

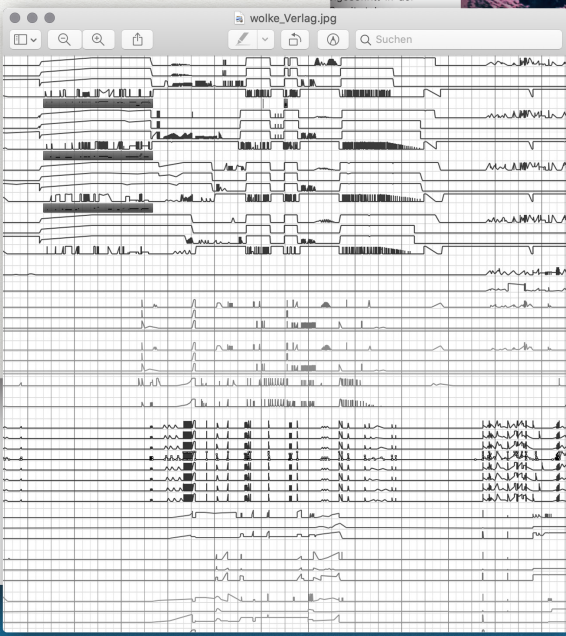
ALEXANDER SCHUBERT



Switching Worlds

gegenüber der
lichen Integration
auber eingebüßt.
kzeug betrachtet,

in der Digitalität
Fragmentierung,
ageschritt in der



wolke

unsere sen-, interaktions-, kommunikations-
endeckende Digitalisierung geändert haben.

as: „Beyond Digital“, in Wired (2008),
/WIRED6-12.html (Abruf: 19.7.2019)
kutsche – Medienmusik vs. / (+) Instrumentalmusik“,
en und ihre Musik“ (2009) Jg. von Forschungszentrum
emen/p100/p109_miyazaki.htm (Abruf: 19.7.2019)
2008),
WIRED6-12.html (Abruf: 19.7.2019)



Alexander Schubert studied neuro-informatics and multimedia composition. He is a freelance composer and professor at the HfMT Hamburg. His work focuses on post-digital performance concepts, which take place at the junction of the digital and analog world. He explores the friction between immersive physical settings and their artificially virtual counterparts. His multimedia compositions use sound, video and light. They address the subjective and social confrontation of humans with a technical reality and future.

Alexander Schubert

Switching Worlds

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PUBLICATION OF ARTICLES

Uncertain Conditions

Dissonance, Swiss Music Magazine,
Issue 140, 2017, page 8ff (German, original)

Virtuality and Deception

Music Texts 153, 2017, page 46ff (German, original)
Tempo

Focussing the View

CeC, eContact, Issue 19.2, 2018 (English, original)

Binary Composition

Music Texts 153, 2017, page 46ff (German, original)
Tempo

The Aesthetics of Error

Neue Zeitschrift für Musik[New Newspaper for Music],
Issue 02/2018, page 14ff (German, original)
Tempo

ABSTRACT

In the context of this work, I propose the examination of my compositional strategy in the context of a postdigital¹ perspective and present my artistic method as a tool for visualizing and sensually experiencing digital effects in the analogue world. This approach is based on the assumption that, today, the use of digital tools and representational forms is no longer the exception but the rule, and that this circumstance nowadays significantly influences our interactions, views and body images. In particular, these approaches address the question of whether, in this newly established constitution, our view of the analogue, non-digital environment has also changed. "Post-digitality" is to be understood here as a "shift in perception". This readjustment of a digitally influenced or digitally reflective perspective will be presented as a compositional strategy. Under the title "Switching Worlds", this practice will be established as a technique that actively thematizes the interweaving of the analogue with the digital and their interplay, thus making it palpable, and shall present and contrast different perspectives. The comparison of virtual and physical worlds and their artistic decoupling will be presented as a compositional approach and method of artistic research that attempts to convey these implications not only theoretically, but also to make them comprehensible to the senses.

¹ In this article I use the form "postdigital" for the adjective and "post-digital" for the phenomenon.

1 INTRODUCTION

*The digital revolution is over.*²

With these words, Nicholas Negroponte proclaimed an age in which the use of digital tools and representational forms is no longer the exception, but has become the rule.³ Today, our interactions, perspectives and body images are significantly influenced by this reality. Even though technical fields continue to develop and a fascination for technology persists, the digitalization and virtualization of our living environment are, although not yet complete, so far advanced that it can be taken for granted. Digitality is no longer a sign of the future and is slowly disappearing from our focus: it is its absence that continues to catch our attention.⁴ There is much to be said for the fact that, in this newly established constitution, our view of the analogue, non-digital environment is also changing. This observation is reflected in the term “post-digital”.

Post-digitality is to be understood here as a shift in awareness. This readjustment of a digitally influenced or digitally reflecting perception shall be presented as a compositional strategy. Under the title "Switching Worlds", this practice will be established as a technique that actively addresses the penetration of the analogue and digital and their interplay and thus makes them palpable by positioning and contrasting different perspectives next to each other. The comparison of virtual and physical worlds and their artistic decoupling will be presented as a compositional approach and method of artistic research, which attempts to convey these implications not only theoretically, but to make them comprehensible to the senses.

1.1 Postdigital Turn

The postdigital perspective is based on an analogue world which is completely permeated by digitality. The use of the prefix “post” before the term “digital” refers not to the end of digitality, but to the moment when the digitalization of cultural living reality is more or less established. “Post” initially describes not a state after digitalization, in which there is no longer any digitality, but rather, its complete distribution. On the one hand, this term can now describe the extent to which our modes of seeing, interaction, communication and reception have changed as a result of widespread digitalization. On the other hand, this shift describes a differentiated position towards digitality. With the social, economic and governmental integration

- 2 “The digital revolution is over.” Negroponte, Nicholas: ‘Beyond Digital’, in:Wired (2008),
online: <http://web.media.mit.edu/~nicholas/Wired/WIRED6-12.html> (Retrieved: 19.7.2019)
- 3 Miyazaki, Shintaro: ‘Medien, ihre Klänge und Geräusche – Medienmusik vs. / (=) Instrumentalmusik’,
in: PopScriptum 9 – Instrumentalisierung – Medien und ihre Musik(2008) , Forschungszentrum Populäre
Musik der Humboldt-Universität zu Berlin [‘Media, its Sounds and Noises– Media Music vs./ (=) Instrumental
Music’, in: Popscriptum 9 – Instrumentalisation– Media and its Music],
online: https://www2.hu-berlin.de/fpm/popscrip/themen/pst09/pst09_miyazaki.htm (Retrieved: 19.7.2019)
- 4 Negroponte, Nicholas: ‘Beyond Digital’, in: Wired (2008),
online: <http://web.media.mit.edu/~nicholas/Wired/WIRED6-12.html> (Retrieved: 19.7.2019)

of all digital technologies, they have lost some of their original magic. In the post-digital viewpoint, digital technology is not seen as a pure tool, but as including its cultural implications.

The starting point for postdigital upheavals is digitality and its properties of computability, discretization and fragmentation. But the implications meant here emerge only in the subsequent step: in the broad use and cultural integration of these technologies. Consequently, a number of elementary reference points are now available for social and artistic disposal. Central are questions of manipulability (this being simplified and more strongly established by digital tools) and connected to this, of authenticity. Easy access to processing and synthesis techniques as well as to large amounts of data has enabled the creation of qualitatively new potentials here (and also democratized their availability).^{5 6} Also affected are representation in general and of physical bodies in concrete terms. A changed depiction and reception in the context of the postdigital shift goes hand in hand with virtualization and leads to an increased decoupling of original and image, as well as cause and effect. As a consequence, aspects of body perception, identity, authenticity and social interaction are affected.

Parallel to social development in the age of digitalization, the use of electronic media in the arts – and also specifically in art music – has changed. In multimedia music, electronic content and processes are, by now, rarely an end unto themselves; rather, they are used representatively – i.e. exemplarily, descriptively or symbolically. Comparable to the stagnation of material progress in instrumental composition^{7 8}, there has been a change in the way digital tools and content are used. Sound effects, projections, synthesis programs and transformations are, for the most part, established techniques that are increasingly seldom sufficient as the sole *raison d'être* for a work. Then again, the creative field of research is all the more diverse, searching for forms of presentation and interaction that discursively deal with our changed reality of life, and therefore, with digital tools and representations.

5 Cornell, Lauren and Halter, Ed: *Hard Reboot: An Introduction To Mass Effect*, Cambridge Massachusetts: MIT Press, 2015, p. 20.

6 Weibel, Peter: 'The Post-Media Condition', in: *Metamute* (2006), online: <http://www.metamute.org/editorial/lab/post-media-condition> (Retrieved: 20.7.2019).

7 Lehmann, Harry: *Gehaltsästhetik [Salary Ethics]*, Munich: Wilhelm Fink Verlag, 2016, p. 197ff

8 Lehmann, Harry: *Die digitale Revolution der Musik [The Digital Revolution of Music]*, Mainz: Schott Verlag, 2012, p. 92.

1.2 Personal Motivation

Ever since I owned a computer as a teenager, the interplay between analogue and digital content has been a central element both in my private life and in my artistic work. My musical (and artistic) activity has always been characterized by integration or interweaving of electronic content and techniques as well as analogue material. Since the beginnings of my compositional work, making music has meant cutting, collaging and editing samples and audio tracks. My socialization is characterized by an electronic production environment. Nevertheless, the analogue, wild, spontaneous, gestural, direct has always played an important role in my life. I love being performative, sleeping outdoors in the open air or playing with acoustic instruments. These opposite poles have always driven me to produce art. So, in the beginning, I mixed field recordings with electronic simulations of nature, composed acoustic music albums and then, in the course of time, deconstructed one track after the other, or integrated electronic performance setups into free jazz. The friction between these contrasting elements and the resulting and questioning of each one inspired me: to see the electronic as an analogue object and to simulate the analogue through the electronic. I wanted to represent the virtual, the constructed and the artificial in a setting that was not technical, cold and clear. The digital should always shimmer through, through a tangible, warm, human surface. This central duality contains a number of ambiguities that are either connected to it or directly result from it. These include aspects of authenticity and physicality, for example. Over the last twenty years, this activity has evolved from an intuitive approach to an increasingly consciously reflective approach. Last but not least, the formulation of this text represents a further step in the concretization of these aspects.

1.3 Postdigital Change in Perspective as a Compositional Strategy

If one understands the postdigital shift as a change in the perception of digital content, or as a reorientation of position in relation to digitality, the question arises as to how art can, or should, behave respectively. I find this issue extremely relevant in the context of multimedia composition. Due to the social connotation of digital media, I would even go so far, in the sense of a postdigital imperative, as to say that these connotations can no longer be blanked out. The implications of digital technologies have become an integral part of the digital itself.

An artistic examination of this range of themes offers the chance to make these aspects sensually perceptible and directly tangible. Because the consequences of post-digitality particularly influenced perception, experience and also physical interactions, it is obvious that this level should also be dealt with. The technique of perspective-comparison I have proposed should enable the possibility to compare different modes of perception and interaction. In this way, opposing modes of presentation and communication are juxtaposed and thus made tangible. By this, I understand the process of visualization.⁹ It is intended to bring into

⁹ In the German text the word "Sichtbarmachung" is used, which does not only refer to how something is visualised—but rather, that it is visualised.

focus those consequences of digitalization which are invisible, unnoticed or disregarded. As there is a noted disappearance of technology in the wake of post-digitality, art can offer space here, to once again make characteristics an object of observation. In my own artistic practice, I realize this approach essentially through the construction of immersive settings with technical contents. So, firstly scenarios are constructed, which can then be deconstructed and contrasted with another perspective. The continuous comparison of opposing modes of observation provides the space for the audience to form its own opinion. In this sense, my compositions contain no clear moral conclusions, but instead, offer an experimental setting that challenges the audience to take a stand. I regard this process as artistic research since it explicitly involves neither illustrative nor descriptive works of art, but rather, experimental setups with an open outcome. Many of my pieces are setups that deal with digitally-mediated perception. This enables the sensual experience of the technical content and then the evaluation by the audience (and by myself). These approaches are exploratory, in the truest sense of the word, as I want to learn, together with the audience, something about the changing modes of perception and interaction in the postdigital age.

1.4 Thesis Structure

The presented text is divided into two main parts. In the first part, I describe my compositional strategy and its contextual classification (Chapters 2–5). In the second part, I present a collection of essays and magazine articles about the thematic field that I have written in recent years (Chapter 6). Therefore, I will first present my approach to postdigital techniques in contemporary composition and place it in the context of cultural studies. I will exemplify and substantiate this with various shorter contributions.

Initially, I will introduce the terms “post-digital”, “post-internet” and “new aesthetic”(Chapter 2). Originating with a description of the basic digital characteristics (Chapter 2.1), their consequences are explained and systematized in the context of the postdigital turn (Chapter 2.2). As a central point, the digital error as an artistic tool is also discussed in this section (Chapter 2.2.5). A further direct consequence of digitalization, the term “post-internet” is used to describe the repercussions of widespread distribution of the internet, first socially and then artistically (Chapter 2.3). The “new aesthetic” proposed by James Bridle is a collective term that attempts to describe the impact of digital techniques on the visual language of the present day (Chapter 2.4). The visibility of technology itself and its technical influence on society are discussed as central points in this chapter. This summary represents the content basis and motivation for my own work.

Subsequently, I will situate my artistic activity within the context of artistic research (Chapter 3). First, I will outline the basic characteristics and issues of artistic research (Chapter 3.1), focusing on the production of knowledge through sensual insight, the aesthetics of production, and the interplay between the researcher/subject and the object under investigation. I will then correlate these approaches and observations with my own practice (Chapter 3.2). The development

of technical tools (Chapter 3.2.2) and experimental settings (Chapter 3.2.3) plays a central role here. This forms the basis for examining the postdigital thematic area at a sensual level of experience in an experimental set-up with an open outcome. Methodical documentation tailored to the project will be presented as an integral part of the compositions (Chapter 3.2.4).

In Chapter 4, I present my composition strategy as a tool for achieving a post-digital change in perspective. In doing so, I present my artistic practice as a means of comparing different perspectives within the interplay of the analogue and digital world (Chapter 4.1). I argue that the influence of the digital is so elementary that the use of digital content must necessarily be thought of as postdigital (Chapter 4.2). A postdigitally positioned composition can actively reflect codes of representation and interaction and make them perceptible. The influence of program interfaces and the affordance of digital technology, in general, are concrete examples (Chapter 4.3). The digital error is often used in my artistic work as an instrument for breaking up narration and media presentation. This is a key method with which to steer the focus away from pure technology onto its implications (Chapter 4.4). Analogue and digital are discussed as two levels which increasingly penetrate and overlap each other. This coupling and artistically induced uncoupling are presented as practical approaches (Chapter 4.5), followed by the consequences of increasing virtualization on the concept of truth and upon physical sensations (Chapters 4.6 and 4.7). Finally and specifically, I deal with the influence of post-internet shift in the compositional context (Chapter 4.8). The virtual imperative (Chapter 4.9) suggests the viewpoint that the use of digital techniques always has a virtual character, and that this should not be ignored in the artistic context.

The second part of the thesis (Chapter 6) contains five articles which have been published in various magazines. These texts elaborate on some of the topics presented in the main text and additionally provide further details about some of my compositions and techniques. The essay *The Aesthetics of Error* (Chapter 6.1) explains in detail the use of digital error, introduced in Chapter 4.3, and also references the topics of authenticity and reality, presented in Chapter 4.6. It also discusses the more general connotations of malpractice/malfunction and failure. Aspects of physicality, identity and authenticity are discussed in the essay *Virtuality and Deception* (Chapter 6.2). This text also expands upon thoughts from chapter 4.6, giving supplementary examples from an artistic and compositional context. The essay *Binary Composition* (Chapter 6.3) takes this paper's recurring theme of ambivalence and duality and extends it to further levels, such as humour, intuition and pop aesthetics, as well as expanding the principle of opposing perspectives out into a broader spectrum. The main body of text introduces the use of light as a postdigital means of visualization (Chapter 4.3.3) and is supplemented by the essay *Focussing the Gaze* (Chapter 6.4), which provides further insights into light usage in my work. The last essay *Uncertain Conditions* provides a summary of the basic intentions of my work (6.5) and specifically reflects the interplay of technical and human.

2. DIGITALITY, POST-INTERNET AND A NEW AESTHETIC

In "The World is not a Desktop", Marc Weiser, a computer scientist at Xerox PARC, inquires as to the characteristics of perfect technology and suggests this answer:

*A good tool is an invisible tool.*¹⁰

The quote comes from 1993 when this idea was a noble ideal and digital technology still far from it. Desktop PCs were physically and visibly present, and every kind of technology was very clearly recognizable as such. Almost 30 years later, we are a few steps further ahead. The visibility and invisibility of technology have taken on a whole new significance. The omnipresence of digital content and its systematic reduction and integration into the physical world makes it disappear in our perception, making it an integral part of our lives. Perhaps we must already rephrase the statement above to "This World is a Computer Desktop". In any case, we can today at least stop for a moment and ask ourselves, to which extent the inner life of the computer – that is, digital order and the associated working processes – have already permeated our world. When workers, guided by algorithms, navigate their way through the city; when airports are a digital check-in, moulded into architecture; or when newspapers look just like their online version: we then feel, perhaps, the influence of digitality, which is literally permeating our world in ever greater depth.

