeo in footnote)\footnote{https://vimeo.com/332284028/0a37940bd5}. The video is no longer accurate; some information to the images is incorrect, but at the time, it had been a useful ‘visual’ explanatory documentation.
5-5 1st Series of Drawings of the FoP Experiment
A) Top row: Mind drawings done in the air, in synchronous & asynchronous stroking conditions, blind: no pencil images
B) Middle row: Paper drawings, with mirror, synch and asynch
c) Bottom row: repeat of B but poking technique instead, synch and asynch

5-6 1st Series of Lao-tse Master-System Drawings
A corresponds to (A) of 5-5, B with (B) of 5-5, and C with (C) of (5-5)
5-7 2nd Series of Drawings of the FoP Experiment
A) Top row: Blind drawings, in synchronous & asynchronous stroking conditions
B) Middle row: Paper drawings, with mirror, in synch and asynch
C) Bottom row: full-body illusion, blind, in synch and asynch

5-8 1st Series of Lao-tse Master-System Drawings
A corresponds to (A) of 5-5, B with (B) of 5-5, and C with (C) of (5-7)
The results of the ‘live’ painting on my back were enticing (5-9) – in a way they reminded me of Rorschach inkblot images (5-10) for several reasons: (1) the Rorschach test is not based on perception but visual representation – this is what the master-slave robot computer tries to do, (2) the oil paint images on my back are surprisingly plastic – they can be depicted in any way – what one sees in these images is in the imagination of the human being, (3) like Rorschach images are a form of self-discovery (cf. Leichtman 1996), looking at these Lao-tse robot finger paintings and describing what one sees could lead to a discovery about one’s self. For example, the 3rd painting (top row of 5-9) could be seen as two heads kissing, the 5th painting (middle row, in middle, of 5-9) could be horizon of a street to the beach with trees on both sides, the 9th and last painting (bottom row, the last in 5-9) could be a prehistoric caveman figure (on the right, looking left) with some unidentifiable furry creature on the left.
jumping up to the right – all these my imagination and saying something about myself. There are limits to what these images can embody and communicate. Nevertheless, the more I reflected about these *lao-tse inkblot* results, the more I found them to be a fascinating interplay between real and artificial, between robotic (prosthetic) and my ‘self’, between convention of the computer (which had its’ limitation in movement) and originality (the idea to paint on my own back with oil via the Master-Slave Robot, and an interplay finally between self-expression and self-deception.

5-10 *Example of a Rorschach Inkblot*

### 5.1.4 Concluding Remarks

With this experimental study I was reminded of the prosthetic sense we already have with ourselves. As already mentioned in 1.1.2 about post-humanism: the replacing or extending the body with various prostheses has become a continuation of a process that began before we were born – the process of us already becoming a prosthetic supplement or device, a process that increases our body ownership beyond our own body and self. As this study demonstrates: such an experience as with a prosthetic robot finger can create a second, third representation of one’s own body, which is no longer perceived as ‘me’ but as someone/something else, a ‘presence’ that I include as part of my self. The Lao-tse inkblots could be the visual reminders of the ‘otherness’ that was present at the time of drawing.
The Lao-tse robot finger is a very physical tool – it touched me, my skin, my back, with a force at times. I am reminded of the philosopher and mathematician Alfred North Whitehead’s theory of feelings. Whitehead states in his complex text about Process and Reality that: “all aesthetic experience is feeling arising out of the realization of contrast of identity”. He also suggests that in the pursuit of truth, feelings must be criticized since their evidence is never final. But authentic perceptive feeling is an ideal to aim for. The Lao-tse inkblots are aesthetic and trigger in me ‘feelings’ that are perceptive, direct and authentic but also as foreign, and not-mine.

Whitehead also mentions:

“all awareness, even awareness of concepts, requires at least the synthesis of physical feelings with conceptual feeling. In awareness actuality, as a process in fact, is integrated with the potentialities which illustrate either what it is and might not be, or what it is not and might be. In other words, there is no consciousness without reference to definiteness, affirmation, and negation. Also affirmation involves its contrast with negation, and negation involves its contrast with affirmation” (retrieved from same source as mentioned in footnote 49).

In the Robot Master-Slave experiment I felt I was thrown into an opposite of myself (me and the robot)(master-slave systematic computer brain and conventional yet impulsive human brain), which showed me though the contrast of images, a contrast of identity is a vital necessity sometimes for self-representation. The possibility to have more than one representation of my body and self in space aids me (and my brain) in assembling a complex unified self-perception, even the feeling of a presence is through a robotic interface, and even though I might not perceive it as ‘me’, it assists me in shaping my constant re-representation(s) of my ‘self’.

This 3rd experimental study threw me into a new thinking, which took its’ time emerging from an unconscious to conscious state in my artistic practice. I describe and show some outcomes of this on-going process in the next section.

5.2 What Constitutes the Self (2018-9)

The power of the robot as a neuroscientific tool, interfacing the body with brain systems for cognition and consciousness led me back to a deeper thinking about what art is, and how I want to represent the self. I went through a series of loops, looking at what a last selfie could

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be – had asked people to send short texts describing how they would want to enact their very last selfie (before they die), and I would draw or paint this ‘staging’ and return it as a solid artwork. UK (initials of person’s name) wrote: “She should be in the picture and in the background a snake pit. Colours: black, grey, brown, shiny. Her eyes preferably red, her hair white, not the whole body, rather from neck up, or whole body but face showing” (5-11). It is a project that is intricate and one that demands involvement and grappling with big issues of life and death. This is still an on-going project.

5-11 A Last Selfie – UKs, 2017, Nicole Ottiger

My thought however came back to my very own self-. In 2018 I had finally realized or decided that a self really is only a ‘self’ in company of other(s) – a self is only ‘being’ when it includes the ‘other’ (5-12 to 5-13).

The philosopher Michelle Boulous Walker (2017) suggests the most important things in life have a tendency to ‘take their time’. I am realizing this is true when it comes to my artwork. Slowness is a vital aspect that makes the artistic practice more imaginative and subversive as well as enjoyable. We should be more involved in and practice slow thinking and practice slow reading (just as ‘slow food’ is also a new knowledge won over time), and to have courage to announce unfinished and incomplete work. When I regard the time frame of my experimental studies and respective artworks that resulted, the ‘time’ involved was/is not to be
underestimated – it is a method and practice of crucial critical thinking - just as artistic practice is a methodological process of research and also a mode of dissemination in its own right.

Boulous Walker also mentions in relation to Levinas in the production of certain philosophical knowledge, one comprehends the other in terms of seizing or grasping it (cf. 2017:57). She quotes Levinas (1989 in 2017: 57):

“[T]he notion of an intellectual activity or of a reasoning will – a way of doing, something which consists precisely of thinking through knowing, of seizing something and making it one’s own --- an activity which appropriates and grasps the otherness of the known. A certain grasp … knowledge as perception, concept, comprehension, refers back to an act of grasping”.