Several explicit and implicit imprints of our communication and interaction with media are initially resulting from the fundamental characteristics of digital technology (and more generally, in the next step, also extending beyond media use). The screen, the interface and also the predictability of digital content opened up a new field in the 1990s. Due to its widespread dissemination, the digital became increasingly invisible (and its influence nevertheless more visible). The omnipresence of computation – “ubiquitous computing”, as Weiser calls it¹¹ – often eludes our attention and only returns to our consciousness when an error occurs. As a perfect technique, Weiser cites a pair of glasses, which normally seem invisible to the wearer. At this point, Benjamin Hill observes that a fine crack, or dirt on the lens, makes glasses very noticeable.¹²

The first rupture through digitality was named by Kim Cascone with the term “post-digitality”.¹³ The digital mistake and disillusionment with new media established a glitch aesthetic of its own, which became the starting point for a series of further viewpoints, addressing the permeation of the analogue world by the digital and questioning how our entire perception has already been shaped by this content.

10 Weiser, Marc: 'The World Is not a Desktop', in: *Interactions* 1/1 (1994), p. 7–8,
online: <https://www.dgsiegel.net/files/refs/Weiser%20-%20The%20World%20is%20not%20a%20Desktop.pdf>
(Retrieved: 13.04.2019).

11 Weiser, Mark: 'The Computer for the 21st Century',
in: *ACM SIGMOBILE Mobile Computing and Communications Review* 3/3 (1991), pp. 3–11.

12 Hill, Benjamin Mako: 'Revealing Errors',
in: *Error: Glitch, Noise, and Jam in New Media Cultures*, Mark Nunes, New York: Continuum, 2011, pp. 27–41.

13 Cascone, Kim: 'The Aesthetics of Failure: "Post-Digital" Tendencies in Contemporary Computer Music',
in: *Computer Music Journal* 24/4 (2000), pp. 12–18.

Similar observations can be made in the context of a “post-internet” shift, here exploring the influence of the internet upon representation, communication and interaction and the changed role of the internet after virtually complete expansion.

The permeation of the analogue world by network and digital technology has created a visual language with a strong virtual character. This overlap and visibility is the focus of a current called “new aesthetic”, as Just Hodgson describes it:

*The New Aesthetic is concerned with the blurring of boundaries associated with ubiquitous computing.*¹⁴

At the centre of the shifts being introduced in this chapter is always a sensitization to the visibility or perceptibility of digital technology. To some extent, this is an active process of (re)disclosing¹⁵: this being an active and critical process that makes hidden or blended-out content perceptible again.

Referring to Giorgio Agamben's definition of a paradigm, it seems reasonable to speak of a paradigm in the context of the postdigital and thus to focus on how we think – and not what we think about.^{16 17} It is interesting to look at the changes in interaction, presentation and communication that have resulted from digitalization. Consequently, the theme doesn't primarily concern the use of digital content and technology, but rather the resulting new usage modes. Thus, these post-topics are to be understood as shifts and not as a break in evolution.¹⁸ The focus is not on the fact that digital technology is being used (or is no longer being used), but on the consequences that have resulted from the technology. John Culkin's quote¹⁹ from 1967 can therefore also be applied to the digital era:

We shape our tools, and afterwards, our tools shape us.

2.1 Digitality

Keywords such as “digital revolution” and “information society” are intended to account for the fact that digitalization is bringing about fundamental changes in the economic and working world as well as in public and private life.

14 Hodgson, Justin: *Post-Digital Rhetoric and the New Aesthetic*.

Columbus: The Ohio State University Press, 2019., p. 5.

15 Here, as in later chapters, the word “disclosure” has been chosen to represent the idea of making something visible [Sichtbarmachung].

16 Meskin, Jacob and Shapiro, Harvey; ‘To Give an Example is a Complex Act: Agamben's pedagogy of the paradigm’, in: *Educational Philosophy and Theory* 46/4 (2014), pp. 421-440.

17 Agamben, Giorgio: ‘What is a Paradigm?’ August 2002.

online: <http://www.maxvanmanen.com/files/2014/03/Agamben-What-is-a-paradigm1.pdf> (Retrieved :13.04.2019).

18 Cramer, Florian: “What is ‘Post-digital?’” in: *Postdigital Aesthetics. Art, Computation and Design*, David M. Berry and Michael Dieter, London: Palgrave Macmillan, 2015 (=Nr. 24), pp. 12–26.

19 Culkin, John: ‘A Schoolman's Guide to Marshall McLuhan’, in: *Saturday Review* (18.3.1967), 70–72, pp. 51–53.

*The 'Digital Revolution' is a recent term describing the effects of the rapid drop in cost and rapid expansion of power of digital devices such as computers and telecommunications. With the arrival of the digital media, the world was arguably altered and the way that we think of ourselves and the planet (indeed the universe) has conceivably changed forever. In particular, digital culture is associated with the speeding up of societal change, causing a number of technological and social transformations in a surprisingly short amount of time.*²⁰

Only a rough outline of the most important aspects can be given here: significant changes include access to information, faster and globalized communication, limited privacy, forms of digital surveillance, distribution of copyright-protected material, network organization (of collaborations) and the emergence of the internet – to name but a few (more detailed implementations can be found here^{21 22 23}). There is no intention to present the full extent of the digital changes at this point; rather, in the context of this work, to present some key elements and their influence on society and art.

2.1.1 Raster and sampling

In order to be able to analyse the consequences of digital media, techniques and representations, it is useful to first consider what is meant by “digitality”. The term has many aesthetic connotations and is sometimes used symbolically, for example, for something cold, technical or unnatural. On a basic level, digitalization is first and foremost to be understood as merely a mastering process or grid, the mapping of the analogue onto the discreet:

*The nature of digital media is the raster (the sequence of similar addressed individual elements) and the rule (the agreement on how an element is defined).*²⁴

Consequently, continuous data with both seamless temporal progression and value range are discretized and quantized and thus transferred in all their resolution properties into a rasterized system. This value range can be binary, but can also use any other subdivision of the analogue spectrum. It is essential that a (loss-laden) mapping is made to a discrete (i.e.numeric) representation. This screening and coding occur in different levels of detail: the temporal discretization ranges from the high-resolution scanning frequency (sampling rate) of an analogue-to-digital converter (up to 192,000 samples per second) to larger sampling or storage

20 Greeber, Glen and Royston, Martin: 'Introduction', in: *Digital Cultures - Understanding New Media*, Glen Greeber and Martin Royston, Maidenhead: Open University Press, 2009, p.5

21 Leeson, Lynn. (Ed.): *Clicking in: Hot Links to a Digital Culture*, Seattle: Bay Press, 1996.

22 Gere, Cahrle (Ed.): *Digital Culture*, London: Reaktion Books, 2008.

23 Campanelli, Vito: *Web Aesthetics: How Digital Media Affect Culture and Society*, Rotterdam: INC, 2010.

24 "Die Natur digitaler Medien ist das Raster (Folge gleichartiger adressierter Einzelelemente) und die Regel (die Vereinbarung, wie sich ein Element definiert)".Großmann, Rolf: 'Spiegelbild, Spiegel, leerer Spiegel. Zur Mediensituation der Clicks & Cuts', [Mirror image, mirror, empty mirror. On the media situation of Clicks & Cuts] in: *Soundcultures*, Marcus S. Kleiner and Achim Szepanski, Berlin: Suhrkamp, 2003, pp. 59-60.

units (frame rates with 25 frames per second, stop-motion/time-lapse with several seconds' duration). In addition to the temporal rasterization, the resolution per point in time (bit depth or pixel/voxel amount of an image/frame) is also extremely scalable. This quantization can vary between high-resolution 4K/32Bit representations and highly compressed storage forms, allowing a wide range of raster depths. Common to all resolutions and formats is the countable display.

The concept of sampling or rastering is of particular interest in this context because of its manifold scalings. Basically, "sampling" is the taking of (continuous) samples to exemplify, reconstruct or approximate the original with a countable selection of data points. The practice of taking a part (as a sample) out of continuous signals, events, actions or representations and then using it further is also relevant on an artistic level in every degree of scaling. It should also be noted that rasterizing can also be implemented in other ways – such as light pulses – in addition to typical instruments such as microphones, scanners and cameras.

It should be emphasized that this is not only about the quality of the sampling at the detailed level of the measuring process, but that these effects also occur at a larger scale. Discretization in the context of digitalization is accordingly not limited to the finest possible discrete representation. It can also be found at a higher representation and storage level – in the subdivision and rasterization of larger information units. The sampling rates consequently not only determine how error-prone a signal can be when restored and reconstructed in detail, but are also a process of subdivision and selection. Under certain circumstances, the selection of a section or sample can influence the presentation and content implication of the material to be represented. It can be a conscious act of selection, equivalent to steering attention. It is therefore not necessarily the case that the rasterized result aptly represents the continuous original. On a technical level, for example, one finds the effect "aliasing", which occurs when a signal is not sufficiently finely scanned. Sonic, temporal or visual artefacts are then created. Whether it is an error artefact caused by an insufficient sampling rate, or a distortion of the representation, since, in a selection process, only certain numerical values are taken: both lead to a decoupling between the original and the image. More generally, one could also speak of a discontinuity – and in this sense, also of an uncoupling – instead of discretization only. In the course of the text, this aspect will still be considered as a technical basis with regard to authenticity, body images and deception.

The reduction to a discrete form has immediate effects on a whole range of factors. Besides the discrete representation, it is primarily the processing of this data that enables qualitatively new steps to be taken. The following aspects are direct consequences of digitalization: the storage of large amounts of data, access to extensive databases, optimized computability of digital data, non-linearity of data, automation of processes and interaction with the data (detailed presentations can be found here^{25 26 27}). Calculability – i.e. the ability to (easily) perform processes

25 Paul, Christiane: *Genealogies of the new aesthetic* (2017).
online: <https://prezi.com/st0oypvunvdc/genealogies-of-the-new-aesthetic/> (Retrieved: 13.5.2019)

26 Creeber, Glen: 'Theorizing New Media', in *Digital Cultures*, Glen Creeber and Royston Martin, Berkshire: Open University Press, 2009, pp.11ff.

27 Roads, Curtis: *The Computer Music Tutorial*, Cambridge: MIT Press, 1996, pp.5ff.

and calculations with the data – is not fundamentally tied to the digital²⁸, but the speed and the quantity that can be achieved with it means that a new quality can be attained, which can only be realized on the digital level.

2.1.2 Computability of the New Media

The most relevant and consequential physical and formal manifestation of digitalization is the “new media”. In the course of digitalization, they have become the epitome of the so-called “digital revolution” and have thus become a socially and theoretically relevant object. Although discretization is theoretically conceivable without the new media, it is these media that have brought about the most decisive implications. They have driven and enabled the fundamental social change from a post-industrial, “technocratic society” via a “knowledge-based society” to an “information society”.²⁹

The broad generic term “new media” covers a wide spectrum of devices and formats, including computer animations, human-computer interfaces, websites, VR worlds, computer installations, computer games, and much more. The new, digitally-mediated media distinguish themselves from analogue media, such as radio, television, books, magazines and classic film formats. More helpful than classifying the media according to a new or old publication date is an analysis of the characteristics and implications of the different media types. Terry Flew, for example, highlights the aspects of digitalization and convergence, interactivity and networks, virtuality and globalization as essential characteristics of new media.³⁰

Lev Manovich³¹ begins by describing five essential features that describe new media and characterize their basic function:

1. *Numerical Representation*
2. *Modularity*
3. *Automation capability*
4. *Variability*
5. *Transcoding (the relationship between calculation and aspects of the general cultural aspects of everyday life)*

This description is initially characterized by the interaction of the user with a computer. This is primarily an inventory of the use of a computer or similar device. Only the fifth point provides a preview of the transferred properties. It can be stated here that discretization and digitalization – in interaction with new media – lead directly to changed interaction, depiction and representation concerning the

28 Cramer, Florian: “What is ‘Post-digital’?”, in: *Postdigital Aesthetics. Art, Computation and Design*, David M. Berry and Michael Dieter, London: Palgrave Macmillan, 2015 (= Nr. 24), pp. 12–26.

29 Berry, David M.: ‘Thinking Postdigital Aesthetics: Art, Computation and Design’, in: *Postdigital Aesthetics. Art, Computation and Design*, David M. Berry and Michael Dieter, London: Palgrave Macmillan, 2015 (= Nr. 24), pp. 1–11.

30 Flew, Terry: *New Media: An Introduction*, South Melbourne, Victoria: Oxford University Press, 2002. p. 28

31 Manovich, Lev: *The Language of New Media*, Cambridge, Massachusetts: MIT Press (Leonardo), 2002. pp. 27ff

data. Besides the numerical (discrete) depiction, the computability of the data is the decisive point. This is perhaps initially a quantitative leap since many things can now be done much faster. Following from this, however, is a whole series of further technical implications, which also become socially relevant in succession. Modularity, automation capacity and variability allow a fundamentally new way of dealing with data and media. In the next step, numerical representation allows an object or information to be broken down into several parts. These can be processed separately from this point on. Such a form of representation allows arbitrary calculations to be performed on the data, ranging from low-level evaluations to manipulations, to high-level processes, such as AI-supported analyses. According to Manovich, variability means that a “new media object” (i.e. an object that exists in new media) no longer has a fixed, unchangeable form and representation. The most consequential and, for this thesis, relevant point – namely, the process of transcoding – shall be discussed in detail after a short insert. Before that, the classification of digital media by Christiane Paul will be examined.

Christiane Paul postulates similar, extensively presented characteristic³², which can be regarded as a concision of some aspects of Manovich's classification:

Aesthetics of the characteristics of the digital medium:

- *Computable: determined by numerical methods and mathematics (divisible into small units)*
- *time-based: requiring an extended viewing period (as video, performance)*
- *non-linear: assemblage (with or without interaction) in new configurations: recombinantaesthetics*
- *real-time: relying on instantaneous communication processes or constructing themselves “on the fly”*
- *algorithmic: requiring a certain media literacy with regards to the rules of programming*
- *generative: able to self-produce*
- *automated: new balances between authorship and programmability*
- *interactive: new media works require an understanding of response as a medium*

Like Manovich, her first point bases on the central aspect of computability/predictability and also refers to the automation capacity. Out of this, she derives the generative, algorithmic properties and focuses on processing in real-time systems. This additionally results in the ability to interact, made possible by algorithmic processing with real-time access. In the context of this thesis, the component of nonlinearity is particularly interesting. The abolition of a clear temporal progression in display, readout, interaction and sampling are the fundamentals for temporal uncoupling, as outlined in Chapter 2.1.1. In terms of creating new content and realities, the generative aspect is of ongoing interest in the course of this work (see 4.7).

32 Paul, Christiane: *Genealogies of the new aesthetic* (2017).
online: <https://prezi.com/st0oyvunvdc/genealogies-of-the-new-aesthetic/> (Retrieved: 12.11.2019)

Christiane Paul subsequently derives several specifics for the digital medium from the aesthetics of the digital medium's characteristics.³³ This describes what could be called the most natural, logical or adequate forms of the digital medium: Aesthetics of the medium:

Aesthetics of the medium:

- *(networked) installation*
- *net art/networked art*
- *'software art'*
- *virtual /mixed/augmented reality*
- *locative media art*

In this list, there are various aspects which will be of interest in the course of this dissertation. Even if not all explicitly fall into these categories, essential aspects are influenced by these cited works. For example, a piece does not have to be explicitly a network installation, to be implicitly influenced by digital properties, and thus contain aspects of a network-influenced way of thinking, construction or aesthetics.

2.1.3 Overlaying through Transcoding

As described by Manovich and Paul, the fact that digitalization and the use of new media have such strong implications suggests that they have a social impact on user behaviour, interaction and general cultural practices. Matt Hills maintains that new media are already old and that it is not their existence that is new, but their influence on society:

*Instead of asking what is New Media [...] we should be asking [...] what's new for society about the New Media?*³⁴

Glen Creeber formulates this question as follows:

*What are we doing with New Media and what is New Media doing with us?*³⁵

With the term "transcoding", Lev Manovich no longer describes the concrete properties of a digital medium and the computational implications resulting from them, but rather takes up the interwoven relationship between the digitally represented object and its meaning in the analogue, cultural world.

33 Paul, Christiane: *Genealogies of the new aesthetic* (2017).

online: <https://prezi.com/st0oypvunvdc/genealogies-of-the-new-aesthetic/> (Retrieved: 20.7.2019)

34 Greeber, Glen and Royston, Martin: *Digital Cultures - Understanding New Media*, Maidenhead: Open University Press, 2009, p. 5.

35 Greeber, Glen and Royston, Martin: 'Introduction', in: *Digital Cultures - Understanding New Media*, Glen Greeber and Martin Royston, Maidenhead: Open University Press, 2009, pp. 1-10.

*As I have suggested, computerization turns media into computer data. While from one point of view computerized media still displays structural organization which makes sense to its human users – [...] from another point of view, its structure now follows the established conventions of computer's organization of data.*³⁶

In doing so, he distinguishes between the “cultural layer” and the “computer layer”. The “cultural layer” describes the aspects of an object that convey content, narration and meaning. Consequently, this is the information that a human being extracts from an image or text when he or she registers the content. The “computer layer”, on the other hand, describes the categories of machine language, such as packages, lists, functions, variables and data structures. The crucial point for Manovich is that the two layers of content and storage form cannot be considered separately:

*Since new media is created on computers, distributed via computers, stored and archived on computers, the logic of a computer can be expected to significant influence on the traditional cultural logic of media. That is, we may expect that the computer layer will affect the cultural layer. The ways in which computer models the world, represents data and allows us to operate on it; the key operations behind all computer programs (such as search, match, sort, filter); the conventions of HCI – in short, what can be called computer's ontology, epistemology and pragmatics – influence the cultural layer of new media: its organization, its emerging genres, its contents.*³⁷

Lev Manovich postulates here a permeation of these two levels, an effect which is widely spread and observable today; to be observed, for example, in the clear interplay between print media and digital text media. Whilst New Media often imitated traditional media initially, the trend has reversed, in that the visual appearance of print media is modelled on the flat appearance of websites. A comparable trend can be observed with analogue and virtual synthesizers.

Lev Manovich describes a first step on the way to a postdigital perspective: the anchoring, superimposition and blending of analogue and digital layers. The use of “compositing” directs the focus to a deliberate act of fusion and merging:

*The result of this composite is the new computer culture: a blend of human and computer meanings, of traditional ways human culture modeled the world and computer's own ways to represent it.*³⁸

In this section, it was made clear that the digitalization of content leads to a change in its representation. Digital processing opens up an arsenal of inherent operations and manipulations, from which several implications arise, influencing

36 Greeber, Glen und Royston, Martin: *Digital Cultures – Understanding New Media*, Maidenhead: Open University Press, 2009, S. 5.

37 Greeber, Glen und Royston, Martin: „Introduction“, in: *Digital Cultures – Understanding New Media*, hg. von Glen Greeber und Martin Royston, Maidenhead: Open University Press, 2009, S. 1-10.

38 Manovich, Lev: *The Language of New Media*, Cambridge, Massachusetts: MIT Press (Leonardo), 2002, p. 46

interconnectedness, variability, interactivity and the generative nature of the content. An uncoupling of content attributions of the analogue original and its representation in the computer layer leads to two-part classifications and characteristics of the objects. Both perspectives permeate each other, so that the analogue media, objects and works of art significantly shape their digital counterparts and, in the second stage, are significantly influenced by them. As this phenomenon occurred at the turn of the millennium primarily in the context of new media and was an isolated characteristic of certain interfaces, media and devices, one could question whether a society significantly shaped by its digital tools is completely affected by the penetration of the computer layer: a hypothesis titled "Post-Digital", which will now be analysed as resulting from digitalization and the success of new media.

2.2 Post-Digitality

Digitalization and new media have a relevant influence on the handling of media content of all kinds. As a result, usage has changed fundamentally, for example in terms of availability, editing possibility, interaction and predictability. In the context of new media, this is seen as a rather self-contained phenomenon, a phenomenon which is limited to the use of (digital) media and which is clearly delineated or takes the contrast between analogue and digital worlds for granted. However, from the perspective of a so-called "postdigital turn"³⁹, society and its cultural modes of interaction are now viewed under the premise that the entire cultural world has already been digitally developed and permeated. This view is based on the assumptions that a separation of these two worlds no longer truly exists and that the disparate contrast is no longer to be found in this form. "Post-digitality" describes a shift that takes place after the social inclusion of digital technologies.⁴⁰ Consequently, the prefix "post" is not to be understood as a time after digitalization, in which digital media no longer exist: rather, it is a state in which, in large parts of the western cultural world, digitalization cannot be considered complete, but at least omnipresent. This results firstly in three potential consequences:

2.2.1 Digital technology is becoming increasingly invisible in everyday life (due to this content being progressively embedded and familiarized).

2.2.2 Perceptions of the analogue parts of the world have changed.

2.2.3. Disillusionment with the digital world following the political, economic and social use of digital tools

Subsequently, one may discuss the question as to which options for action result from these observations. Specifically, this means: Is post-digitality simultaneously an action, an operation, an exit, a positioning, or a perspective? These questions

³⁹ Berry, David M.: 'Thinking Postdigital Aesthetics: Art, Computation and Design', in: *Postdigital Aesthetics. Art, Computation and Design*, David M. Berry and Michael Dieter, London: Palgrave Macmillan, 2015 (= Nr. 24), pp. 1–11.

⁴⁰ In this thesis I use the form "postdigital" for the adjective and "post-digital" for the phenomenon.

– which also constitute the artistic practice – will be discussed from Chapter 2.2.5, and then in Chapter 4 in detail. Before this, the core aspects of “post-digitally” will be outlined.

2.2.1 Invisibility

The establishment of the concept “post-digitality” is situated after the phase of digitalization and new media. It can only be assumed that the period in which new media were in focus, and were perceived as new, has concluded. The use of smartphones, computers, tablets, online communication and social networks is no longer a rarity – it is everyday life and the norm. This phase is followed by one in which the disappearance of visibility occurs. Florian Cramer, therefore, claims that the concept of post-digital can be seen as the “opposite” of new media since it assumes a state in which digitality is no longer seen as disruptive, i.e. as permeating the analogue world and contrasting with old media.⁴¹ David Berry goes so far as to say that the “digital” describes a historical condition. He means that formerly, in an analogue environment, something would be digitally calculated or represented at a certain moment in time, i.e. as a separately recognizable action. He sees our present time in contrast to this, as completely digital:

*Indeed, in a similar way to how the distinction between ‘being online’ and ‘being offline’ has become problematic, with widespread wireless networked devices, so too, perhaps, the term ‘digital’ describes a historical world of discrete moments of the computational.*⁴²

It is, therefore, a question of the extent as to which digitality is still visible and is received as such. We certainly perceive it increasingly less explicitly and take it more for granted. Sean Cubitt describes this fact as follows:

*Applications like wireless networks [...] are effectively invisible, inaudible and cannot be felt. This poses a first problem in digital aesthetics: many aspects of digital media simply cannot be sensed. In fact, as we shall see, what you cannot see is often the most significant thing about digital aesthetics.*⁴³

But the term invisibility refers not only to actual, invisible components, such as radio transmissions: in addition, we no longer regard the end-user devices as an intrusion into the analogue world but as having become an integral part of it. When embedded in cars, kitchen machines and other everyday objects (see also “internet of things” and Chapter 2.3 for comparison), this phenomenon becomes particularly

41 Cramer, Florian: “What is ‘Post-digital’?”, in: *Postdigital Aesthetics. Art, Computation and Design*, David M. Berry and Michael Dieter, London: Palgrave Macmillan, 2015 (= Nr. 24), pp. 12–26.

42 Berry, David M.: ‘Thinking Postdigital Aesthetics: Art, Computation and Design’, in: *Postdigital Aesthetics. Art, Computation and Design*, David M. Berry and Michael Dieter, London: Palgrave Macmillan, 2015 (= Nr. 24), p. 3.

43 Cubitt, Sean: ‘Case Study: Digital Aesthetics’, in: *Digital Cultures - Understanding New Media*, Glen Greeber and Martin Royston, Maidenhead: Open University Press, 2009, pp. 23ff.

obvious. Sean Cubitt postulates that the basic properties of computational ability are hidden under user-friendly levels of the interfaces, thus partially eluding the gaze of the consumer.⁴⁴ There are two opposing trends of visual disappearance and visual imprinting which can be observed in parallel here. On the one hand, technical devices increasingly elude our (active) perception; on the other, these devices shape our human perception and our physical living space.

2.2.2 Digital Imprinting

The tangible negative consequences of digitalization – e.g. surveillance, loss of data protection, manipulation – are clearly identifiable, even if they partially overlap in positive contexts, such as freedom of expression and access to knowledge. The changed perception of the human being as a result of digitalization is a subtle and differentiated aspect. It can be assumed that our interactions and perceptions today are shaped by the use of digital media. Here, Katja Kwastek points out that it is important to look at the aesthetics and not at what is depicted, focussing at this point upon the form of representation and not the content.⁴⁵ In this context, we find the following interesting: how do we perceive it, how is it represented? Consequently, it is not only a matter of the digital becoming initially invisible but also of how our view is shaped by such interconnections. To what extent are our perception and interaction with the analogue – or the holistic, analogue-digital environment – shaped by digital media (and all its implications)? This is not one clearly identifiable element that can be isolated, but a whole range of different aspects.

The imprints caused by the use of digital interfaces and the altered role of screens (see Chapter 2.2.3) are evident, a probable conclusion being that we generally receive media and content increasingly through digital communication. These aspects extend to modes in which bodies are represented and have a decisive influence on interpersonal communication (see Chapter 6.2). Network-based, collaborative modes of communication and presentation, and those shaped by the internet, also have a lasting influence on how we operate in the analogue world (see Chapter 2.3).

The basis for these phenomena is the predictability/computability of all digital content, including all the aspects and consequences already described (in Chapter 2.1.2.). In the editing possibility, manipulability, analysability and recombination of digital contents – and consequently of the provided user interfaces – lies the altered basis of the postdigital view of our environment. David Berry describes the potency of calculation and digital transfusion as follows:

All of these proposed terms and concepts seize on a hybridized approach towards the digital and non-digital, finding characteristics of one within the other,

44 Mirocha, Lukasz: 'Communication Models, Aesthetics and Ontology of the Computational Age Revealed', in: *Postdigital Aesthetics. Art, Computation and Design*, David M. Berry and Michael Dieter, London: Palgrave Macmillan, 2015 (= Nr. 24), pp. 58-71.

45 Kwastek, Katja: 'How to be theorized', in: *Postdigital Aesthetics. Art, Computation and Design*, David M. Berry and Michael Dieter, London: Palgrave Macmillan, 2015 (= Nr. 24), pp. 72-85.

*deliberately mixing up processes of making things discrete, calculable, indexed and automated in unorthodox ways. In doing so, they form part of an epistemological asterism of practices, experiences and mediations that follows the primacy of the computal as normative. That is, the appearance of these terms can be interpreted collectively as endeavours to elucidate the trajectories of ubiquitous digitalization; they collectively form new patterns which can help us begin to map and historicize the varieties of computal societies.*⁴⁶

Here, under “computal societies”, Berry describes a digitally shaped society, whose practices, experiences and mediations are given by the paradigm of discretization and calculability. Conventions and aesthetics of the digital are rubbing off on the analogue world. This happens partly consciously, in the use of “modern” styles and tools. It also happens unconsciously, within ourselves. We see a book, a photo, a screen, a film, a telephone, a building, not detached from digital properties, functions and interactions. Furthermore, the digital logic of calculation also penetrates the analogue world in a concrete way – e.g. architecturally. Increasingly often, the analogue world is not only stylistically digital but is explicitly shaped by digital, algorithmic specifications. For example, sections of airports, warehouses or delivery services can simply be regarded as the physical representation of an algorithm (this permeation is sometimes reflected by the name “New Aesthetic”, and is discussed in more detail in Chapter 2.4). Our environment is thus digitally viewed and digitally shaped. It is accordingly both an aesthetic and a logical imprint, as David Berry notes:

*Rather, surfaces themselves become thin machinery, containing not just the possibility of a hermeneutic encounter but also an agency drawn from computation itself. These surfaces point towards and suggest the very veneer of computation networked across the terrain of everyday life, directed towards control and surveillance. The postdigital is, then, both an aesthetic and a logic that informs the re-representation of space and time within an epoch that is afterdigital, but which remains profoundly computational and organized through a constellation of techniques and technologies to order things to stand by.*⁴⁷

46 Berry, David M.: ‘Thinking Postdigital Aesthetics: Art, Computation and Design’, in: *Postdigital Aesthetics. Art, Computation and Design*, David M. Berry and Michael Dieter, London: Palgrave Macmillan, 2015 (= Nr. 24), pp. 1–11.

47 Berry, David M.: ‘The Postdigital Constellation’, in: *Postdigital Aesthetics. Art, Computation and Design*, David M. Berry and Michael Dieter, London: Palgrave Macmillan, 2015 (= Nr. 24), pp. 44–57.

The essential aspect here remains the ability to compute. This is reflected in the editing capacity and manipulability of contents. We experience in this an effect of digital “affordance”⁴⁸ – i.e. a digital, offer-orientated character. The perceptual psychological affordance concept describes the stimulative nature of an object, i.e. the actions and interactions that a user could and would perform with the object, based on the object's properties. This approach can be transferred to digital implications, as Justin Hodgson postulates:

[...] The changes to textuality via computability did not stop with typographical play or manipulation of format. Rather, the combination of increased affordances of manipulation (Marinetti in a machine) and new functions for engagement (the promises of hyperlinks and algorithmic augmentation) brought textuality alive in unprecedented ways – dramatically altering the range (and impact) of ekphrastic practices (whether put to rhetorical ends or not).⁴⁹

That we can interact with them and change them have become the overriding characteristics of digital media and content. So: they are no longer rigid objects and content: they are containers incorporating a range of manipulation and selection. It can now be argued that this invitation to interact is, increasingly, deeply rooted in our perception. In this way, the screen has taken on a new, formative role as an interaction tool.

2.2.3 Post-Screen

An essential component that has been shaped by digitalization is the handling of content through the presentation on a screen. Content has been displayed on screens for a long time now, and, with the advent of television, this display has also become a mass medium and a socially established mainstream.⁵⁰ However, advanced digitalization has changed how screens are used to present and represent in a more comprehensive, multi-layered form. These are no longer merely a playback device for produced, fixed content. Rather, the screen and the digital surface have become

48 “Affordances are an object’s properties that show the possible actions users can take with it, thereby suggesting how they may interact with that object. For instance, a button can look as if it needs to be turned or pushed. The characteristics of the button which make it look “turnable” or “pushable” together form its affordances. Psychologist James Gibson coined “affordance” in 1977, referring to all action possibilities depending on users’ physical capabilities. So, a chair not only “affords” being “sat on”, but also “thrown”, “stood on”, etc. However, in human-computer interaction (HCI) expert Don Norman [...] defined as perceivable action possibilities—i.e., only actions users consider possible. Thus, an object’s affordances depend on users’ physical capabilities and their goals and past experiences. A chair only affords “sitting”, because past experience supports that action. Don Norman’s definition of affordances as perceivable action possibilities soon became the predominant one in HCI and UX design.” What are Affordances?,

online: <https://www.interaction-design.org/literature/topics/affordances> (Retrieved: 4.4.2020).

49 Hodgson, Justin: Post-Digital Rhetoric and the New Aesthetic. Columbus: The Ohio State University Press, 2019, p. 6.

50 Also, using screens has a long tradition in art—for example, by Nam June Paik.

an interface for communication, processing and interaction.⁵¹ We no longer see a screen and the content displayed on it as content to be received, but rather as an (interaction) surface, with which we can design, retrieve, edit, share, retouch and communicate content ourselves. The integrity of the surface of content has given way to the interactivity of the user interface. The focus of the screen has become possible interaction.