The artwork *What Constitutes the Self I* consists of one real arm (pinkish in colour, alive and warm), and two rubber hands. On a closer look, one might ‘see’ that the hand (the larger of the two rubber hands) is of the same proportion and style as the real hand-arm (therefore of the same identity and physical ownership) and that the other hand is smaller, softer looking and with less veins protruding, a foreign body, yet with touch – lying on the real hand – its presence is totally accepted and feels welcomed. Is the real hand grasping the other?
Flesh versus soul was an original title of the abovementioned artwork. It also reflects an appeal of projection, and is also a reflection on understanding acts of creation. The gods are long since replaced by ‘users’; cognitive consciousnesses who induce possibilities of real, fake, virtual and illusive realities all at the same time. It is a tingling feeling of transmissive attraction. Boulous Walker suggests one should not swallow the otherness back into the same (as Heidegger and Freud do, eventually) but to go slower, to engage in questions, to leave the field of understanding open and open-ended, to allow encounters of an ethic receptive attitude of otherness in order to know and know more fully, without premature interpretation (ibid. 2017).

What Constitutes the Self II (5-13), a 2nd artwork in the same series contemplates the fact that human body parts are already prosthetic and are tools. Again, the hands, 6 of them look similar or the same — on closer observation, 5 appear to be of the same selfhood, same-same but also different, and 1 seems of another character and physicality (the last on top of the
heap is softer and smaller), but as a whole they fit together and are working, waiting, being together.

5-13 What constitutes the Self II, 2018, Nicole Ottiger

This artwork is also a reflection about: is it not human error and its psychic disturbances that provide the breeding ground for the stimuli to engage creatively and not just in foraging and propagation. The creative hand that practices art or thinks with the fingers and creates is no
longer in demand because it is too expensive, too slow and not suitable for mass production. But man is an individual, and each (still) has his own handwriting as identification. The analogue hand seems increasing redundant, and the virtual is on the march. With this thinking, materiality re-gained a weight in my artistic practice – a value - for to represent self, I also need to be able to ‘embody’ (symbolize and assimilate) the body too. There is no self without the body (at least on earth). The body is back (5-14).
What constitutes the Self X has new material aspects – on one side bronze and on the other a visible demonstration of the inclusion of technology (as also artwork 5-15 for example). Craftsmanship and making art, based on the individual abilities and skills of (wo)man, is being replaced by computer technology, artificial intelligence and scientific achievements. The digital 3-D printer for example and digital hands work perfectly and reliably. Is the human hand, with its 'analogue mechanics', which often behaves in an unpredictable physical and mental state, losing its’ supremacy as the creative, life-giving magic wand of mankind?

Representing the hand as a contemporary, up-to-date self-portrait is a double-bind: imprints of my hand as a sculpture, as well as photographic positioning draws also attention to the fact that the hand is essential to mankind, even for technology. The hand is a tool - without it we are lost, and yet the analogue hand seems increasingly superfluous – yet the analogue, digital, virtual are one and the same. With that reflection, I came to a present state of conscious thinking that the self maybe is (or should not be) so visible, and found myself heading to attempts to represent the self as a form of anti-portraiture (5-16).
Towards Anti Portraiture is a 3 min video work (see link to Vimeo in the footnote)⁴⁷, where one can hear a voice describing self-states – in a poetic way. The image remains blurred, pixelated, in movement (as the person being videoed moves in front of camera, the pixels change slightly in colour and shift position) – the implication is that one concentrates on the voice. The work is still a work-in-progress. Originally, I had wanted the voice to very subtly change ownership (to a Siri and other person besides my own, sometimes in a chorus) – but technicalities needed to make this work well means this work is not complete yet, and still in progress and being updated accordingly.

⁴⁷ https://vimeo.com/331232768
Towards Anti-Portraiture, Self-Portrait 2019

Welcome to (my-) self – you can find me also at home within my body and on https://www.nicolettiger.ch
I have a core self:
Discovering myself means looking outward, observing my own behaviour from the outside inwards.
Sometimes I lose the feeling of self – I have both unconsciousness and consciousness working to perceive my subjectivity – which sketches it’s own model of self, from experience, through experience, a life-functional model and theory of self.
The self likes to deceive itself.
I am an agent of my own self. Deep self is based on fear, fun, desire and survival strategies.
The self is translucent and opaque. A dark house with lights outside. Unreliable but with a self sure ego.

Dark haired with silver-grey speckles.
Still white skin, more freckles.
Average height, slim, green-grey eyes, smexy.

Notion of self control
Blind spots and bright spots.
Wired for fight or flight.

My body perceives, my brain perceives. My eyes think they perceive my self.

Timeouts- day/night dreams / dissociations / switchers/traumas contribute self-awareness too.
Shedding the feeling of me from time to time.
Direct experiences form the self-consciousness.
I emerge again and again.
Self-observing ego. An I, my I.

Me-ness.
I am what I do with my own hand.
I am it, a deepest level
me, my soul.

5-17 Voice Notes I for Towards Anti Portraiture

To conclude: as a self-portrait, it’s always my hand (left or right or both), and yet there is often within the sculpture or photo, one additional „not-my hand“, symbolic of the other - a subtle indication that without the opposite (without the/another, regardless if real, virtual or digital) there is no self. Using artistic practice as a method as well as mode of expression, reporting
and revelation, it becomes evident that thinking through art is possible and can be regarded a slow, open-ended but also a valuable knowledge tool.

I conclude my thesis in the next chapter and re-examine my key research questions in light of the art-science material I have presented and knowledge gained throughout.
6 CONCLUSIONS

This thesis has reflected on 3 experimental studies: From Perception of Art to Art Making, Video Ergo Sum, and Feeling of a Presence, and resulting artworks: Shooting Stars, Visual Space has no Owner, and What constitutes the Self. Throughout this thesis I have used all 6 projects to examine ‘what the self is’, including how to represent the self in art.

I used art as a methodology (considering how art practice can be used as a tool and what different artistic roles and/or positions can the artist take within the art making process). I show how I achieved my thinking and knowledge, by developing research projects and artworks at the direct intersection of art and neuroscience (Chapters 3 to 5) and a process of unthought and intuition using the strategy of ‘The Becoming of Unbecoming’ and the practice of slow philosophy.

The art research I have presented is part of an on-going, open-ended process about ‘what the self is” and remains hugely visual (and not verbalized). Nonetheless I want to encourage artists to add to the growing emergent research agendas that bring together contemporary art and neuroscience around issues of embodiment of the self and altered states of self and body.

My research questions focused on the idea of art as a tool to explore the self, to understand what the self is and how to represent the self visually.

I took inspiration and methodology from neuroscience. I engaged in using a critical, self-reflective language and writing throughout my research in order to develop an advanced understanding of the abstract, elusive, virtual concept of the self, and the evolving extension of ‘self’ positions and identifications I made. Yet, I employed visual thinking (and visual representation) as the overarching method. In the process of researching I became aware of the possibility that visual art self-representations speak for themselves. I tentatively suggest that there is knowledge in the visual artworks I have done — a knowledge that has no verbal language yet. My resulting artworks belong to the category of knowledge that has a prospective potential (cf. Rheinberger 2013).

I conducted my experiments productively in ways that allowed unexpected things to occur, also in order to do allow art to speak for itself. This means, I set up the experiments precisely and yet left doors open for surprises (cf. ibid.).
My artistic practice evolved as I (unconsciously at first, then consciously) understood that I had been working my way steadily through understanding the following things fundamentally:

(a) Perception – what perception is in neuroscience and how perception of art can be scientifically tested.

(b) What possible ways of seeing the bodily self are available for transposition into art.

(c) Virtual self involves more than a technical projection of the self in a virtual plane — virtuality is a term that triggers many levels of association with the self (internally). The self is anyway not limited to the boundary of one’s own body.

(d) Human-robotic interaction is more scientific than artistic but introduced me to the possibility of a shadow self.

The result is that my understanding of ‘self’ kept evolving. I argue that in analysing what the self is, my answers (artworks) show a constant re-positioning of the self in light of the new information and knowledge I often first assimilated unconsciously. I contend that visual language is rich in tacit knowledge and I liken it to visceral knowledge – it comes much faster than the conscious can digest, acknowledge and understand. I feel my final artworks (as opposed to the initial experimental studies) show such knowledge.

The relationship between the arts, neuroscience and the laboratory were pivotal to this research. With the collaboration of LNCO, I demonstrate ‘fragile visualities’ that art produces in understanding what the ‘self’ is. I call the artworks ‘fragile visualities’ because the results are visual. Visual knowledge need time to grasp. I demonstrate the kind(s) of knowledge that contemporary art does have and produces. I argue that the self needs to relocate itself (on a virtual plane for example) to gain an insight into the ego-perspective we are over familiar with, and understand the ‘self’ better – it is a requirement in the process of establishing and grasping what the self actually constitutes, as opposed to only staying with outer appearance and portrayal of the self. We cannot ignore the unconscious material that Visual Art produces: it is not always even an immediate visual, visceral portrayal that contemporary art produces. My artwork has become subtler than in the past.

My research shows that re-positioning the self is equivalent to an ‘updating’ system, and only with another self (an opposite) or others, can the individual ‘self’ relate and (re)position itself.

The transition or stages of my evolving self-concept and position I take, evident in my artworks (chronologically) may be a natural, normal process, or significant of the posthuman era I live in. It merits further research to explore this in more detail. I will continue with my artistic
practice — the Anti-Portraiture series is still in progress and long not finished, and I have come into a field of non-visibility or different kind of making visible by using my voice as a tool of embodiment of the self. Within the arts the voice has long been valued as a tool, nonetheless for me it opens up a new set of potentialities.

The examples supplied in this thesis are pioneer experimental study design at the interface of visual arts and neuroscience and further encourages transdisciplinary dialogue between cognitive neuroscience, art theory and visual art.

My untypical, alternative, practice-led visual art methodology, including empirical data and artwork is a new approach where scientists and artists endeavour to truly collaborate and learn from other, where respective theoretical concepts, techniques, processes are used, and where outcomes sometimes are outside their own field of practice.

This trajectory contributes to the on-going debate on art-science collaborations that aim to raise awareness about the potentials of art as a method and tool within science as well as in the visual arts.
Appendix A
Ethics Guideline

Concerning: Experimental Studies in the PhD Research of Nicole Ottiger

To whom it may concern,

This is to certify that the experimental studies conducted at LNCO titles: Video Ergo Sum (2010-11), From Perception of Art to Art Making (2010-11) and Feeling of a Presence (2015) was part of a research collaboration between the artist Nicole Ottiger and the Laboratory of Cognitive Neuroscience, Federal Institute of Technology Lausanne.

This work was supported by the Artists-in-Labs residency grant and by EPFL research funds and therefore it fits the standard criteria and ethics guideline of all research conducted in the Swiss Federal Institute of Technology Lausanne. All neuroscientific experiments that were devised and ran in the lab were in accordance with the ethical standards of the Declaration of Helsinki and approved by local Ethics Committee.

Sincerely,

Prof. Olaf Blanke
Perception of Style Experiment

The following set of studies (1 to 3) was designed and developed in collaboration with Olaf Blanke (Director of LNCO) and Anna Sforza (then post-doc researcher in psychology at LNCO). The aim was to devise a way to “experimentally measure” the right and left hemispheric contribution to art perception.

I developed a pilot study, which through discussion and first mini trials led to re-adjustments to account for subjects’ behaviour and unpredictability in such tests – linked also to finding the most suitable method of test instruction, and how to account for the risk of chance, and how to randomize the test. I was able to begin with controlled scientific collecting of empirical, experimental data about the right and left hemispheric contribution to art style and perception.

Study 1 - Drawing Hand (right and left) & Artist

The first such experimental study was about perception of style: drawing hand (right and left) & artist. Two artists (myself and an artist friend who remained anonymous) were involved in the making of the art images (original size A4) used as stimuli (size reduced to playing card size of 8 x 12 cm). Both artists used the left and right hand equally to make the art images (I drew 16 of the 32 cards, 8 cards thus drawn with left hand and 8 with the right).

The hypothesis was a set of questions: would subjects sort the drawing accordingly? –
(a) According to artist type, and (b) According to hand?

Method: Card test with 32 art images as stimuli, Questionnaire 1 (on art habits) after test
Methodology: Subjects were told 4 artists had created these drawings, and that the task was to classify each drawing to one of the 4 artists (A, B, C, D).
Aim: To test the chance performance of getting the hand correct (independent of artist) or the artist correct.

- 16 subjects, scientists, 6 female
- Mean age: 27.5 years (range 21-38)
- 14 right handed

- Total of 32 stimuli (drawings)
- 4 “styles” of drawings (Nicole RH, Nicole LH, Peter RH, Peter LH)
- We selected a portrait, landscape, abstract, face, animal, ...
- All drawings were presented to each participant for free inspection
- We told people that 4 artists had created these drawings for us and that the task was to classify each drawing to one of the 4 artists
- All drawings were visible throughout the experiment
- Chance performance is 25%
- Chance performance is 50% to get the hand (independent of the artist) correct or the artist correct independent of the artist)
- After the experiment we gave people a questionnaire about their art habits (rating on a seven-point Likert scale from 1 (fully disagree ---) to 7 (fully agree +++)
- Mean time to achieve the task: 4.3 minutes
The Stimuli - The first 16 (of the 32 Art image set used as stimuli in Study 1)
The Stimuli - The second 16 (of the 32 Art image set used as stimuli in Study 1)
Results: Subjects got 65% hand correct (independent of artist) and 68% artist correct (independent of hand), but only 49% got artist & hand correct (see graph 1 on next page).

The method of results was a statistical analysis of how many ‘hands’ correct and/or ‘artist style’ correct was inputted into a excel-sheet, and with classification to either Artist 1 or 2.

Diagram 1 - Illustration of how the statistical data was collected
There was a correlation between scientists who are rarely creative or are involved in art in some way (see correlation analysis on next page).