Josephine Bosma concludes “post-digital” must be followed by “post-screen.”^{52 53} Two consequences are conceivable here, parallel to the considerations about post-digital: first, abandoning the screen or changing the way it is used. However, forms of presentation that manage without a screen can be explicitly influenced in their aesthetics by the contemporary use of a screen. This applies, for example, to the Brush Stroke works of the artist Elisa Giardina Papa, which transfer digital Photoshop tools into the analogue exhibition context. The non-use of a screen is consequently no anachronistic step backwards since it is done in the knowledge of the interface's potential. Second, the handling of a screen display can be regarded differently. If the surface displays of desktop programs are embedded, for example, in classic formats such as feature films, this reflects the fact that even a closed format such as a Hollywood film is viewed on the screen through the users' eyes. This is especially true for content that is received via streaming with a browser. Our passive view has given way to an active user role.⁵⁴

David Berry thematizes the focus on the interface in the postdigital turn, questioning the lasting role of the screen:

*The postdigital, as an aesthetic, gestures towards a relation produced by digital surfaces in a bewildering number of different places and contexts. This interface-centricity is not necessarily screenic, however, and represents the current emerging asterism that is formed around notions of art, computation and design. In this conception, the postdigital is not purely a digital formation or artefact – it can also be the concepts, networks and frameworks of digitality that are represented (e. g. voxels, glitch, off-internet media, neo-analogue, ‘non-digital’ media, post-internet art). Nonetheless, the interesting aspect is the implicit notion of surfaces as theatres of action and performance – such as through data visualization, interactivity or material design – above and beyond a depth model, which highlights the machinery of computation.*⁵⁵

51 Manovich, Lev: *The Language of New Media*, Cambridge, Massachusetts: MIT Press (Leonardo), 2002.

52 “What is not directly visible is also less likely to be seen. Additional issues for art in the context of digital media seem to be the visual impermeability or the spatial dispersion of specific works and practices. What I mean with visual impermeability is the presence of somehow ‘hidden’ structures, like network technologies, code and software processes, and even indirect influences of the Internet or of computer technology, in specific works of art.” Bosma, Josephine: ‘Post-Digital is Post-Screen: Arnheim’s Visual Thinking applied to Art in the Expanded Digital Media Field’, in: *A Peer-Reviewed Journal About Post-Digital Research* Vol 3 No 1 (2014). online: <https://apjra.net/article/view/116091> (Retrieved 20.7.2019).

53 Bosma, Josephine: ‘Post-Screen - Fehlerhafte Interpretationen des Digitalen in der Kunst’, in: *Kunstforum International* [‘Post-Screen– Erroneous Interpretation of the Digital in Art’, in: *Artforum International*] Nr 243 (2016), pp 56ff.

54 Manovich, Lev: *The Language of New Media*, Cambridge, Massachusetts: MIT Press (Leonardo), 2002, pp. 94ff.

55 Berry, David M.: ‘The Postdigital Constellation’, in: *Postdigital Aesthetics. Art, Computation and Design*, David M. Berry and Michael Dieter, London: Palgrave Macmillan, 2015 (= Nr. 24), p. 44.

Again, computability is cited as the starting point and relevance and focus on the interface emphasized. In this, Berry describes the relevance of the interface, also placing at disposal the extent to which this concept must still be tied to the screen. On the one hand, the perspective is already so imprinted that we can sense the affordance of an interface, even when there is no screen; on the other, the aesthetics and concepts of the interface and screen are actively transferred to media and formats that are not digital.

In conclusion, we can say: we see a screen with different eyes, and we see our world through the eyes of our programs and end-user devices.^{56 57}

2.2.4 Dis-Illusionment⁵⁸

This provocative statement from Nicholas Negroponte (already quoted above) is often used in the postdigital context:

*Like air and drinking water, being digital will be noticed only by its absence, not its presence. [...] Computers will be a sweeping yet invisible part of our everyday lives: We'll live in them, wear them, even eat them. A computer a day will keep the doctor away. [...] Terabit access, petahertz processors, planetary networks, and disk drives on the heads of pins will be ... they'll just be. Face it - the Digital Revolution is over.*⁵⁹

In saying this, Negroponte postulates an end to the digital boom, and to focussing on the digital – thus leading to disenchantment or disillusionment with aspects of digitalization.⁶⁰ The process of this disillusionment and disenchantment, both in terms of content and technology, is to play an essential role in this text, focusing on the extent to which digitality disappears from our field of vision: for example, because it becomes invisible, or because we no longer see it, it being omnipresent. However, this dissertation also concerns itself with enthusiasm for digitality: have the objects lost their initial enchantment? Or do we observe how, in recent years, techniques have increasingly been used for practices that must be critically assessed, such as repression, surveillance and marketing? Many original applications, networks, forums and techniques were initially conceived with a rather optimistic, utopian

56 For example in SELFIE CONCERT by Ivo Dimchev, Lauren McCarthy's Follower, Dries Depoorter's Tinder Me Cards, Memo Atkin's Learning to See or Pippin Bar's The Artist is Present.

57 Iconographic Photo of Hillary Clinton at the airport, showing the public turned with their backs towards her in order to make selfies.

Photo by Barbara Kinney, 2016, <https://time.com/4508252/hillary-clinton-epic-selfie/> (Retrieved 20.7.2019)

58 In the original German text, the word "Enttäuschung" is used to refer not only to disillusionment, but also to the removal of an illusion.

59 Negroponte, Nicholas: 'Beyond Digital', in: Wired 6/12, 1998.

online: <http://archive.wired.com/wired/archive/6.12/negroponte.html> (Retrieved: 04.04.2020)

60 Herwig, Jana: 'Postdigitaler Vordenker oder digitaler Antagonist? Zu Nicholas Negropontes Entwurf des Digitalen', [Post-Digital Forward-Thinker or digital Antragonist? On Nicholas Negroponte's Digital Draft]

In: Post-digital Culture, Daniel Kulle; Cornelia Lund; Oliver Schmidt and David Ziegenhagen, 1995.

online: <http://www.post-digital-culture.org/herwig> (Retrieved: 04.04.2020), p. 3.

intention; with the common good in mind. The complete capitalist and political exploitation of these methods, forms of communication and technologies naturally leads to a fundamentally more critical debate. In this sense, postdigital can also mean the disillusionment after the hype, the more clarified, disenchanting view after the digital boom. As with and similar to the dot-com bubble, the optimistic mood of new beginnings in the digital age changed and gave way to a more differentiated view, as Florian Cramer indeed records:

More pragmatically, the term 'postdigital' can be used to describe either a contemporary disenchantment with digital information systems and media gadgets, or a period in which our fascination with these systems and gadgets has become historical – just like the dot-com age ultimately became historical in the 2013 novels of Thomas Pynchon and Dave Eggers. After Edward Snowden's disclosures of the NSA's all-pervasive digital surveillance systems, this disenchantment has quickly grown from a niche 'hipster' phenomenon to a mainstream position – one which is likely to have a serious impact on all cultural and business practices based on networked electronic devices and Internet services.⁶¹

This aspect is a theme in itself. In the context of this work, two components may be of interest. On the one hand, the insights and ambiguities in dealing with digital techniques are the content-related motors for discussion and artistic reappraisal: the complexity and diversity of the digital factors' influence upon human beings are objects of artistic research and exploration. On the other hand, the concept of "disenchantment" is particularly exciting here, in its various connotations. If one accedes to the disillusionment or disappointment with the processes of the digital society outlined above, we recognize, with this term, the moral evaluation of a development, in which promising approaches have been misused. Disillusionment, in the direct sense of the word, also means the removal of a deception – i.e. the exposure of blindness or an illusion. In the context of the postdigital perspective, this process is not only to be understood in terms of social evaluation but also as a process of "rendering visible". If we are to understand the permeation and invisibility of digital content as a deception, the process of disillusionment can be seen as a tool that directs the gaze back to digital content in everyday analogue life. The different modes of visualizing digital components can be realized by various methods and can occur randomly through different processes. Here, a central motive is the occurrence of an error that reveals digital processes, representations or techniques. The original definition of the term "post-digitality" is directly linked to the occurrence of an error, and will therefore now be declared as a fundamental component. In addition to the technical component of the error, the aesthetic and content-related implications will be more intensively discussed in the course of this text.

61 Cramer, Florian: "What is 'Post-digital'?", in: *Postdigital Aesthetics. Art, Computation and Design*, David M. Berry and Michael Dieter, London: Palgrave Macmillan, 2015 (= Nr. 24), p. 13.

2.2.5 Errors and Glitches

With its various connotations and implications, the term “post-digital,” first used by Kim Cascone⁶² in 2000, has since been the subject of controversial discussion and is accompanied by various connotations and implications. In its original use by Cascone, the term is established within the framework of the glitch aesthetic to address genuine digital errors and artefacts. The original definition is thus contained in – but not bound to – a musical style description and should not be reduced to it or one genre.⁶³ Since the term's initial use, it has increasingly emancipated itself from the genre and now covers a broader spectrum.

In his text, Cascone describes the musical use of the error as a sonic, aesthetic tool. The spectrum illustrated encompasses several loosely related sub-genres, with the glitch aesthetic at their core. This stylistic works with digital errors, artefacts, coding errors, file errors and corrupt digital media. The works of Markus Popp (under the pseudonym “Oval”) in the 1990s are classic examples of this approach: CDs and other digital sound carriers were manipulated and destroyed, resulting in a dense, rhythmic texture field with hard artefacts, breaks and jumps. The album *Solo For Wounded* CD by Yasunao Tone is also a classic example of this working method. Cascone describes the artists' working method within this context as follows:

*The ‘postdigital’ aesthetic was developed in part as a result of the immersive experience of working in environments suffused with digital technology: computer fans whirring, laser printers churning out documents, the sonification of user-interfaces, and the muffled noise of hard drives. But more specifically, it is from the ‘failure’ of digital technology that this new work has emerged: glitches, bugs, application errors, system crashes, clipping, aliasing, distortion, quantization noise, and even the noise floor of computer sound cards are the raw materials composers seek to incorporate into their music.*⁶⁴

Obviously, such editing and manipulation of digital media make the nature of the media explicitly audible and perceptible. These are processes that could not have been achieved with analogue media. The error thus reveals the data structure and the nature of the digital medium. In the broader context of the glitch aesthetic, Cascone also cites other sub-genres such as “clicks'n'cuts” or “microwave”. In these forms, the brutality of the error, that is, the aggressively disruptive, is no longer quite so evident; the empty, virtual-digital sound worlds in the foreground. There is a reduction of a data format, to a sonically reduced, digital sound language. The sound of this language is quite different from the minimal or drone music of previous decades. Also, the genuinely digital processing remains audible in these

62 Cascone, Kim: ‘The Aesthetics of Failure: “Post-Digital” Tendencies in Contemporary Computer Music’, In *Computer Music Journal* 24/4, (2000), pp.12-18.

63 Ferguson, John R.: ‘Fostering a post-digital avant-garde: Research-led teaching of music technology’, In *Organized Sound* Volume 21/Special Issue 2 (2016), pp.127-137.

64 Cascone, Kim: ‘The Aesthetics of Failure: “Post-Digital” Tendencies in Contemporary Computer Music’, In: *Computer Music Journal* 24/4, 2000, pp.12f.

subgenres – if not so aggressive. The continuous use of clicks and compression artefacts explicitly demonstrates the sampling form. The way in which samples are cropped or looped is explicitly digital in these genres. It is a sonic image of a file. In this environment, the digital artefacts, which are normally masked, have become the decisive distinguishing feature. According to Cascone therefore, “post-digital” means the use of techniques and stylistic devices that almost exclusively use faulty artefacts found in digital techniques. Contrasting with music (and art in general) produced only by digital means, the digital tools used here do not disappear within a black box. Nor are they easy to hear, as is often the case with the introduction of new techniques, because of their (new) sound characteristics. Rather, it deals with the disclosure of the methods, storage formats and processes of digital sound processing. It is also a shift in perspective from the foreground of a work (motive, melody) to the background. Comparable to minimalism in the visual arts, a shift in perspective takes place on the material (files) or the tools (DSP processes) themselves. In this case, the fixation on the error created a new sound language, which was genuinely digital and also a tool that could provide information about the new digital media. The prominent musical use of the error can thus be seen as being a tool with which to provide information about the technology and medium used.⁶⁵ The abortion of (digital) functionality can be used to remove a veil of technology, to deal expressively with the inherent structures and processes.^{66 67}

In principle, Kim Cascone is describing the tip of an iceberg, which was not yet wholly apparent at the turn of the millennium. The glitch aesthetic of the 1990s was capable of deconstructing and reflecting a digital medium and developing a new digital-centric language from it. Referencing the development of the new media (as described in Chapter 2.1.2), this was a process carried out on a separately perceived storage medium. It was, therefore, initially the use of a self-contained medium, whose characteristics were being mapped out. The highlighting of the digital working tools, and the elevation of these processes to an aesthetic of their own, have, in turn, a generalizable validity. This focus of looking/hearing can certainly be read as directing the attention within a society to an activity taking place mostly in the background. The digital storage and processing that actually takes place in the background are thereby brought into focus and exhibited. These are not yet metaphorical processes, nor are they primarily critical positions. Although the fixation on the digital is already a step towards the recognition of the digital influence, this takes place in a rather abstract, minimalist context. Cascone

65 “Resonating with Martin Heidegger’s (1977) notion that the essence of technology is revealed in its breakdown, the glitch reveals aspects of the technology, it draws attention to its structure, its opaque quality, the fact that it is designed and has materiality.”

Cascone, Kim: ‘The Aesthetics of Failure: “Post-Digital” Tendencies in Contemporary Computer Music’,
in: *Computer Music Journal* 24/4, 2000, pp.12f.

66 “The post-digital seeks to lift the veil of the technical, to find ways of being expressive using inherent structures, processes and other affordances.”
ebd.

67 Jenkins, Henry: ‘Confronting the Challenges of Participatory Culture: Media education for the 21st century’,
in: Cambridge Massachusetts: MIT Press, 2009, pp.9ff.

himself says that no art can be freed from its relationship to its environment. This is certainly true, but the emphasis can still be stated.

Twenty years after the publication of Cascone's text, it seems reasonable to rethink the function, implication and connotation of the (digital) error and to examine it for new potentials in light of the changed conditions.

The malfunctioning of a system can open our eyes to the mechanisms behind technology or refine our view of its use in society. The following questions take centre stage:

1. *What impact/role can an error play in a digital society?*
2. *How can the fault be used to artistically depict and thematize changes in digitalization?*

Regarding point 1: errors are not only an artistic tool but occur naturally, especially in complex systems. Justin Hodgson uses the example of two computer system failures to describe how digital errors can lead us to rediscover otherwise invisible or unnoticed structures and reflect on their effects:

For example, on July 8, 2015, a technical glitch grounded, for the entire day, all United Airlines flights in the US. That same day, the New York Stock Exchange and the Wall Street Journal websites went down as well—also glitch-related. In addition to demonstrating how digital disasters have the potential to operate with the magnitude of a natural disaster, these events also revealed the scary reality that many major corporate glitches and computational mishaps are, as informatics scholar Zeynep Tufekci explained in “Why the Great Glitch of July 8th Should Scare You”.⁶⁸

These are two extreme examples, addressing the fragility of the digital system. A susceptibility to error goes hand-in-hand with the weaknesses of capitalist globalization. The small errors that we encounter in everyday life are, perhaps, even more exciting. Justin Hodgson uses a faulty ATM to describe how its defect lets us peek behind the seemingly perfect façade of a banking company:

Anyone who has seen a famous “Blue Screen of Death”—the iconic signal of a Microsoft Windows crash—on a public screen or terminal knows how errors can thrust the technical details of previously invisible systems into view. Nobody knows that their ATM runs Windows until the system crashes. Of course, the operating system chosen for a sign or bank machine has important implications for its users. Windows, or an alternative operating system, creates affordances and imposes limitations. Faced with a crashed ATM, a consumer might ask herself if, with its history of rampant viruses and security holes, she should really trust an ATM running Windows.⁶⁹

68 Hodgson, Justin: *Post-Digital Rhetoric and the New Aesthetic*. Columbus: The Ohio State University Press, 2019, p.6.

69 Hill, Benjamin Mako: 'Revealing Errors', in: *Error: Glitch, Noise, and Jam in New Media Cultures*, Mark Nunes, New York: Continuum, 2011, p.27.

An error can therefore make a closed system – at least partially – understandable. Through the termination, we learn something about the system behind it (in the example above, the operating system). A look behind the facade of a digital interface can tell us firstly, something about the medium itself, as described in Chapter 2.1.2, and secondly, something about its basic properties, such as the computational capability. At a more elevated level, it tells us something about fragility, narration, appearance and control. A closed system can claim something, represent something. It has a certain authority and power. These media/interfaces always function as a black box in the digital world. The link in the programming is not physically visible; it can be designed in any way and can, therefore, initially only be experienced by the user based on its graphic design (GUI). If a system is not visible, not understandable, not controllable, then it has a hierarchical component, which Benjamin Hill summarizes as follows:

As technologies become more complex, they often become more mysterious to their users. While not invisible, users know little about the way that complex technologies work both because they become accustomed to them and because the technological specifics are hidden inside companies, behind web interfaces, within compiled software, and in “black boxes”. Errors can help reveal these technologies and expose their nature and effects. As technology becomes complex, the purpose of technology is to hide this complexity. As a result, the explicit creation of black boxes becomes an important function of technological design processes and a source of power. Once again, errors that break open these boxes can reveal hidden technology and its power.⁷⁰

The manifestation of this digital control can have many facets. The malfunctioning of a digital system can reveal fragilities, power structures, manipulations, conventions, labels and forms of representation. It is the surface that can be broken. To recognize that this surface exists, and that (under certain circumstances) an unreflected trust is placed in it, is then the supporting achievement. A disappearing black box is made visible again and its structure is potentially recognizable.

As to point 2: in contrast to such randomly occurring mistakes, the mistake is used in the artistic context as a productive tool, to additionally generate an increased awareness. This is what constitutes the changed situation as compared to the original use of the term. The possibilities and necessities of making digital processes visible, experienceable and criticizable have increased since then. Digitalization has developed from a marginal phenomenon within society to the norm. Perhaps it is no longer necessary to explicitly focus on digital media; rather, it must be shown that we are already looking at it, that our view is imprinted by it and that it is hidden beneath the surface of everyday life. Further use of this style and this tool can be derived from this. Even if the tools and elements of aesthetics have remained the same, their function and use today is different.

70 Hill, Benjamin Mako: 'Revealing Errors', in: *Error: Glitch, Noise, and Jam in New Media Cultures*, Mark Nunes, New York: Continuum, 2011, p.36.

Historically, the term “digital error” is often associated with noise, or with the noise genre. Mark Nunes, for example, sees noise as the primary manifestation of an error:

*Error gives expression to the out of bounds of systematic control. When error communicates, it does so as noise: abject information and aberrant signal within an otherwise orderly system of communication.*⁷¹

Based on the concept of a “glitch” – i.e. a digital error – this observation seems initially plausible. The digital errors are in themselves naturally noisy and have a distorted sound. But noise⁷² also means randomness – although this only covers part of the potential of the digital error. Noise – or more clearly the sub-genre “digital harsh noise” – is characterized by a digital saturation of signals. This is where both the sonification of digital data and rebellion against a clinically clean digital system come together. This form of expression can be understood in an activist way: it bears both destructive traits against an intact digital world, and constructive traits, in which a sound language is found that can be perceived as beautiful. However, the reduction to noise, to the random and to that, which is designated as noise, does not do justice to the digital error's potential, specifically within the postdigital context: for it is not only destruction, deconstruction, rebellion against the digital and the loss of control that this brings about, but rather, it is mostly an effect that clearly points to a system. In this, not only the accidentally added value of an error can be seen, but also its potential as an artistic tool, as also described by Mark Nunes:

*Errors are underappreciated and underutilized in their ability to reveal technology around us. By painting a picture of how certain technologies facilitate certain mistakes, one can better show how technology mediates. By revealing errors, scholars and activists can reveal previously invisible technologies and their effects more generally. Errors can reveal technologies and their power and can do so in ways that users of technologies confront daily and understand intimately.*⁷³

2.2.6 Visualization

“Post-digitality” is to be understood as a shift, which is situated after digitalization. It encompasses numerous approaches and ways of thinking, all of which are based on an increasingly digitalized world. The social omnipresence of digitality provides the basis for several observations, all of which are linked to the visibility of digital media and technologies. Although some theories originate from the visual disciplines, and interface theory is also primarily anchored in the visual, it is nevertheless a comprehensive – not only visually tangible – phenomenon. Disclosure of digitality

71 Nunes, Mark: ‘Error, Noise, and Potential: The Outside of Purpose’, In: Error: Glitch, Noise, and Jam in New Media Cultures Mark Nunes, New York: Continuum, 2011, p.3.

72 In the original text, both “Rauschen”[noise] and “noise” are written, as both are in use in German language

73 Hill, Benjamin Mako: ‘Revealing Errors’, In: Error: Glitch, Noise, and Jam in New Media Cultures, Mark Nunes, New York: Continuum, 2011, p.28.

does not only mean that we can see it with our eyes, but rather that it is revealed: making it experienceable, perceptible and understandable.⁷⁴ The visibility and invisibility of the digital are the central elements in the postdigital world, regardless of whether the devices disappear behind facades or through miniaturization, GUI surfaces conceal or hide the content, a digital view is trained on the analogue, or the physical world increasingly obeys the logic of the algorithm. In a world permeated by digital content, the conscious perception of these elements is no longer a matter of course. Theoretical research or artistic practice on post-digitality attempts to take this fact into account by thematizing, revealing and making this interplay perceptible. A number of new artistic practices and aesthetic currents consequently emerge around the theme of the visibility of digitality and calculation.

The compositional possibilities resulting from this will be presented in Chapter 4. The so-called “new aesthetic” is an aesthetic emerging from post-digitality. It is based on the phenomena and observations described above and already forms a bridge to the aesthetic practice described in the following. This current is described in Chapter 2.4. Before this, the parallel spread of the internet and associated social influence will be discussed, described by the term “post-internet”.

2.3 Post Internet

Closely linked to the postdigital turn is the phenomenon of “post-internet”. Similar to the context of post-digitality, this perspective is based on the assumption that the internet, as a phenomenon, is not complete or no longer in existence, but rather, has spread and established itself so widely that a large part of cultural and social components are significantly and irreversibly shaped by it. Analogous to the term “postdigital”, this does not mean a perspective or aesthetics following the epoch of the internet: rather, it is intended to draw attention to the changes in the way we view and interact with it. For this reason, Guthrie Lonergan (for example) prefers the term “internet-aware”.^{75 76} “Internet-aware” accordingly describes the fact that today, perception and interaction take place in the awareness of the existence of the internet. This could be interpreted as meaning that today, in the Western world, internet knowledge and its cultural implications can be assumed as being standard. It is therefore no longer an optional way of thinking or a volitional tool: this way of thinking tends to assume that the internet's practices and forms of representation are so well established that they are already firmly rooted within us. Marisa Olson and Gene McHugh have called the influence or the changed perspective that this engenders “post-internet”.^{77 78}

74 In the German text, the phrase “sichtbar machen” [to make visible] is used.

75 Cornell, Lauren and Halter, Ed: *Hard Reboot: An Introduction To Mass Effect*, Cambridge Massachusetts: MIT Press, 2015, p.183.

76 Droitcour, Brian : *Why I Hate Post-Internet Art* (2014).
online: <https://culturetwo.wordpress.com/2014/03/31/why-i-hate-post-internet-art/> (Retrieved 1.12.2017)

77 Olson, Marisa: *POSTINTERNET: Art After the Internet.*,
online: https://www.academla.edu/26348232/POSTINTERNET_Art_After_the_Internet (Retrieved 20.7.2019).

78 McHugh, Gene: *Post-Internet*, Brescia: Link Editions, 2011, p.123.

As early as 1964, Marshall McLuhan predicted the “global village”^{79 80} and in so doing, was already predicting a process that became increasingly widespread at the beginning of the twenty-first century. Gene McHugh postulates that the internet is indivisibly linked to life – and is no longer a separate island.⁸¹ As described above, the distinction between online and offline today is basically historical. Using the internet, dialling in is no longer an active process – one is actually constantly online unless one chooses not to be. Not only has personal access become increasingly omnipresent, but embedding this in every kind of technical device, service and infrastructure is increasingly establishing itself as a normal state of affairs.

2.3.1 Implications

With the integration of the internet into almost all areas of human life, various parameters of cultural life have changed significantly. These effects are initially based on all the characteristics and implications of the digital. The phenomenon of “post-internet” is thus based on the characteristics of the digital and extends them by network-specific components. Other starting points here are factors such as calculability, rasterization, interface logic, black box components and screen focus. The consequences of the changed perspective, the transition into the invisible and the imprint of the interface are also present and relevant. But the internet has a whole range of other implications that go beyond pure digitalization. The network character is obviously at the centre. As a result, new forms of communication for data exchange will initially emerge in a very basic way. On the technical – but also the content – level, the internet offers a decentralized and, initially, autonomous infrastructure. Positive aspects here include the opportunity for knowledge exchange, the democratization⁸² of tools and information and low-threshold access to means of production and software solutions. The community idea and the joint solving of problems in forums and open-source contexts reflect the idealistic side of the internet. On the one hand, positive characteristics such as cooperation, communication, community and equal opportunities can be observed here. With the internet’s “coming of age” – likewise to be seen analogously to the development of the digital into the postdigital – various internet components have also changed from an often optimistic origin to a negative side. Capitalist and power-driven corporations and states have now transformed large parts of the net into a supervised system with a capitalist orientation, as Alexander Galloway, for example, describes:

79 McLuhan, Marshall: *Die Gutenberg-Galaxis [The Gutenberg Galaxy]*, Toronto: Toronto Press, 1962, pp.21,31ff.

80 “Today, after more than a century of electric technology, we have extended our central nervous system itself in a global embrace, abolishing both space and time as far as our planet is concerned.”

McLuhan, Marshall: *Understanding Media: The Extensions of Man*, Berkeley: Ginko Press, 1964 , p.100.

81 “What we mean when we say ‘Internet’ became not a thing in the world to escape into, but rather the world one sought escape from... sigh... It became the place where business was conducted, and bills were paid. It became the place where people tracked you down.”

McHugh, Gene: *Post-Internet*, Brescia: Link Editions, 2011, p.123.

82 Taylor, T. D.: *Strange Sounds: Music, Technology and Culture*, New York: Routledge, 2001, pp.3ff.

*[...] the mere existence of networks does not imply democracy or equality ... [we] suggest [that] rhizomatics and distribution signal a new management style ... as real as pyramidal hierarchy, corporate bureaucracy [...].*⁸³

On the other hand, clearly discernible as negative developments are a lack of data protection and an increasing tracking of user behaviour. Less obvious, but of increasing relevance, are aspects of narrative sovereignty, opinion manipulation, influence and authenticity. The tools of the internet belong to the toolbox of diverse activists, parties and social currents. The struggle for the sovereignty of interpretation, visibility and credibility is fiercely fought in the internet's forums, commentary columns and social media groups, in an embittered and increasingly professionalized manner. Stemming from the time of its foundation, the internet and its private participants are partly attributed with something "authentic," since they have not yet been instrumentalized. Within this multilateral communication platform is, therefore, a battle for credibility. Florian Cramer describes this development as follows:

*The 1990s / early 2000s assumption that 'old' mass media such as newspapers, movies, television and radio are corporate, while 'new media' such as websites are DIY, is no longer true now that user-generated content has been co-opted into corporate social media and mobile apps. The Internet as a self-run alternative space – central to many online activist and artist projects, from The Thing onwards – is no longer taken for granted by anyone born after 1990: for younger generations, the Internet is associated mainly with corporate, registration-only services.*⁸⁴

However, several genuinely new practices, aesthetics and media products can also be observed, existing exclusively on the internet, the only place where their creation was possible. The network character has contributed to the development of new forms of cooperation, artistic appropriation and remixing, both in the distribution of media and in the mode of distribution of media products. In this context, authorship and copyright, for example, face fundamental challenges. But new forms of expression were also found, such as memes, commentary videos, net.art collaborations and wiki websites. These cultural products are a direct result of the internet and are explicitly based on its core characteristics. Some of these forms of expression are explicitly art. Others of these mechanisms are indirect factors influencing the reception and production of art. "Post-internet art" can be seen as a segment within a post-internet society, which is genuinely shaped by it and can illustrate or make other aspects palpable.

83 Galloway, Alexander R. and Thacker, Eugene: *The exploit: A theory of networks*, Minneapolis, Minnesota, London: University of Minnesota Press, 2007, p.13 and 39.

84 Cramer, Florian: "What is 'Post-digital'?" in: *Postdigital Aesthetics. Art, Computation and Design*, David M. Berry and Michael Dieter, London: Palgrave Macmillan, 2015 (= Nr. 24), p.22.

2.3.2 Post-Internet Art

“Post-internet” as a phenomenon shows various parallels to post-digitality and/or is largely caused by it. Just as post-digitality breaks away as a shift from digitality, so also with art shaped by the internet, “post-internet art”, and “net.art”. The art genre “net.art” has its roots in the Web 1.0 era. In the emerging internet, these were works of art, mostly in the form of websites, which were static in nature: static in the sense that most of them did not originate from collaborative genesis, but were predetermined by artists as fixed works. That the means of the internet were explicitly used is the central point, these being HTML pages (later e.g. Flash, Shockwave), which are displayed in a browser. It is art on the internet – and often via the internet. The artist duo Jodi wrote about this in 1997:

When a viewer looks at our work, we are inside his computer. There is this hacker slogan: “We love your computer.” We also get inside people's computers. And we are honored to be in somebody's computer. You are very close to a person when you are on his desktop. I think the computer is a device to get into someone's mind. We replace this mythological notion of a virtual society on the net or whatever with our own work. We put our own personality there.⁸⁵

So, it takes place explicitly on the net, on the viewer's computer. In contrast, the movement of network art has placed an even stronger focus on telemetric content, while net.art explicitly focused on the language, aesthetics and presentation of websites.

Web 2.0, with its interactive pages, forums, social media and wiki pages, brought about clearly altered changes in user behaviour and the range of possibilities, as outlined above. From now on, every user could participate, change, comment, publish and research.

The shift to post-internet art took place parallel to the complete adoption of Web 2.0 and the internet's social permeation. In the broadest sense, post-internet art is an art which is created in the awareness of the internet's existence, but without necessarily using it as a means of realization. In fact, the difference to net.art is that post-internet art does not have to be a website, take place on the internet or be digital in any form: rather, it is a matter of transporting, illustrating, adapting or criticizing specific characteristics of the internet. This is possible if the characteristics of the internet are known and taken for granted by both the artists and the audience. Olia Lialina wrote accordingly:

For a long time it did not make sense to show net art in real space: museums or galleries. For good reasons you had to experience works of net artists on your own connected computer. Yesterday for me as an artist it made sense only to talk to people in front of their computers, today I can easily imagine to apply to visitors in the gallery because in their majority they will just have gotten up from their

⁸⁵ Baumgärtel, Tilman: 'Interview with Jodi,' in: Telepolis, 1997.

online: <https://www.heise.de/tp/features/Interview-with-Jodi-3446080.html> (Retrieved: 12.11.2019)

*computers. They have the necessary experience and understanding of the medium to get the ideas, jokes, enjoy the works and buy them.*⁸⁶

This immediately raises the question of why art shaped by the internet should be exhibited for example in a gallery. In fact, critics argue that the essential and positive qualities of internet art could disappear as a result. Even more critical is the view that, in this way, internet art would be adapted for the white cube – and would finally become sellable. This view can be reconciled with the commercialization of the internet itself and is certainly partly justified. This process can also be interpreted as a sell-out of subculture.

Despite justified criticism, however, the practices and perspectives carried under the label “post-internet art” can make a contribution of their own – independent of net.art. The internet has given rise to numerous practices, forms of representation and communication that can also be thought about, taken up and criticized outside the net. They can either be actively transferred, they can be disclosed analogously, or it can be shown that our interaction and viewpoint are already shaped by them anyway. Some examples of practices in the field of post-internet art would be:

- *implementation of analogue network structures*
- *transferring the curatorial and editing work from the internet*
- *adaptation of internet-specific art forms (memes, wiki, video clips ...)*
- *reflection of critical internet aspects (surveillance, data protection ...)*
- *utilization of archives/databases (visualization, big data ...)*
- *accessing private user material (artwork, based on user behaviour)*
- *real-time connection/evaluation of network data*
- *adapting self-portrayal modes*
- *adopting/presenting social media practices*
- *addressing the density and quantity of information (information overload)*
- *adapting media behaviour (non-linear, fragmented, interactive ...)*
- *hypertext analogy*
- *mapping Internet algorithms (search results, auto-complete, suggestions, cookies, advertising ...), using them as tools*
- *integrating of GPS and/or geodata*

Some cases refer simply to the transfer of an approach or an idea into the analogue space. However, there are also some basic characteristics of internet practices, the use of which has relevance outside the internet. Artie Vierkant, for example, sees post-internet art as a departure from new media and conceptualism.

Post-Internet also serves as an important semantic distinction from the two historical artistic modes with which it is most often associated: New Media Art and Conceptualism. New Media is here denounced as a mode too narrowly focused on the specific workings of novel technologies, rather than a sincere exploration of

86 Lialina, Olla: *Flat against the wall*, 2007.

online: http://art.teleportacia.org/observation/flat_against_the_wall/ (Retrieved: 12.11.2019)

*cultural shifts in which that technology plays only a small role. It can therefore be seen as relying too heavily on the specific materiality of its media. Conceptualism (in theory if not practice) presumes a lack of attention to the physical substrate in favor of the methods of disseminating the artwork as idea, image, context, or instruction. Post-Internet art instead exists somewhere between these two poles. Post-Internet objects and images are developed with concern to their particular materiality as well as their vast variety of methods of presentation and dissemination.*⁸⁷

Again, this is an analogy to the relationship between post-digitality and new media. Vierkant sees the detachment of the object from the internet presentation form as a positive process, in which not only the medium itself is reflected, as was, for example, also the case in net.art. In this sense, post-internet art can be seen as an artistic tool, adapting and reflecting concepts, approaches and forms of representation, without remaining within the exclusive examination of the medium itself. This would, therefore, be the opposite of any criticism claiming that this art form would be freed from the advantages of net-based art. Another fundamental point is the internet's handling of archives, data and information. Vierkant describes the artist's changed role within this context as follows:

*“Artists after the Internet thus take on a role more closely aligned to that of the interpreter, transcriber, narrator, curator, architect.”*⁸⁸

Here, the process of collecting, compiling, interpreting and curating is brought to the fore. In fact, this practice is becoming increasingly common: the arranging of existing content, the (unquestioned) use of internet search results, or commenting on and describing existing materials. Commentary videos, reaction videos and edited image replicas have become a common meta-language on the internet, which would be unthinkable in this form without network-based distribution.