Scientists who rarely experience visual art:
(1) Classify artworks better than chance,
(2) Discriminate the artist, and
(3) Discriminate whether the artwork was carried out by the right or left hand.

**Conclusion**: Predominantly right and left hemisphere-generated artworks can be considered as style.
The questionnaire results (see next page) allowed a correction analysis to be carried out.

- Frequent art exhibition visits improve hand, but less, artist discrimination
- Frequent seeking of artful experiences improves hand, but less, artist discrimination
Art Questionnaire used in Study 1 (and Study 2)
To rate on a seven-point Likert scale from 1 (fully disagree ---) to 7 (fully agree +++)

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<th>I visit events on art or art history in my leisure time</th>
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8. I enjoy reading articles written by artists or about art in general

9. It often happens in my everyday life, that art objects attract my attention and fascinate me

**Detailed response required with following:**

10. Do you like art? If yes, which is your favorite period/movement in art?

11. Do you have a favourite artist? Why do you like him/her?

12. Do you own any pieces of art? If yes, what are they?

13. Are you creative in your life? If yes, which medium do you use?  
(photo/video/draw/paint/sound/other)

**Open comment section –**

*Any comments you wish to add?*
Study 2 - Epoch (early and late Cubism) & Artist

For this second study famous artist styles were used, from the same historical period – art images were selected from Picasso and Braque, a) 8 images each from their early cubism period, 1908-1914) and b) 8 images each from their late cubism, 1914-1921/22. The images were reduced to black-white-grey because colour risked giving too much information about the era they were made in.

Again, the hypothesis was a set of questions: would subjects sort the drawing accordingly? – (a) According to artist type, and (b) According to epoch (early/late cubism)?

Method: Card test with 32 art images as stimuli, Questionnaire 1 (on art habits) after test

Methodology: Subjects were told 4 artists had created these drawings, and that the task was to classify each drawing to one of the 4 artists (A, B, C, D).

Aim: To test the chance performance of getting the hand correct (independent of artist) or the artist correct.

- 10 subjects, students (6 female)
- Mean age: 23 years (range 19-26)
- 10 right handed

- Total of 32 stimuli (drawings)
- 4 “styles” of drawings (Picasso (early cubism), Picasso (late cubism), Braque (early cubism), Braque (late cubism)
- We selected 16 paintings from early and 16 from late cubism
- All drawings were presented to each participant for 5 minutes free inspection
- We told people that 4 artists had created these drawings for us and that the task was to classify each drawing to one of the 4 artists
- All drawings were visible throughout the experiment
- Chance performance is 25%
- Chance performance is 50% to get the hand (independent of the artist) correct or the artist correct independent of the artist)

- After the experiment we gave people a questionnaire about their art habits
- Mean time to achieve the task: 5 minutes
The Stimuli - The first 16 (of the 32 Art image set used as stimuli in Study 2)
**The Stimuli - The second 16 (of the 32 Art image set used as stimuli in Study 2)**

*Results*: Subjects got 76% Epoch correct (independent of artist) and 59% Artist correct (independent of epoch), but only 43% got artist & epoch correct (graph 2)
Graph 2 - Perception of Style: Epoch & Artist

Analysis

The students:
(1) Classify famous artworks better than chance,
(2) Discriminate the artist, and
(3) Discriminate especially well whether the artwork was carried out in early or late Cubism.

Conclusion: The discrimination performance for these “accepted” and famous style is comparable to discrimination performance for right and left hemisphere styles.
Study 3 - Re-confirmation

This study was to re-confirm the data from study 1 in a different sample, and to see if we could develop a setup that is computerized, PC based (and using E-Prime Software; a software solution to create and generate the real time simulation), allowing future RT (reaction time) and accuracy analyses. To measure mean RT per stimulus is an index of speed of processing and gives an indication of how fast the thinker (subject) can execute the mental operation needed by the task at hand. We also wanted to see if reaction times were associated with art habits, but this did not work out - there were unexpected difficulties to measure RT – we had to leave this and age data out.

- 12 subjects, students (3 female)
- mean age unknown
- 12 right handed

- Same as experiment 1; except only 16 stimuli were used for part 1 (this was also training for part 2)
- In part 2 the remaining 16 stimuli (4x4) were repeatedly presented on a computer screen (Eprime)
- Subject was asked to classify each presented image, separately
- Stimuli remained on the screen until 4AFC response was given

- Mean time to achieve the task: Unknown
- Mean RT per stimulus: Unknown
Graph 3 Perception of Style: Card Test (training for computerized version)

Graph 4 Perception of Style: E-Prime

Results: Even if presented as single items on a computer screen, students
(1) Classify artworks better than chance,
(2) Discriminate the artist, and
(3) Discriminate whether the artwork was carried out by the right or left hand.

Conclusion: Predominantly right and left hemisphere-generated artworks can be considered as style.
APPENDIX B

Published Book Chapter (2016): *Explaining the Edge*. Ottiger, N. & Blanke, O.

(I) Thoughts on Self-Representation in Art, by Nicole Ottiger,
(II) A Looping System Forth-Which Art Making and Research Always Will Be! Interview with Olaf Blanke, conducted by Nicole Ottiger.

Explaining the Edge

In 2002, her artist book *Baukasten* (Werkstatt) was published with new preface by Verlag, Luzern.

Nina Ottiger, is an artist and researcher who lives and works in Zurich, but she is also an art psychotherapist and deputy head of art therapy at Ateliers Living Museums at the National Museum of Modern Art, Switzerland. She has a Master of Arts in Art Psychotherapy from London University (Goldsmiths), and a BA in Fine Arts from Lucerne University of Applied Sciences and Arts. Currently, she is also a PhD candidate in Visual Arts at the University of Plymouth, UK. Her research is focused on self representation and the relationship between binary and distributed “self” body recognition in the arts. She received the following art-prize: Apollo SBI-Grant for Art and Science in Practice (2012). ZOW, artists in Berlin, residence at the Laboratory of Cognitive Neuroscience (2002) and Berliner Arts in Berlin at Gisela Kreutz Arts. Paris (2009). 2002 Stedelijk Art Grant Fondation Vevey.

Laboratory of Cognitive Neuroscience, Brain Mind Institute (BMI), École Polytechnique Fédérale de Lausanne

Our Goals: The research at the BMI focuses on three main areas: Molecular neurobiology and neuroimaging of neurodegeneration, Molecular and cellular mechanisms of synapses and neurodegenerative aspects, and cellular, synaptic and cortical hyperplasia. We examine the fundamental principles of brain function in health and disease, by using and developing unique experimental, theoretical, technological and computational approaches. We combine different levels of analysis of brain activity, so that cognitive processes can be understood as a manifestation of brain processes, as they emerge from the collective activity of thousands of cells and synapses. Sympathetic and parasympathetic activity plays a central role in the physiological and molecular mechanisms of cellular compartments. Researchers involved in the Research: Prof. Dr. Stefan, Head of the Laboratory of Cognitive Neuroscience, Dr. Anne Siroczi and Christian Plutkow, PhD candidates.
Thoughts on Self-Representation in Art

How is reality generated? While inner perception is contrary to outer perception, what kind of given reality is presented while recording the inner images involved in the displacement of a body? If displacement is awareness and a form of self-consciousness, I attempted to measure this visually, objectively and subjectively in a phenomenological way, using low-tech art equipment (video camera and other visual media). My aim was also to explore how creative a "subject" behaves in scientific test conditions. I worked with the subject's sense of body experience and documented the perspective of the subject in a basic way, with and without neural links to see if it would come up against any correlations. The documented recordings were part fact (reality) and part fiction: fact being short video sequences while the subject was wired up to virtual-reality, and fiction—images created by the artist—based on recollection of awareness and emotions during these tests.