The term “post-internet” was coined and has been significantly discussed in the art context. However, this description should not only designate an art practice but may also serve as a perspective for observing and describing general social and cultural phenomena. Thus, we can ask more fundamentally: to what extent are online concepts relevant, can be discussed and criticized, even in offline mode.

2.3.3 Post-Internet Perspective

The above-mentioned artistic practices already describe various aspects of an internet-influenced activity. These strategies also include a heightened perception of aspects of the internet, and, by detaching oneself from the medium itself, elements can be viewed quasi detached and more clearly. If we remove an object from its

⁸⁷ Vierkant, *Artie: The Image Object Post-Internet*, 2010.

online: http://jstchilln.org/artie/pdf/The_Image_Object_Post-Internet_us.pdf (Retrieved: 12.11.2019)

⁸⁸ Vierkant, *Artie: The Image Object Post-Internet*, 2010.

online: http://jstchilln.org/artie/pdf/The_Image_Object_Post-Internet_us.pdf (Retrieved: 12.11.2019), p.8.

usual context, we look at it more critically or analytically, because we perceive its setting and therefore its legitimation as less self-evident. At this point, it is worth considering which basic characteristics of the internet now allow changed perspectives and which options for courses of action result from this.

Florian Cramer describes, with the assertion of the internet, a change from the symbolic to the index, i.e. from printed text to hypertext and from text in general to context.⁸⁹ On the internet, virtually all elements are connected to each other by a few mouse clicks: one can get from a political video to a cake recipe by activating a few links. So here, on the one hand, various materials stand side by side and coexist in a web of connections. The users have the role of curators, deciding for themselves when and what next follows. Consequently, there is no longer a linear narrative that is fixed in time. This fundamentally changes the form of presentation and interaction/media use. But on the other hand, not only are different materials lying next to each other, but increasingly detailed representations and explanations are hidden behind every façade. It is an extensive archive through which users can navigate. This form of navigation and media content preparation is also increasingly found outside the internet, where the collective character and the research aspect increase.

A further aspect is the continuous change, modification and proliferation of content and objects on the internet. Artie Vierkant describes this trend as follows:

First, nothing is in a fixed state: i.e., everything is anything else, whether because any object is capable of becoming another type of object or because an object already exists in flux between multiple instantiations. The latter is a schema already intuitively arrived at by artists in recent history, prompting writers as diverse as Rosalind Krauss and Lev Manovich to proclaim a "Post-Medium Condition" and the rise of "Post-Media Aesthetics".⁹⁰

According to Vierkant, internet objects are even more subject to change and their content is even less fixed in this context than that of objects from the field of new media. Already, Manovich had postulated the changeable character of objects in the context of new media, a view that gains further weight through the post-media perspective; since, according to this approach, digital objects can be easily transferred from one media form to another. If this procedure takes place as data-moshing, then, here too, a bridge to the glitch approach of media reflection can be seen. In the internet context, aspects already highlighted by Manovich are fundamentally expanded. It is not only the nature of the digital medium but also its placement in the network context. Processes of versioning, development, commenting and editing are among the obvious practices of the online community. This has a significant impact on how we look at the content or an object. The request for the original, which has been repeatedly re-negotiated in terms of technical

89 Cramer, Florian: "What Is 'Post-digital'?", in: *Postdigital Aesthetics. Art, Computation and Design*, David M. Berry and Michael Dieter, London: Palgrave Macmillan, 2015 (= Nr. 24), pp.12–26.

90 Vierkant, Artie: *The Image Object Post-Internet*, 2010.
online: http://jstchillin.org/artie/pdf/The_Image_Object_Post-Internet_us.pdf (Retrieved: 12.11.2019).

reproducibility and digital storage, is, here too, confronted on a technical basis with a changed work mode and a differentiated form of authorship. Vierkant writes:

In the Post-Internet climate, it is assumed that the work of art lies equally in the version of the object one would encounter at a gallery or museum, the images and other representations disseminated through the Internet and print publications, bootleg images of the object or its representations, and variations on any of these as edited and recontextualized by any other author. The less developed stratagem for pointing to a lack of representational fixity is that of taking an object to be represented (to be more direct, presented) as another type of object entirely, without reference to the “original”. For objects after the Internet there can be no “original copy”.⁹¹

Parallel to the “dis-illusionment” process within the context of the post-digital (see Chapter 2.2.4), and the described implications of the internet (Chapter 2.3), the post-internet perspective can also be seen as a critical view. Following the euphoria surrounding the new medium, the new means, the hopes, the uncontrolled and free mechanisms of action, a perspective emerges which looks to a future, in which the internet has become established and developed. The gaze turns away from the medium itself, towards the mechanisms and implications. The use of the tools and formats of the net gains something critical and reflective. It is no longer primarily a matter of technical contextualization, but rather, of the economic and social parameters. This step back is made both in terms of content and as a step out of the net, into an analogous form of presentation. Post-internet art thus creates a certain distance to the object (be it through a critical perspective or through the actual distancing in the sense of an offline presentation of internet content). This is how Jennifer Chian describes this circumstance:

Unlike 1990s Net.art, Post-Internet practices often exploited the web’s decentralized, commercial properties to communicate with users and corporations. Many works were peer-responsive, profoundly cute and personal (for example, Parker Ito and Caitlin Denny’s curatorial project, JstChillin, Ryder Ripps’s dump.fm, Computers Club collective, and John Transue’s New Age Addiction.com online was the informality and adventure, and the pleasure young artists took in creating contexts where their work could exist away from galleries and museums, in a naively utopian manner. These optimistic tendencies concerning Net art were not unlike their 1990s precedents, but possessed little, if any, critical backbone in relation to the political implications of Pool—a platform for “expanding and improving the discourse between on each other”. This platform was short-lived, only updated intermittently, space for grad students, curators, emerging artists, and academic artists to promote writing about art and Internet culture after Web 2.0.⁹²

91 Vierkant, Artie: *The Image Object Post-Internet*, 2010.

online: http://jstchillin.org/artie/pdf/The_image_Object_Post-Internet_us.pdf (Retrieved: 12.11.2019).

92 Chan, Jennifer: ‘Notes on Post-Internet,’ in: #mm Net Art—Internet Art in the Virtual and Physical Space of Its Presentation, Marie Meixnerová, Brescia: PAF + Link Editions, 2019, p.132.

This perspective is directly consistent with the concept of post-digitality as previously described (Chapter 2.2). Just as postdigital practices do not have to use digital media, so can post-internet art do without the net or even technology in general, as Marisa Olson notes:

[...] exciting turn happening in new media, with respect to both the art world and the context of “traditional media”. [...] Things are more co-mingled now. [...] There doesn’t seem to be a need to distinguish, any more, whether technology was used in making the work—afterall, everything is a technology, and everyone uses technology to do everything. What is even more interesting is the way in which people are starting to make what I’ve called “Post-Internet” art in my own work (such as my Monitor Tracings), or what Guthrie Lonergan recently called “Internet Aware Art.” I think it’s important to address the impacts of the internet on culture at large, and this can be done well on networks but can and should also exist offline.⁹³

Thus, the use of the technical means is irrelevant for the time being. The consideration and presentation of the internet-specific methods and conditions are what is important. The focus is, therefore, moving away from the technical basics and rather pointing out modes of operation, forms of representation, processes and implications. This can be done in an offline version, but also in a context that explicitly uses the means of the internet (also in its critical aspects). It is central that the mechanisms are thematized. This step is possible, as soon as it goes beyond mere affirmation or technical use.

In summary, a change of perspective, a point of view or a focus on certain aspects is the essential point here as well. “Post-internet art” thus means a glance at the internet, with which its specifics are brought into focus in a critical or at least reflective way. This point of view also includes a general perception, taking place in the awareness of the existence of the internet. Modes of presentation and communication have changed fundamentally and are no longer used without reservation, but now addressed in a contemplative manner. The collective term “post-internet” includes a broader spectrum of changed or consciously taken perspectives enabled by the internet.

Doubtless, our everyday life is significantly influenced by internet use. Its permeation leaves traces in our perception, our cultural objects and the physical world. The visual imprint of our environment is reflected in the “new aesthetic” view, due equally to post-digitality. This perspective describes the manifestations in the cultural sphere of the Western world, occurring as a result of digitalization, virtualization and networking.

93 Debatty, Régine: Interview with Marisa Olson 2008, online: https://we-make-money-not-art.com/how_does_one_become_marisa/ (Retrieved:12.11.2019)

2.4 New Aesthetic

If one follows the development from the digital to the postdigital; and if one understands this tendency as a development of the visible, displaying and adaptation of the view of technology in the twenty-first century: then, this leads to a loose aesthetic construct called “new aesthetic”, denoting the increasing visibility of digitality and the internet in the analogue, physical world. It describes the shaping of the non-digital environment, through a visual language having its origins in digital and internet-specific media. Therefore, it describes a consequence of the digital and is characterized by the visual appearance of the virtual and algorithmic in the physical environment. Examples of this can be found in all fields, such as architecture, fashion, business processes or photography. It is a general phenomenon, initially describing visual aspects, but which can also be easily transferred to the auditory and all other areas. The appearance of this language and the sensitization to recognize it in everyday life developed partly parallel to the phenomena of post-digitality and post-internet and can also be seen as a consequence of them. These are not clearly separated areas, but rather focal points with larger intersections. While the postdigital focuses on the computational, and the postdigital is influenced by network characteristics, the focus of the new aesthetic prefers to lie on the virtual.

The term “new aesthetic” has never been explicitly defined, nor outlined in a manifesto; it is a conglomeration of considerations. Fittingly, the original foundation stone was a Tumblr blog by James Bridle. Bridle first used the term in 2011 at the SXSW1 conference and wrote about the topic in the first post on his blog:

For a while now, I've been collecting images and things that seem to approach a new aesthetic of the future, which sounds more portentous than I mean. What I mean is that we've got frustrated with the NASA extropianism space-future, the failure of jetpacks, and we need to see the technologies we actually have with a new wonder. Consider this a mood-board for unknown products.⁹⁴

His essential groundwork for the concept of the new aesthetic took place afterwards as a loose collection of pictures, videos and links on the blog [new-aesthetic.tumblr](https://new-aesthetic.tumblr.com/).⁹⁵ These examples have been continuously updated and expanded over the years. Consequently, there is no concrete theoretical concept here – this was subsequently tested by cultural studies scholars and gradually updated. Rather, Bridle creates a catalogue or documentation of computer/calculation-based patterns in everyday life. The permeation of the digitalization and virtualization of the visual language is to be illustrated in examples from the blog, in which one finds examples from the context of architecture, computer vision, artificial intelligence, lifestyle, virtual reality and much more. Curt Cloninger also writes that the new aesthetic does not have a uniform (visual) aesthetic:

⁹⁴ Bridle, James: *The New Aesthetic*, 2011.

online: <https://jamesbridle.com/works/the-new-aesthetic> (Retrieved: 12.11.2019)

⁹⁵ *The New Aesthetic*. online: <https://new-aesthetic.tumblr.com/> (Retrieved: 4.4.2020).

*'Drone technology produces its own visual aesthetics. Google Maps produces its own visual aesthetics. Generative Processing code produces its own visual aesthetics. Glitches across various media, compression algorithms, and hardware displays produce their own visual aesthetics.'*⁹⁶

The wide range of examples and visual languages makes a uniform definition difficult or even impossible; the range of characteristics so wide that it should preferably be understood as a rough generic term. Nevertheless, the sensitization to technical permeation and its half-visible, half-invisible manifestation in the physical world may be summarized and made tangible as one perspective, as David Berry also notes:

*The New Aesthetic, therefore, signals a kind of threshold or saturation point whereby the obscure ubiquity of digital, networked and mobile devices inspires a struggle to map, document and record; in other words, to make sensible and intelligible the seemingly opaque operations of digital infrastructure, even while invoking an ambiguous gesture of aesthetization using the Tumblr.com platform.*⁹⁷

So, it is not so much a uniform visual language or a closed aesthetic formalization, but rather a vaguely sketched criterion that can unfold its relevance in the relationship between technology and man, as also observed by Justin Hodgson:

*That significance [...] is a new kind of art practice and cultural critique—if not a twenty-first-century rhetorical orientation—calling attention to human relationships with technologies, human acts of mediation, the systems and protocols that produce particular computational representations, and the human viewpoints that frame those considerations.*⁹⁸

2.4.1 New Aesthetic and the Web x.0

As formerly described, the phenomenon “new aesthetic” can be regarded in the context or continuum of the development of the internet. Just as post-internet relates to Web 1.0 and net.art, the new aesthetic has a specific positioning to the changing web. While post-internet, beginning with Web 2.0, addressed net culture from a distanced perspective, the new aesthetic is perhaps primarily to be found in the consequences of Web 2.0 and in the transition to a successor, the (if anything) perspectively named Web 3.0. Justin Hodgson also writes that the digital's specific aesthetics and virtual permeation are still to be placed after Web 2.0 in terms of time:

96 Cloninger, Curt: Manifesto for a Theory of the 'New Aesthetic', 2012.

online: <https://www.metamute.org/editorial/articles/manifesto-theory-%E2%80%98new-aesthetic%E2%80%99>
(Retrieved: 12.11.2019)

97 Berry, David M.: 'Thinking Postdigital Aesthetics: Art, Computation and Design', in: Postdigital Aesthetics.

Art, Computation and Design, David M. Berry and Michael Dieter, London: Palgrave Macmillan, 2015 (= Nr. 24), p.5.

98 Hodgson, Justin: Post-Digital Rhetoric and the New Aesthetic.

Columbus: The Ohio State University Press, 2019, p.11

One such frame is the pseudo-continuum that exists from new media studies to postdigital aesthetics to the New Aesthetic. To better situate this tripartite, I offer the following parallel with Web 1.0, 2.0, and 3.0 considerations. The Web 1.0 was fairly static (primarily a client-based internet), while Web 2.0 moved the world toward a dynamic social web. Web 3.0 is yet something else, involving [...] at least three common approaches: a shift from indexical to semantic web, an attunement to an increasingly visually saturated culture [...], and an orientation toward ubiquitous computing and the ways in which it breaks down any digital/real distinction.⁹⁹

Here, the further development of Web 2.0 is to be understood as a process, through which the internet and its mechanisms manifest themselves in the offline world as well. Following internet interaction in Web 2.0, physical everyday life is now also increasingly being shaped by it. Examples (amongst many) are tracking systems, online map services, augmented reality applications, gig economy streaming or online audio recognition. These are more than merely interactive web services. At the same time, it is also about more than social interaction online and the feeding of content by the users. As a result of data mining, artificial intelligence, big data and the integration of technologies in a variety of devices, as well as high user numbers, the internet can virtually turn itself inside out: it is not a closed space that can only be reached with browsers and telephones, but increasingly penetrates the analogue world, as Justin Hodgson also notes:

... new media (and new media principles) took shape on the front edge of Web 1.0 technologies and solidified, more or less, in the Web 2.0 era; postdigital (and post digital aesthetics) took shape somewhere between the coming of Web 2.0 technologies and the Web 3.0 turn; and the New Aesthetic was of a different moment yet, taking shape in a culture operating in (if not beyond) the Web 3.0 mobile, techno- cultural scene.¹⁰⁰

The new aesthetic is definitely no phenomenon shaped solely by the internet; however, it is inevitably connected with it and the consequences of post-internet sensitization. The blurring of the line between digital and analogue is central, as is the blurring between online and offline. It is precisely the lack of separation that is a basis for this aesthetic. It is supported by the semantic web (like post-internet) and the predictability of digital content (like post-digitality). Nevertheless, not all post-internet practices and perspectives can automatically be assigned to the new aesthetic. There is a whole range of internet-specific styles, forms of co-operation and visual languages, which are more influenced by clip-making, editing and publishing methods. Humorous lo-fi video clips, GIFs, commentary sections, memes, image boards, ASMR, Let's Play videos and many more are examples of stylistic devices originating from the internet and also reflecting on the post-inter-

99 Hodgson, Justin: *Post-Digital Rhetoric and the New Aesthetic*. Columbus: The Ohio State University Press, 2019, p.5.

100 Hodgson, Justin: *Post-Digital Rhetoric and the New Aesthetic*. Columbus: The Ohio State University Press, 2019, p.5.

net, but nevertheless, do not necessarily run along the dividing line where the new aesthetic sees itself positioned. The focus here is more upon the virtual and its interface to the analogue world. This is partly emphasized technically or metaphorically by the protagonists of the movement.