Having set out to research about the self/body and consciousness, applying the visual

A Looping System Forth—Which Art Making and Research Always Will Be!

One of the things I truly appreciated as an artist-in-lab in the Laboratory of Cognitive Neuroscience at the Brain Mind Institute, EPFL Lausanne in 2010, were my long discussions with Olaf Blanke about self-portraiture and art, while the BMI was working on neuro-scientific research about the phenomena of the "self" and concepts of the "corporeal self."
Nicole Ottiger: Let’s first talk about one of the latest discoveries the lab has made—the “unravelling of the ghost”.

The researchers found a way to induce the illusion of experiencing an uncanny mysterious presence—a ghostly presence.

Oded Blanko: Yes, for a long time these ghostly sensations have been described by people outside the clinical context. However, in my work as a medical doctor and neurologist I also met several patients who told me about such experiences. The first time I came across somebody who had experienced this in the context of a disease was at the Neurology Clinic of Geneva. I talked to that patient for a long time because back then, neurologists had a lot of hypotheses, but nobody had a good model of how to really explain it. At first I wanted to compare stories by people from a long time ago with...
arts as my medium, I also wanted to determine what roles immersive, virtual environments take and play in “measuring” self-consciousness. These aims did not change throughout the residency but evolved: the more I learned and the more aware I became. I had access to lab equipment, scientific literature and the lab’s databank. I attended the weekly lab meetings, lunch lectures and conference lectures, PhD seminars as well as discursive meetings with Olaf Blanke, all of which shaped my thinking.

My project contained the following three aspects:

1. "I" as the subject and object of experience (I can only feel to be my experiences)—when I perceive, think or feel something, then the "I" seems most present. Being a subject (test person) in a number of lab experiments intensified this "experience" of the self in relation to specific questions about the consciousness of the self and subjectivity that neuroscientists strive to experimentally control and measure. I immensely enjoyed these test conditions as they were "live", active, hands-on opportunities to understand what the scientists were researching, through experiencing one’s own self reactions and behaviour in such conditions. I also could reflect about the many forms of experiments, which in some cases I used in my art practice.222

2. The "artist" as a scientific researcher, exploring "right" and "left" brain contribution to art making and art perception. In collaboration with Olaf Blanke and Anna Sforza (post-doc researcher in psychology) we devised a way to "experimentally measure" the influence of brain hemispheric lateralization in art perception, systematically. I developed a pilot study, through discussion, and first trials with re-adjustments to account for subjects’ behaviour and unpredictability in tests—linked also to finding the most suitable method of test instruction, and how to account for the risk of chance, and how to randomize the test. I came to appreciate just how creative neuroscience can be. From the sixth month I was able to begin with controlled scientific collecting of empirical, experimental data about the right

very recent ones to see whether they had the same experience. They may have suffered from the same disease, which could be migraine or epilepsy; but others who experienced the same sensation were completely healthy. It was very nice for patients to know that they are not the only ones in the world who have such a strange experience, because it really is a sensation.

This is what most of them told me: “you’re walking, you’re sitting, you’re standing, you’re lying in bed and then you suddenly have the strong feeling that somebody is just behind you, very close—at arms’ length”—normally that was what the patient said—"and never in front, never to the right, never to the left, always in the back. And when you look around, there is nothing there. And when you look back to the front, the convincing, very convincing feeling is that somebody was
Ottiger, 2020

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Figure 2: Visual Ergo Brain Series, Third Person ev. 3 (2010/10)
and left hemispheric contribution to art style and perception. I was excited! The first such experimental study was about perception of style: drawing hand (right and left) & artist. The second perception of style study involved quick (early and late) 6 art. The third study was to re-confirm the data from study 1 in a different sample. This procedure was conducted to validate the first results, but also to see if we could develop a set up that is PC based allowing future reaction time measurements (RT) and accuracy analyses.

Almost since the very beginning we discussed “using” the artist and her tools and ability to make a visual work to learn more about the hemispheric lateralization and art perception. Thus, the fourth study was based on classical work on hemispheric specialization, where for example a lexical decision task using right visual field (RVF) dominance for word non-word discrimination, is carried out. We set up an experiment in which I drew selected images after a single visual exposure. The exposure time was 50 milliseconds, and flashed to a point outside the fovea (≠ 10°). Images were presented to the right visual field (RVF), left visual field (LVF), and I drew the images with either the right hand (RH) or the left hand (LH). The RVF-RH and LVF-LH setups can therefore be considered to be “pure” left hemispheric and right hemispheric drawings. This experiment is still ongoing.

2 The artist researching the genre self-portraiture, within the mediums photography, drawing, painting and video. With a long personal interest and history of self-portraiture, a central question remained constant throughout my residency: Why do artists make self-portraits and what makes them so particular in comparison with other self-representations? Other persistent questions include: What is the self? What is it? What is the body? How does a body sometimes dissociate? What is the body in space? What is the appearance of one’s own body? The feeling of being in your own body and to possess it, is a fundamental human experience and closely linked to our subjective first-person perspective of the world. But

there”—it is like feeling a presence like the one between you and me right now, but of course I can see you and I can hear you as opposed to the patients who have experienced this “ghostly” sensation of a presence. Neurologists have debated about this phenomenon for long time: is it a hallucination? Is it an illusion? But how can it be a hallucination when you can’t see it, when you can’t hear it? I interviewed many such individuals, and in one particular individual we were able to induce the sensation in a repetitive fashion. Each time we directed a light current to a certain part of that young patient’s brain during diagnostic evaluations, the presence appeared. This convinced us that there is a clear biological underpinning of it, and we observed a certain number of other illusions that we have now been able to induce by building a robotic stimulation system, also using virtual reality.
where it originated and how it works, is very much an on-going research. And, is it important for artists? These questions led me back to concepts of self-portraiture.

In a self-portrait the artist renders the intimate representation of the own personal self and it may be regarded as a method of investigation on oneself, both physically and emotionally. While rendering a self-portrait the artist extends the represented self beyond the perceived self. In some painted and photographic self-portraits the painter is represented twice—a reduplicative phenomenon, as the painting painter, by choice of technique and mode of expression, and, as the depicted subject the painted painter. How the artist represents himself is ultimately the artist’s decision and therefore it does reveal self-consciousness. The painted artist is often depicted as having a vision that is both directed to the world, at one’s own appearance and as a source of insight (inner awareness). In virtual surroundings of today’s world (digital media) we are generating lots of virtual selves. In art representation a virtual self was always observed and recently it seems to have re-gained a figurative (bodily) element.

By example of an artwork series (Third Person, Video Ego State Series) that I created during the residency, I demonstrate the method and reflect on artistic practice within a scientific environment.

We normally experience our conscious self as localized within our body. However, in certain neurological conditions such as out-of-body experiences, this spatial unity may break down leading to a striking disturbance of self-consciousness.

1. The human control (the term comes from the Latin, meaning to point) is a small control panel comprised of closely packed buttons in this case.

Move in Ottiger. What is that installation like, for a test-subject?

Ottiger. You, as a test person would be standing. A manipulator would measure your arm movements, and then we use a robotic device, which uses the signals coming from the manipulator, and feeds them back to your body. While you move your arms to the front, we have a “Lao-tse” robot finger programmed so that it touches you in the back.31

Move in Ottiger. Is the robot calibrated to my own speed of touch?

Ottiger. It’s calibrated to your speed, to your force and also to your timing and the place. While I move to the right, the robot finger would move to the right. If you do this synchronously, meaning if it touches you on your back, you feel it at the same time as you move your hand, there is no illusion. But you have the strange sensation of touching yourself in the back when you’re extending your arm forward, which is
Neuroscience (LNC) researchers found that during multisensory conflict, participants felt as if a virtual body seen in front of them was their own body. Participants also misleadingly localized themselves towards the virtual body and thus to a position outside their own bodily borders.

A version of the LNC’s experimental tool and setup designed to use conflicting visual–somatosensory input in virtual reality to disrupt the spatial unity between the self and the body was adapted and used to explore the virtual nature of the self in artistic practice. I (the artist) wore a virtual reality (VR) setting—VR goggles connected to a video camera—that immersed me into the body of my avatar while drawing my self-portrait (“Third Person”, Video Essay—Sum Series).

The neuroscientific experimental set-up and method is a simple yet intriguing one: It makes use of video-projection and virtual reality technology in order to enable me to get a view of my external self, of my own body, from behind, in 3D creating the impression that I was standing two meters in front of myself during the art making process. This external, “behind-the-body” perspective is confusing since we normally only see ourselves from a first-person perspective. We look out onto the world though our eyes, but we cannot perceive our heads (unless we look into a mirror) and we cannot see ourselves from behind. We do not have the ability to see ourselves the way others see us. The possibility to project an external, imitated out-of-body perspective of myself onto a head mounted display (HMD)—a set of VR goggles that I wore and thus projecting myself on a virtual plane ahead of me—was strange, exciting and very quickly accepted as a “normal non-normality.” I consider it a stage further in comparison to the wonderful painting of René Magritte’s called Not to be Reproduced (1937) because it is three-dimensional in space, however pixelated and perceived in real-time. I felt as if I was performing the physically impossible. Nevertheless, it’s a convincing feeling that you touch yourself, which was actually the starting point of our research. Next we tested the effect of delay; in other words, when you moved forward, the robot finger did not move, but if it moved shortly afterwards, then the subjects came up with another explanation, which is: “There must be somebody else behind my back touching me”.

It’s interesting—you could certainly use or induce the robot to move, because you are moving. It’s on a long and curved stick, like a very strange brush, but yes you should definitely try

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it with drawing, because it’s in a way related to visually being at a distance from yourself as the self-portraits you made in the Video Ergo Sum series. With this robot finger experiment you would have a very strange loop and of course, normally you are blindfolded—that would be interesting—you could be totally blindfolded, but also seeing it will be quite interesting, because what you draw—visually—could give you a feedback onto your back; as if your back were a canvas. Yes, nice, we have another project here, Nicole!

Nicole Ottiger. Looking back to my own artist-in-lab residency of 2010, how did you become familiar with our differences in artistic and scientific vocabulary? I remember some of the lab members even cultivated a very nice “arty” sense of language—I think that also has a lot to do with your own familiarity with the arts, Olaf, or maybe it is easier in
in whichever way I wanted. During the actual physical act of drawing I always only saw the view of myself from behind, projected in front of me, at a distance of two meters (the abided distance between the position of video camera to myself, as stipulated by the neuroscientists who devised the original experiment). We deliberately chose this particular distance because people who have had neurological out-of-body experiences reported being at distances of at least two meters outside of their real body.

I started with synchronized stimulations, which didn't seem very interesting at first. It took the time-delayed setting to push me into a different perceptive mode. Being familiar with one's own first person perspective harbours a certain danger of "knowing". I therefore tried to outsmart myself by using a time delay of 32 microseconds to attempt to see "aneux". A time delay is an equivalent to an asynchronous condition where you see yourself as a non-real perceptual illusion. I experienced body-time movements that were not in sync with the visual input.

Repeating the drawing experience again and again set off a re-familiarization but interestingly also a growing awareness for the complexity of the basic idea behind the virtual reality set up. I had to adapt to abnormal constraints by, for example, deciding "how" to draw in a time delayed condition where the visual information was lagged. Drawing in this asynchronous mode I found myself in a permanent state of being slightly incorrect. In this condition I had felt not only estranged from the first person, but also from the third person, the virtual self. The condition of being asynchronously stroked whilst drawing led to a fixation; localization around the physically "felt" touched area but it also led to a concentrated overworked zone on the visual level in the drawing. 226

With my head often wrapped up all in black cloth to avoid peripheral sight, I felt strangely cocooned in the virtual projected room, and somewhat detached from the rest of my body (although I could see my body in front of me) — it was as if my blind spot had

neuroscience. What I am asking is: Has the different vocabulary between myself and the scientists developed? Has it been a handicap or a starting point for interesting discussions?

Old Habits
There are many links between neuroscience or cognitive science and art. They are of course both very difficult to make sense of, from both sides. Art and Science have a long-term relationship that has to evolve further through shared processes and of course there are fields like neuro-aesthetics or aesthetics which link to perception, to consciousness and to the feeling of different states in respect to art. Psychologists, cognitive scientists and also some parts of basic neuroscience research (particularly human neuroscience) constitute most of the neuroscientists who are interested in the arts. I don't know whether it is more contemporary art or the "established" art in the museum,
but generally speaking there is definitely an interest among neuroscientists. However, it has always struck me that we don’t really have a “neuroscience of art” or at least of the visual arts. Much more serious work remains to be done in what is called “neuro-aesthetics”.

Nenad Ottiger: Yes, I agree! Neuro-aesthetics is very controversial however, maybe we’ll come to that later.

Ovid Blank: Okay, but this field is also quite separated from the rest of neuroscience because it’s difficult to do. When you try to quantify something like art making or art perception, it’s very tricky, of course. There were and are people in my Lab at EPFL that have an interest in art and were interested in interacting, even maybe to try and design an experiment together with you, where it’s not just you observing us but we get to observe you! It’s great that we chose to look together
shifted and situated itself to the space in front of my visual field. My field of vision within the virtual plane on the inside of the VR goggles is an artificial LED white and subtly pixelated, which affected the choice of my drawing material. At first I used a pencil to draw but since the video camera is projecting visual material to the artist from two meters away it was almost impossible to see the actual strokes in the first drawing attempts.