2.4.2 Virtual Ghosts

An example James Bridle himself cites, as a core segment of his “new aesthetic” are the so-called “render ghosts”.¹⁰¹ He also deals with this phenomenon as an artist. For him, it stands exemplarily for virtual, physical content. Bridle uses the term “render ghosts” to describe photographed people, from stock footage archives, who are inserted into 3D renderings, simulations or photographs. The most common application is the simulation of architectural building projects, in which the render ghosts are intended to breathe life into the design. Bridle describes them as follows:

*The Render Ghosts are the people who live inside our imaginations, in the liminal space between the present and the future, the real and the virtual, the physical and the digital. A world of architecture, urbanism and the city before it is completed - which is also never. They inhabit a space which exists only in the virtual spaces of 3D computer rendering software, projected onto billboards, left to rot and torn down when the actual future arrives; never quite as glossy or as perfect as our renderings of it would like it to be, or have prepared us for.*¹⁰²

The observation of these figures within their virtual scenes, detached from time, shows a number of parallels to post-internet practices, in which artists place objects in the physical world, otherwise only found in the digital world (such as “pins” from Google Maps or the building blocks of a computer game). It also blurs the line between VR and computer game simulations, which also place people in artificial settings: only that here, the bridge to the real world is built. A parallel may also be found here in the increasing use of 3D-scanned people-called 3D-People-for similar commercial purposes.

Antonio Palacios places the phenomenon “new aesthetic” and the “render ghosts” within the context of simulation in the sense of Jean Baudrillard. In his text “An Ontology of Render Ghosts”¹⁰³, he uses this phenomenon to address limits of representation and simulation. Baudrillard himself quotes the short story “Del Rigor en la Ciencia” by Jorge Luis Borges in his text “Simulacra et Simulation”¹⁰⁴, which describes a world overlaid with a map. This map moves away from being a representation and becomes more and more a simulation. Palacios argues – in the spirit of Baudrillard – that a hyperreal space is created; a space having no concrete

101 Bridle, James: The Render Ghosts. online: <https://www.readingdesign.org/render-ghosts> (Retrieved:04.04.2020)

102 Bridle, James: The Render Ghosts. online: <https://www.readingdesign.org/render-ghosts> (Retrieved: 20.1.2020)

103 Palacios, Antonio: An Ontology of Render Ghosts, 2014.

online: <http://www.padjournal.net/ontology-render-ghosts/> (Retrieved: 20.1.2020)

104 Baudrillard, Jean: Simulacra and simulation, Ann Arbor, MI: University of Michigan Press, 2017.

reference to the original but simulating an abstract space upon it. If, for example, we look at the organization of warehouses in online department stores, we observe that the articles' storage no longer follows any humanly comprehensible logic. The goods are distributed without any comprehensible order: stochastically, according to human standards. This location can only be used via the digital interface. For humans, the place is initially useless and disordered in its pure physicality. It is arguably the new aesthetic's appeal that it addresses precisely this aspect: to what extent does the digital represent the analogue world, and to what extent does it superimpose a simulation upon it? The "render ghosts" are therefore primarily a handy example for a deeper-lying phenomenon, as Justin Hodgson points out also:

... like screen glitches, down-sampled satellite imagery, and the blurry squared edges of render ghosts. But for Bridle [...] the pixelated imagery was and is merely a kind of visual short-hand – serving as a relay toward larger concerns: like the blurring boundaries between the digital and the real, and the underlying systems that (a) produce those boundaries and (b) produce culture-specific understandings of such. Or, said another way: while the New Aesthetic is attentive to the very media in which pixelated and glitched representations are being undertaken (and of which they are reflective), it is just as concerned with the human-technology assemblages that allow critics and working creatives alike to make sense of those attunements on multiple levels and scales.¹⁰⁵

The virtuality of the new aesthetic is a much deeper one: in deep permeation also lies its power. Nevertheless, it is worthwhile to reflect also upon the associative space of the render ghosts. This secondary strand allows a sensitization for aspects of the virtual that go beyond the technical. A place of longing, a projection surface, i.e. a fictional place is created here, in analogy to concepts of hauntology^{106 107} and vaporwave. It is a space freed of content, which is ostensibly superimposed on real space, thereby able to serve as a projection surface. Here, technology and physical representation are charged with associations in a digital clinical setting; perhaps making something tangible, palpable and visible, something that otherwise virtually disappears in the invisible digitalization of our world.

2.4.3 Surfaces

Is the new aesthetic hype, a buzzword or a superficial conceptual figure? This can certainly not be completely denied in every case. But nevertheless, this hodgepodge of perspectives, trends and manifestations seems to hit a nerve, one suggesting that it nonetheless touches a relevant point. Bruce Sterling finds that this aesthetic viewpoint unquestionably exists and that the technical present looks at us directly through these objects:

¹⁰⁵ Hodgson, Justin: *Post-Digital Rhetoric and the New Aesthetic*.

Columbus: The Ohio State University Press, 2019, p.5.

¹⁰⁶ Fisher, Mark: *Ghosts of my life: Writings on Depression, Hauntology and Lost Futures*,

Winchester, U.K: Zero Books, 2014.

¹⁰⁷ Shaw, Katy: *Hauntology*, Berlin: Springer, 2018.

Above all, the New Aesthetic is telling the truth. There truly are many forms of imagery nowadays that are modern, and unique to this period. We're surrounded by systems, devices and machineries generating heaps of raw graphic novelty. We built them, we programmed them, we set them loose for a variety of motives, but they do some unexpected and provocative things. [...] [M]odern reality is on display there. What we think about that, or do about that, is another matter. That it exists is not in question.¹⁰⁸

The notion that modern reality manifests itself in this aesthetic on top of the physical world's surface has a poetic beauty and technical clarity. Bruce Sterling complains that this surface or form of representation – or the discourse about it – can be partly naive:

The "New Aesthetic" is a native product of modern network culture. [...] it was born digital, on the Internet. [...] It's open-sourced, and triumph-of-amateurs. It's like its logo, a bright cluster of balloons tied to some huge, dark and lethal weight.¹⁰⁹

Just as the maturing of internet art to a postdigital perspective led to a more serious and critical perspective, so can the sometimes naive or backwards-looking visual language of the new aesthetic also be constructively critical. The affirmative use of representation codes does not mean that the result is likewise affirmative. Under its usage, negative connotations of technical reality can remain present, in a certain way. Christiane Paul and Malcom Levy, therefore, write additionally that the new aesthetic is an apolitical surface, which can, however, in the best-case scenario, provoke political reflection:

As a series of artefacts of the heterogeneous network, the diffuse, crowdsourcely and rhizomatic New Aesthetic per se is not socio-political or concerned with identity politics; it is a surface infused by anything ranging from technological gadgets and software to design, marketing and more. It is, as Bridle himself puts it, an echo. At the same time, this surface and the poor image reflect a spectrum of highly political issues, ranging from the invasive nature of technologies of vision to the understanding of the subject and its boundaries in an age of decentralized control mechanisms. The New Aesthetic is apolitical, while the discourse it generates is politicized.¹¹⁰

Indicative of this fact is perhaps the mixing of so many different languages on the internet, where humorous, trivial and political content is juxtaposed. Using internet services can serve as a democratic or manipulative tool; platforms can be both deeply capitalist and tools for autonomous communication, possibly making it

108 Sterling, Bruce: 'An Essay on the New Aesthetic', 2012.

online: <https://www.wired.com/2012/04/an-essay-on-the-new-aesthetic/> (Retrieved: 20.1.2020)

109 Sterling, Bruce: 'An Essay on the New Aesthetic', 2012.

online: <https://www.wired.com/2012/04/an-essay-on-the-new-aesthetic/> (Retrieved: 20.1.2020)

110 Paul, Christiane and Levy, Malcolm: 'Genealogies of the New Aesthetic' in: Postdigital Aesthetics. Art,

Computation and Design, David M. Berry and Michael Dieter, London: Palgrave Macmillan, 2015 (= Nr. 24), p.30

more difficult to form a comprehensive theory about this phenomenon. But this subject's time-related urgency evokes at least a clear need for action and research. It is necessary to face up to this challenge. Bruce Sterling also demands this:

*That's the big problem, as I see it: the New Aesthetic is trying to hack a modern aesthetic, instead of thinking hard enough and working hard enough to build one. That's the case so far, anyhow. No reason that the New Aesthetic has to stop where it stands at this moment, after such a promising start. I rather imagine it's bound to do otherwise. Somebody somewhere will, anyhow. That is my thesis; that's why I think this matters. [I had] the conviction that something profound had been touched. Touched, although not yet grasped. I'd suggest getting right after it.*¹¹¹

2.5 Summary and Outlook

In this chapter, I summarized the influences, imprints and aesthetics, manifesting themselves after the establishment of the new media and the implementation of digitality in the twenty-first century. The perspectives “postdigital” and “post-internet” were presented, based on the concrete characteristics of the digital and the new media, addressing and reflecting on the resulting consequences. Finally, the young current “new aesthetic” was presented: this has some similarities with post-digital and post-internet, but extends them by aspects of virtuality. In this section, I would like to close the chapter with a summary of the essential aspects, to conclude with considerations concerning the possibilities for action in art or other critical-activist disciplines.

Screening, quantification, sampling and discretization have now been established as the basic characteristics of the digital. Representation in the digital had a primary series of implications, of which the calculability of digital objects must be mentioned first; in other words, the fact that digital objects may be items resulting from the most diverse processes of analysis, conversion and transformation. This leads to the removal of the boundaries between different types of media (“post-media condition”).^{112 113 114} Above all, however, media objects after digitalization are to be processed and not just to be received. These characteristics lead to a change in media use and also have a lasting influence on the way non-digital media are used or perceived. In this early phase, attributed to the era of new media and the transition from Web 1.0 to Web 2.0, digital content and new media are still perceived disruptively – i.e. as a disparate element – in an otherwise analogue, non-digital

111 Sterling, Bruce: 'An Essay on the New Aesthetic', 2012.

online: <https://www.wired.com/2012/04/an-essay-on-the-new-aesthetic/> (Retrieved: 20.1.2020)

112 Kittler, Friedrich: *Grammophon, Film, Typewriter*, Berlin: Brinkmann & Bose, 1986, pp.1-2.

113 Weibel, Peter : 'The Post-Media Condition', in: *Metamute* (2006).

online: <http://www.metamute.org/editorial/lab/post-media-condition> (Retrieved 20.7.2019)

114 Manovich, Lev: 'Post-Media Aesthetics', in: <http://manovich.net/> (2001),

online: <https://pdfs.semanticscholar.org/a753/4122ecb3fefdb775dfea546cf1f331419f50.pdf> (Retrieved 20.5.2019)

world. Although the influence of this content began to be reflected in the non-digital world, the separation of these two worlds remained intact for the time being.

Post-digitality now positions itself at the point to which digitalization has progressed: to such an extent, that it is now firmly integrated into everyday cultural life, permeating the entire society. This is accompanied by the observation that, on the one hand, digital content is becoming increasingly invisible or hidden, and that, on the other, our perception of the entire non-digital world is increasingly shaped by the reception of digital objects: explicitly a phenomenon that has to do with visibility and viewing habits, or general modes of perception. Such imprinting is essentially based on the way screens and interfaces are handled and on their changing roles and influences. Following screen fixation and software interface analyses, the postdigital perspective now assumes that, even without an interface and without a screen, these modes of perception come into play, making the analogue world appear through this framing. The media error has been presented as a basic postdigital concept: thus, the first step from a digital medium's use to its reflection could be made. An error can be understood here as a tool to reveal the digital medium's quintessence and thereby to advance quasi towards the object's characteristics. It is also a process that directs the focus from the surface to the inside of the medium and, as such, a process of changing perspective. The post-digital turn is therefore not only a change of perspective in perception-based media reception but also a reorientation of content. Post-digitality is also understood as a phase in which a critical rethink took place, following the widespread establishment of digital media. After digital technologies were increasingly used for negatively charged practices (surveillance, tracking, Castilian data mining, etc.), the original optimism of digitality is now followed by a differentiated opinion. In summary, this process can be understood as an eye being refocussed, from the digital surface onto the medium and practices behind it.

In parallel, the internet's permeation of society and the resulting impact can be observed under the catchphrase "post-internet." This perspective describes a view, interaction and art form, taking place in the constant knowledge of the existence of the internet. The theory is that certain practices and objects only take place in a particular form because the internet exists. These processes can be concretely or only indirectly shaped by the internet, and are explicitly not necessarily linked to technical realization. If they are, however, localized within the internet, they use the tools reflectively. Here too, a more critical view of the implications of the internet can be observed. In addition to the internet's most obviously used platforms, visual languages and codes, the underlying structures of networking, the semantic web, media use and presentation formats are also formative. The aim here is to link the analogue and digital worlds and to sensitize the eye to this connecting point.

The strands of post-digitality and post-internet are partially grouped under the term "new aesthetic". Within this perspective, the focus is specifically on the visual impact of digital and internet-based technologies. While the aspect of visual imprinting was a sub-area in the above-mentioned concepts, the presence of virtually imprinted elements in the physical world is the central point in the new aesthetic. The new aesthetic deals with everything invisible, but integrally

contained in the essence and reception of these elements, as James Bridle puts it:

*New Aesthetic is concerned with everything that is not visible in these images and quotes, but that is inseparable from them, and without which they would not exist.*¹¹⁵

The central issue is, therefore, the visibility and invisibility of the digital, a matter of sensitizing the gaze, to recognize how we look at the analogue through a digital-influenced perspective, and how we already experience our analogue world as being shaped by digital influences. Christiane Paul and Malcolm Levy describe this interplay, the two sides of which are mutually dependent, as follows:

*The New Aesthetic seems to be a twofold operation: first, the confluence and convergence of digital technologies in various materialities; and second, the ways in which this merger has changed our relationship with these materialities and our representation as subjects. The New Aesthetic captures the embeddedness of the digital in the objects, images and structures we encounter on a daily basis and the way we understand ourselves in relation to them. It captures the process of seeing like, and being seen through, digital devices.*¹¹⁶

These aspects of the merging and blending of the virtual and the physical and also of the digital with analogue can be extended here to all the observations portrayed and should be understood as a quintessence of these statements. This concentration on the process of perception in the digital context is, for one thing, an observational process, but it is also, as is sometimes implied, an active procedure and the conscious assumption of critical observation. At this point, there is a possible range of ways as to how these insights and works can be actively used. This can happen in various contexts – and one of them is art.

From Chapter 4 onwards, I will relate the currents, perspectives and insights presented here to my own creative activity. These ideas represent a larger framework and leitmotif, upon which my work has been very concretely oriented in the past ten years and, indirectly, earlier. I understand my compositional work as a tool with which to describe and explore the dividing line between the analogue and digital worlds. My pieces deal with this altered viewpoint, or rather, a guided redirection of the eye. As previously described, the perceptual change of perspective is to be actively brought about or revealed by creative resources. To draw attention to this circumstance, or to make the invisible of the digital visible, are the objectives of my works.

Before this, in the following chapter, I will review my basic working methods in the context of artistic research. I see my compositional approach as an explorative tool

115 Bridle, James: 'The New Aesthetic and its Politics', 2013.

online: <https://booktwo.org/notebook/new-aesthetic-politics/> (Retrieved: 20.1.2020)

116 Paul, Christiane and Levy, Malcolm: 'Genealogies of the New Aesthetic',

in: *Postdigital Aesthetics. Art, Computation and Design*, David M. Berry and Michael Dieter, London: Palgrave Macmillan, 2015 (= Nr. 24), p.27.

with which to make post-digital aspects perceptible and palpable. Since I design techniques, tools and experimental settings for this purpose, it is appropriate to place my work into the discourse of artistic research. In the attempt not only to illustrate the postdigital but to make it perceptible, I design settings that allow an open outcome or an open interpretation, motivated by an explorative character, with the aim of making digitality and its consequences tangible, criticizable and sensually experienceable. Through these research approaches, it is hoped to achieve an insight that can complement theoretical considerations. In these compositions, I also try to learn something: about myself, technology and human interaction, the next step being to give the same opportunity to the audience. Therefore, I understand a composition as a framework: a staked-out, defined setting: a chance to learn, within these set parameters. This research is my driving force behind creating an individual setting for each piece anew: focusing upon an area of which I myself have only a premonition of how it will precisely behave.

3. METHODS OF ARTISTIC RESEARCH

The definition of objectives and the creation process of most of my work is based on the design of a setting, experiment or trial. In many cases, I begin a piece by formulating a scenario within which I want to investigate, observe or provoke certain events and interactions. Alternatively, my pieces begin with a hypothesis or statement that I want to test or illustrate through the work, or to enable it as an experience. Intuition and subjectivity still play an equally important role in the working process, but this takes place within the fixed framework of a setting, often reminiscent of experimental set-ups. These settings frequently contain technical (digital) tools. It is then a goal to either fathom the effects, mechanisms and implications of these technical tools or, based on a hypothesis, to illustrate or make them palpable. Even if the approaches are not strict experimental setups such as in a physical experiment, the selection of the setting, and thus the content to be reflected upon, plays an essential role in the conception, execution, variation and evaluation of the pieces. Consequently, two very different methods (of intuition and formalization) meet here, and I try to structure them in the compositional process. Accordingly, the interplay of selected technical features on the one hand and intuitive aspects on the other can be found in these pieces both in the content and in the process of creation.