Then I spontaneously added a small hand-sized mirror as a visual aid, a tool that no one in the LNCO Lab at that time had put to use; to be able to look at myself from the front. I was curious to see if anything would change with this added feature and this is what happened: I was immediately able to record my reflex; my response to this stimulus, which was a reversal of the first person perspective. Normally the camera shows just a specified-angle look onto a space, but the mirror allows a lot of flexibility, a reflex-ability for me as an artist, who now not only "sees" the actual front, but also the rear-views and other aspects of the room, and also the position of the camera that I am drawing. In this mirror-sequence stage of drawing, in spite of seeing the unfamiliar back view of myself projected "in front" of me, I felt unexpectedly closer to something at a distance, behind myself—I would go as far as to say, I felt closest to that position two meters behind me. 

In the drawing process itself I was somewhat tactical and seemingly blind at first, then increasingly more familiar, able, playful and adaptive of the situation—I intuitively familiarized myself with the situation by trying things out: How far can I lean towards the camera to gain the absolute maximum of the available sight? And what do I achieve with this strategy? If I turn into the camera, observe and study the visual space, then turn around and draw from the remaining image repressed on the mind—is that a form of irrational intuition? Or is it bodily consciousness guiding my hand? To what degree does or can memory consist of perceived information? Is it reliable? What happens if I use a mirror as well? And at the interaction of the hemispheres and on self-portraiture—of course it’s an interesting area: How does a painter represent him or herself? In self-portraiture there are many ways one could do such a collaboration between art and science. We could ask, for example, why does self-portraiture usually show the face or the front of the body? Has anybody portrayed herself from the back? From the side? Why not draw yourself five times in the same self-portrait? There are endless research questions. Our collaboration during the residency got us started quite quickly and lead to fascinating discussions. And yes, it was important that we chose a topic that is of interest for the artist and a topic that is of interest for the scientist, because the techniques are very different to study or investigate the phenomena. When there is this
so the mind begins to question everything and deconstructs its confidence in “seeing” as a truth. There is an interface (an interference almost) – a transfer point or transition between what the mind sees and what the body knows it is seeing/not seeing that the artist eventually experiences. The translation of this experience into an image requires more than perception, it demands a subjective re-localization.

What the artworks themselves exert onto a viewer is an important part of art perception, which provides clues to the type of self-portrayal. The resulting drawings are representations of my “Self” that I saw through a device, a machine, in other words through an extension of the self. The drawings are also inevitably interpretations, and not just pure studies portraying the outer appearance of my bodily self. The artistic realization and translation of what one sees, into a visual entity on paper, goes through the body. The body consciousness shapes what we see into something more. The drawn results also include “clues” about the common-ground-topic, then this collaboration can actually proceed very nicely and quite quickly which it did in our case. I would say we took on two projects in one during the artist-in-labs residency. One is what you started — (1) this interest you have always had about self-portraiture and it was clear that there were many things to explore on that range, but at the same time — (2) we explored a completely different idea: how the right and the left side of the brain are involved in art making and art perception. This was also an interest I had, which is why we kicked it off quickly as well.

Nico Ottiger

Do neuroscientists see art as an invaluable resource? Do you think neuroscience sees art as an increasingly invaluable resource?

Chief Scientist

Each neuroscientist would say yes to both questions but most neuroscientists would say, “well we don’t
emotional state at the time of experiencing, and a curiosity for what I, as the artist, was aware of, as I perceived the self and the body within the virtual space at a particular point in time, bearing in mind that virtuality is both a space and a non-space. Irrational and immaterial awareness is made visible though pen strokes, along with the varying contrasts, and through the composition of the artworks themselves.

In this experiment with the virtual self, I was aware of my attempts not only to localise the body and my outer appearance, but also my self-consciousness, looking within myself as well.

It is not so simple to discern today’s artistic expression of the self-portrait, because representation is also about the method and/or technology, which often cause a shift in the representation. The contemporary style of artistic depiction of a bodily reality sees the self, fictionalized to transpose an autobiographical relation, one that simultaneously points at challenges, or displays the artist's awareness of an external perspective on him/herself. This

know how to study it”. There is a huge potential to develop this field and I think that’s also the problem. Rather, the tendency has been to get the neuroscientists and art historians to work together or psychologists and art historians, but what is even more relevant is to work directly with an artist in the research collaboration. That can be in many fields: drawing, painting and other forms of visual arts. To some extent we have already done this together, by using some of the research findings or technologies and by directly involving these findings in the art making process, but it takes time. Then one has to totally adapt the technologies one develops, because they have to be perfectly adapted for the art making process. Otherwise it would just be a hindrance or just a visualisation of the research technique or something similar.
self-expression extends both autobiographical and art practice concerns, morphing into a devious conceivably, double-edged position between being the object of review and the critic at the same time. Cultural and literary critic Jorun de Bloos (2007) points out that in being his/ her own critic, the artist manoeuvres him/ herself within the unique position of being both inside and outside the field of artistic practice which I often felt in the laboratory as well as in the experiments. In my experience, this permanent parallel or double role within self-reflection, which de Bloos observes as a new theoretical strategy, provides us with potentially new artistic subjectivities.

Within the scientific environment I found that “staying true” to my artistic values was important and indeed a double action. On the one hand, I was using artistic practice as a visual tool to explore some neuroscience ideas of my bodily self, self-location and perception, and on the other hand, I purposely deployed specific neuroscience methods to inspire myself and invite further reflection on perception through experimentation and exploration in art, which did not always appear to have scientific reference at first glance. Sight/vision and “how” we perceive is dominated by our mind rather than by the eye. The question still remains: What goes on, within vision itself every time we perceive something? According to Merleau-Ponty “vision must be thought in terms of a “helium”, an “ecstatic” state, which I believe is an interesting and necessary notion for art making that often captures some hidden and obscure element of an ecstatic or transformed moment within the complex processes between mind/ brain, perception and self-consciousness.

For an artist to work together with a scientist long-term is very challenging, because for experiments, once they are fixed, you don’t really change anything anymore. You keep the test very, very systematic and you advance in very, very small steps. And as an artist, once you discover something, you may not be particularly interested in it anymore! I assume you may want to develop more and more possibilities and associations very quickly and be unconstrained. Then again, some science researchers may also be working this way. But for the art historian, who looks at art from his or her rocking chair and can take a big distance, consistency is an easier task to undertake. In the field of neuro-aesthetics the question is often: What is art and what can we learn from the brain about creativity? How do people choose certain kinds of art? But the really interesting part, at least for
me, is between the creative act of making art and how to understand and participate in shaping and understanding those processes.

Novis Ottiger: Do you think artists could provoke more?

Ottiger: Well, if it is “just to provoke”, no. But I think in science you mainly need to provoke in the sense that you want to make people curious to learn and understand what something is about. I think this idea of provocation is about encountering a dialog, making something more empowering, and arrive at a focus of attention. Then it is important if you provoke or arise this curiosity from the audience. In today’s world overloaded with information it is always difficult to make people listen to you and find interest in what you do. In this sense, it’s an important part of our daily business to provoke. You can provoke yourself by making your art, but
you can also provoke the audience and probably some art historians or specialised public groups, and so I think, in this sense it's important yes.

Nickie Ottiger: It seems to me that art-culture is somewhat invisible in the scientific institution or scientific community, however, we are currently seeing an extraordinary new collaboration of the two in cyberspace and in technology. What do you think about this?

Ottiger: You are right, contemporary art has cultivated an amazing fascination with technologies over the last decades, but apart from video, it was always very difficult to really bring it into the science laboratory. Of course we have some technology in our studios but we cannot rely too much on a bunch of engineers to make our ideas possible. Sometimes engineers might be necessary for the art making process. Even if you can afford access to the technology, you know the artist often needs to have full control over the technology that is utilized. Today, with an interactive media platform like virtual-reality, some very affordable head mounted displays with some form of tracking are available, so these devices become a new kind of tool in the arts. These tools use visuals and sound at the same time, enabling cross-modalities and changes to the process. I can imagine that as an artist you're naturally drawn to these new types of tools, to work scientifically, to go with the times. I mean we should probably not forget the old art forms, but if you create novel links then this is fascinating.

Many of the technologies we needed or would have liked to have in the lab did not really exist before, so we often had to develop some of them ourselves and we were lucky in a way to be at EPFL, with the proximity to engineering colleagues. So we decided that we should really continue to try to search new techniques and we should
also take inspiration from fields that are not directly related to neuroscience. Of course, in the end we always have to and want to bring it back to neuroscience questions. But for the study in the self and the debating of the self, we had to use and rely on robotics, on computer science in addition to the standard neuroscientific techniques, and this is what we have tried to do here in the last ten years in the lab. I’m very happy that some of the people, of my friends and colleagues, who were in the lab also partly continue this kind of work in their own labs.

Nico in Ottiger Since I often saw you encourage intuitive processes within your lab, I was wondering, what place does “intuition” have as a functional tool in neuroscience? Do you see your PhD students working with it and might it help them to move on to do stunning things? Normally scientists have a lot of constraints that might affect their “intuition”. I read that in the late 1870’s, the psychophysicist Gustav Fechner worked under the assumption that there is a correspondence between the physical properties of stimuli and the intuitive sensations that they cause. Of course, at the time when he studied there was no possibility to observe the neural processes. Now today, the relevant empirical scope, limits, and prospects of the cognitive neuroscience of aesthetics are fiercely debated. Again, in large measure this is due to a lot of disagreements and arguments about the nature of aesthetic experience. So I was wondering: What is your position on the term “Neuroaesthetics”?

Owl Because Neuroaesthetics is a broad field, it can include many things, it means aesthetics and its relationship to the brain. It’s a fantastic research topic and a very important one. Unfortunately, there are not many scientists who can study this topic. Although neuroscientists understand vision quite well, also sound perception and even bodily
perception quite well, we often don’t understand art perception, art making and art evaluation or judgements. You can easily count the number of journals, the number of papers that exist on neuro-aesthetics—it is still a small research topic. Slowly, there are more recent developments and more studies and articles being published. I think that in order to make the field particularly interesting it would be good to involve other domains, not to give most of the power to neuroscience and to the empirical scientists, but to really make sure that this is a truly trans-disciplinary field. All the questions are there, and some scientists and artists have asked them and written about them over the course of the last 60 years, but nobody is really taking it up. There is a new Max Planck Institute in Frankfurt that will work on art and neuroscience. It will be dedicated to aesthetics including neuroscience and social sciences or both parts of the musicology and literature, but again no visual artists.

Novice Ottiger: And you? I have the impression that you are making a difference between the terminology “neuroaesthetics” and “neurology of art”.

Oval Starkie: I don’t know if it’s really a difference, but in the neuroaesthetic fields that I have seen so far, some art historians, some neuroscientists, some psychologists, maybe even some clinical researchers like neuropsychologists are engaged in research about topics like art processes in relations to Alzheimer’s disease, strokes or autism. Then there are popular writers like Oliver Sacks who has written about these deficits or impairments, and many others. But it’s still not really a research with the artist, so a “neuroscience of art” would focus on art making and even more on the creation process, maybe,
than on the perception part. The most interesting question to me is probably: What happens in the brain when you make art? Of course, it may not be one particular moment, but there is something in there we haven't studied: How do you make artworks? That may be the most difficult question to answer. I have tried to write about this in my book *Towards a Neuropsychology of Painting*.

**Necla Ottiger** How do you think that my stay in your lab, contributed to the way in which scientists think about their own research?

**Oual Brikho** Well, there are lot of things to say about that. The discussions we had in that year shaped some of our new experiments, not only the experiments we did together, but also how we approached other ways of progressing. For example, we discussed the art making process and how to draw in the left hemisphere—that definitely needs more thought. In particular: What does a neuroscientist think about these levels of perception? Can they be directly translated? This was accomplished actually in that particular series of experiments (*Left and Right Hemisphere Experiment Series, 2010–11*) and led us into a new experiment (*Shooting Moments, 2013–14*). We even demonstrated this in the Geneva show—*Symposium Parenthesis*. What happens when people react to different possibilities when they see at the edge of vision? We went very far in this investigation, which is very close to what an artist does. It was an interactive neuroscientist-artist-collaboration, in which you are the ultimate subject of your own experiment, a process that is somewhat controlled. We scientists did not just assist you, we took part—although we had to have an artist, of course, to control the choices of the pictures for the experiment. However, as I mentioned before, this is not neuro-aesthetics, it is trying to come up with another way of understanding
the art making process. It entailed vision and movement, painting and drawing and what happens in between, and then what you did was much more important. You took it further, when you decided you didn’t want to sketch over and over because it gets boring. But that you can start other things and start drawing on different surfaces and with other media and turn this into fascinating art and meanwhile learn about your own creative process.

What I would like to do in “neuroscience of art” or “neuropsychology of art” is to go further into looking at the art making process beyond the current research in neuroaesthetics. Of course, one can place “neuroaesthetics” and “neuroscience of art” together—which we did. But when I came to your studio in Zurich, it was really fascinating for me to see, that you really continued the process. Of course in the lab the time is much too short to do any of this, but when I saw your work in your studio I noticed that this art-science collaboration is very useful and it can actually be used in research! I really had the feeling that this is a start of a new form of looking at your work—for both you and me. And, yes, I think this may also be an inspiration for other artists in this trajectory. It’s like a looping system, which research always is and which art making is as well—you work every day, you see this thing, you are happy, you start again. I guess this is so, but to have both particular systems in the loop and to explicitly exploit or use the brain of the artist would be a new way. Therefore it is clear for me that you can come back any time you want. Hopefully it’s clear from this interview that having an artist, a painter in the lab was also pure fun, very interesting, very exciting.
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