Thus, the form of my artistic practice also touches significantly on the question of in which way, with which methodology and with which defined objectives composition can generate knowledge and insight or to make impacts and factors of the (technical) world experienceable. I would therefore like to look at my artistic practice and the approaches used from the perspective of artistic research, thereby attempting to classify the procedure and define the desired objectives as a search for (sensual) insight. Accordingly, I will next present basic characteristics of artistic research (Chapter 3.1), followed by a description (Chapter 3.2) of how I approached the development of the pieces and how this methodology can be reconciled with core ideas of artistic research. This is therefore the methodological basis for implementing the described contents from Chapter 4 onwards. Here I will focus on the concrete realizations – the finished compositions, their classification and the context in which they were created.

3.1 Artistic Research

The concept of "artistic research" has become a lively and controversial topic of discussion in recent years. The structure of this work cannot reflect the whole debate in its entirety. In the following, however, the basic outlines and most important basic questions will be briefly presented (for a detailed overview see ¹¹⁷ ¹¹⁸). The categorization of artistic research, which is currently under development,

¹¹⁷ Mersch, Dieter and Ott, Michaela (Hg.): *Kunst und Wissenschaft [Art and Science]*, Munich: Wilhelm Fink Verlag, 2007.

¹¹⁸ Bippus, Elke (Pub.): *Kunst des Forschens: Praxis eines ästhetischen Denkens [The Art of Research: The Practice of Aesthetic Thinking]*, Zürich: Diaphanes, 2012 (= Nr. 4).

can help classify artistic practice and name elementary characteristics, despite the ongoing discourse and identification process.

“Artistic research” is understood to be a contemporary scientific theory that comprehends artistic practices and products as researching, discursive processes. Representatives of this approach see this process as a method which can generate knowledge, comparable to the established sciences. This perspective is partly contrary to existing definitions of science, requiring contemplation on the concept of research and an (also retrospective) analysis of artistic practices. It expressly contradicts the conviction that art and science should be seen as opposites, whilst considering both the rational aspects of creating art and the less explicitly rational aspects of conventional research methods. The fundamental parallels and similarities are the acquisition of insight and increase of knowledge.

The first question that arises is whether the phenomenon of research in art exists – and if so, how it relates to traditional science, at its core, asking whether the process of creating art or the resulting product can be research. In this text, I proceed from this assumption, even though the indicated form of science is still young and certainly incomplete^{119 120}. As a consequence, as per Henk Borgdorff,¹²¹ several sub-questions or subsequent questions can be derived:

1. *What is research or its goal in general? And how does artistic research concerning the object of investigation relate to traditional research? (ontology)*
2. *What form does produced knowledge or mediated knowledge take? (epistemology)*
3. *In what way can artistic research be practised? (methodology)*
4. *Is the focus to be found in process-oriented or work-based aspects of artistic creation?*
5. *What are the consequences of the distance/lack of distance between subject and object?*

I would like to examine these points in the following sections in sequence. In Chapter 3.2, I will connect this categorization with my work.

3.1.1 What is (Artistic)Research?

In the debate surrounding what artistic research can be and accomplish, it is firstly considered in comparison and contrast to traditional scientific research, which in turn raises the question of what scientific research actually constitutes.

119 comparison: Borgdorff, Henk: ‘The Production of Knowledge in Artistic Research’, in *The Routledge Companion to Research in the Arts*, Michael Biggs and Henrik Karlsson, London: Routledge, 2011, p.44.

120 Baecker, Dirk: ‘Kunstformate (Kulturrecherche)’, In: *Künstlerische Forschung, [‘Art Formats (Cultural Research)’ In: Artistic Research]* Anton Rey and Stefan Schöbi, Zürich: Ipf, 2009, pp.79–97.

121 Borgdorff, Henk: ‘The Debate on Research in the Arts’, 2006.

online: https://konst.gu.se/digitalAssets/1322/1322713_the_debate_on_research_in_the_arts.pdf.

(Retrieved: 12.11.2019)

According to the UNESCO definition, research is ‘any creative systematic activity undertaken to advance knowledge, including knowledge of mankind, culture and society, and the use of this knowledge to develop new applications’ (OECD Glossary of Statistical Terms 2008).¹²² Research, therefore, means not-knowing; better: it is not yet knowing and wanting to know.^{123 124} Moreover, research does not seem to be a unique selling point of scientists but also includes many activities undertaken by artists. It is undisputed that most of them have been creative and a number of them prefer a systematic approach.

Jens Badura describes research as an explorative practice, aiming to create new insight. This view first of all underlines the parallels between the two fields of research, even when they are not congruent:

*Imagination, intuition and creativity are as much at work in the sciences as research, analysis and experiment in the arts.*¹²⁵

Jens Badura further describes that scientific and artistic research pursue the same goal—the production of original insight – but use a different concept of insight:

*However, here the concept of insight is diversified: It is not merely taken for granted that research only produces insight in the sense of scientifically determined, rationally comprehensible findings, but that there can also be other, aesthetically sensual insights, requiring other research practices and forms of articulating research results.*¹²⁶

Paul Feyerabend has already established that science is also characterized by “implicit knowledge”¹²⁷, and Mc Allister states that scientific research is very diverse in its objects, methods and products.¹²⁸ Here, too, there may be insights which are not explicitly presented and formulated, but which may nevertheless be relevant. A tendency may therefore be observed, whereby scientific methods are also opened up to less rigid facts, and a change in artistic practice may redirect one’s eye to a conceptual, analytical approach and a work reassessment.

122 Stern, Roger & Dale, Ian and Leidl, Sandro: OECD glossary of statistical terms, Paris: OECD Publishing, 2001.

123 Rheinberger, Hans-Jörg: Experiment – Differenz – Schrift: Zur Geschichte epistemischer Dinge [Experiment–Difference–Writing: On the History of Epistemic Things], Marburg: Basilliken-Press, 1992.

124 Dombols, Florian: ‘Kunst als Forschung. Ein Versuch, sich selbst eine Anleitung zu entwerfen’, in: Hochschule der Künste Bern [‘Art as Research. An Attempt, to draft Instructions for Oneself’, in: Bern: Higher School of the Arts], (Pub.) Bern: Hochschule der Künste, 2006, pp.21-29.

125 Badura, Jens: ‘Forschen mit Kunst’, in: Dramaturgie. Zeitschrift der dramaturgischen Gesellschaft [‘Researching with Art’, in: Dramaturgy. Magazine of the Dramaturgical Society]02 (2012), p. 14.

126 “Nur wird hier der Erkenntnisbegriff diversifiziert: Es gilt eben nicht als selbstverständlich, dass Forschung nur Erkenntnisgewinnung im Sinne wissenschaftlich ermittelter, rational fassbarer Erkenntnisse betreibt, sondern dass es auch andere, ästhetisch sinnliche Erkenntnisse geben kann, die anderer Forschungspraktiken und Formen der Artikulation von Forschungsergebnissen bedürfen.” Badura, Jens and Hedinger, Johannes: ‘Sinn und Sinnlichkeit’, [Sense and Sensibility] in: Schweizer Monat [Swiss Month] 1001 (2012), p.68.

127 Polanyi, Michael and Sen, Amartya: The tacit dimension, Chicago, Illinois: University of Chicago Press, 2010.

128 McAllister, J.: ‘Seven Claims’, in: Lier en Boog, A. W. Balkema and H. Slager, Amsterdam: Rodopi, 2004, p.18–22.

It can be established that, in a certain way, art has always sought insight. However, artistic research does not refer to this fundamental quality, but rather to the fact that art can be exploratory and produce original knowledge. Thus, not every form of artistic practice is automatically artistic research. But it can be, and it can be comparable to scientific research in its generation of knowledge. Paul Feyerabend argues the theory here that a categorical difference between the research fields cannot be claimed.¹²⁹ Henk Borgdorff describes artistic research in the following words:

Art practice qualifies as research if its purpose is to expand our knowledge and understanding by conducting an original investigation in and through art objects and creative processes. Art research begins by addressing questions that are pertinent in the research context and in the art world. Researchers employ experimental and hermeneutic methods that reveal and articulate the tacit knowledge that is situated and embodied in specific artworks and artistic processes. Research processes and outcomes are documented and disseminated in an appropriate manner to the research community and the wider public.¹³⁰

It is important at this point to emphasize the endeavour of artistic research to obtain original insight with the help of experimental and hermeneutic methods. Equally important characteristics are the documentation and dissemination of the results within the relevant community. These points can be easily reconciled with scientific research. It should perhaps be noted, however, that the use of methods and practices in artistic research can and may be subject to freer use, as, for example, Carmen Mörsch describes.¹³¹ The Manifesto of The Hamburg School of Artistic Research in Music and Theatre makes a postulation in this respect:

[Artistic Research] can be operated using methodologies, concepts and principles of these, even if it does not follow them comprehensively and/or exclusively. We see this as mutually beneficial, where innovations can flow freely between established and emerging forms of research.¹³²

The common ground of artistic and scientific research towards the original gain in insight is of central importance. The methods and approaches on the path to this goal are in part (as described in the following section) comparable or even clearly different. Despite a different approach, however, a common goal of knowledge

129 Feyerabend, Paul: *Wissenschaft als Kunst, [Research as Art]* Frankfurt am Main: Suhrkamp, 2003.

130 Borgdorff, Henk: 'The Debate on Research in the Arts' 2006.

online: https://konst.gu.se/digitalAssets/1322/1322713_the_debate_on_research_in_the_arts.pdf
(Retrieved: 12.11.2019)

131 Mörsch, Carmen: 'Undisziplinierte Forschung' In: *Künstlerische Forschung. Ein Handbuch*

['Undisciplined Research', in: *Artistic Research.A Manual*], Jens Badura; Selma Dubach; Anke Haarmann;

Dieter Mersch; Anton Rey; Christoph Schenker and Germán Toro Pérez, Zürich, Berlin: Diaphanes, 2015, pp.77–80.

132 'Manifesto of The Hamburg School of Artistic Research in Music and Theatre' 7.4.2020.

online: <https://artsearch.hfmt-hamburg.de/index.php/manifesto/> (Retrieved 7.4.2020).

generation can be pursued. The form of this knowledge can (in art) be very diverse in nature and form: in the following, we shall consider, among other things, what nature this knowledge can be. In art, how subjective, implicit or process-inherent can, may or should a research result be?

3.1.2 The Concept of Knowledge and (Sensual) Insight ¹³³

The type of knowledge produced, or rather, the resulting insights can be an essential distinguishing feature of artistic research. According to the perspective in which artistic research does not exactly replicate and reproduce the methods and results of traditional science, not only do the process/production of results in the two research disciplines differ but also the results achieved – i.e. the form, representation and communication of knowledge. As already described, the results in the research disciplines do not necessarily have to be categorically different, but knowledge in artistic research can and is allowed to be different.^{134 135 136} This means especially the acceptance of not strictly rational and explicit findings. The theory here is that resulting insights can also be implicit and immanent – i.e. it does not have to be defined as a theorem, and in some cases, it cannot be grasped exclusively by scientific measurement and description processes. In other words, a multi-layered and more comprehensive concept of insight is accepted as a research result than is the case in scientific research. Jens Badura describes this circumstance as follows:

*[Here] the concept of insight is diversified: It is not simply taken for granted that research only produces insight in the sense of scientifically determined, rationally comprehensible findings, but that there can also be other, aesthetically sensory insights requiring other research practices and forms to articulate research results.*¹³⁷

It should be emphasized that this sensual aesthetic is not a weakened or not yet conclusively differentiated formulation of knowledge, but that it can stand on its own and can also contribute to understanding. Alexander G. Baumgarten formulates this fact as follows:

133 The German philosophical term *Sinnlicher Erkenntnis* has here and elsewhere been translated as “sensual insight/cognition.”

134 Mersch, Dieter: ‘Kunst als epistemische Praxis’ in: *Kunst des Forschens [‘Art as Epistemic Practice’, in: The Art of Research]*, Elke Bippus, Zürich: Diaphanes, 2012, pp.27–47.

135 Heintel, Peter; Rheinberger, Hans-Jörg and Tretter, Felix; Zingg, Wolfgang (Ed.): *Wissenschaft: Kunst: Sind Künstler Forscher und Forscher Künstler? [Science: Art: Are Artists Researchers and Researchers Artists?]*, Klagenfurt/Celovec: Wieser Verlag, 2017.

136 Kirschner, Roman: ‘Materialwissen’, in: *Künstlerische Forschung. Ein Handbuch [‘Material Knowledge’, in: Artistic Research. A Manual]*, Jens Badura; Selma Dubach; Anke Haarmann; Dieter Mersch; Anton Rey; Christoph Schenker and Germán Toro Pérez, Zürich, Berlin: Diaphanes, 2015, pp.89–93.

137 “[Hier wird] der Erkenntnisbegriff diversifiziert: Es gilt eben nicht als selbstverständlich, dass Forschung nur Erkenntnisgewinnung im Sinne wissenschaftlich ermittelter, rational fassbarer Erkenntnisse betreibt, sondern dass es auch andere, ästhetisch sinnliche Erkenntnisse geben kann, die anderer Forschungspraktiken und Formen der Artikulation von Forschungsergebnissen bedürfen”, Badura, Jens and Hedinger, Johannes: ‘Sinn und Sinnlichkeit’ [Sense and Sensibility], in *Schweizer Monat [Swiss Month]* 1001 (2012), p.68.

Hence, sensual insight is 'not a preliminary stage to the clarity' of the ideas of logical cognition, but its "aim" is precisely reversed: whereas clear cognition – abstracting and analysing – concentrates 'on the identical features accruing to several objects', 'to form the species from the set of equals', sensual insight – concretising and synthesising – pays attention 'to the richest possible set of features that constitute the peculiar and non-comparable' of the object.¹³⁸

One can understand this shift to a changed or expanded spectrum of insight as a sensitization: a task of exclusively rational explicit knowledge; the innate theory being that such a process can provide additional insights in present world disclosure:

A sensitisation through awareness of current times and of perceptual (or world-generating) infrastructures, whose efficacy remains unnoticed in the pathways of normality. In other words, an attentiveness that fosters our competence in dealing critically and creatively with that contingency that shapes modern relationships with the world.¹³⁹

Hans-Jörg Rheinberger describes the search for insight fundamentally as explorative handling of materials to gain insight and, in the artistic context, explicitly as a form of handling materials with an aesthetic-epistemic intention appropriate to the arts.¹⁴⁰ Christoph Schenker notes, however, that the insight gained – in the artistic context – does not have to be congruent with knowledge. It can also be a matter of competencies.

These competences mean thinking, doing and acting not only according to the criterion of truth but also according to the criteria of justice and happiness, correctness (beauty, interest) and efficiency.¹⁴¹

Jean-Francois Lyotard describes this knowledge as “dense knowledge” or “narrative knowledge”¹⁴². Dieter Mersch calls such knowledge “tacit knowledge”,

138 Baumgarten, Alexander G.: *Ästhetik [Aesthetics]*, Hamburg: Meiner, 2007, p. XLII.

139 “Einer Sensibilisierung mittels Aufmerksamkeit gegenüber der Gegenwart und den wahrnehmungsleitenden (bzw. weiterzeugenden) Infrastrukturen nämlich, deren Wirkungskräfte in den Bahnungen der Normalität unbeachtet bleiben. Eine Aufmerksamkeit also, die unsere Kompetenz im kritischen wie schöpferischen Umgang mit jener Kontingenz befördert, die das moderne Weltverhältnis prägt.”

Badura, Jens: ‘Forschen mit Kunst’, [Research with Art] in *Dramaturgie. Zeitschrift der dramaturgischen Gesellschaft [Dramaturgy. Magazine of the Dramaturgical Society]* 02 (2012), p.17.

140 Heintel, Peter; Rheinberger, Hans-Jörg and Tretter, Felix; Zingg, Wolfgang (Hg.): *Wissenschaft:Kunst: Sind Künstler Forscher und Forscher Künstler? [Science: Art: Are Artists Researchers and Researchers Artists?]*, Klagenfurt/Celovec: Wieser Verlag, 2017. p.124

141 Heintel, Peter; Rheinberger, Hans-Jörg und Tretter, Felix; Zingg, Wolfgang (Hg.): *Wissenschaft:Kunst: Sind Künstler Forscher und Forscher Künstler?*, Klagenfurt/Celovec: Wieser Verlag, 2017. S. 124.

142 Heintel, Peter; Rheinberger, Hans-Jörg und Tretter, Felix; Zingg, Wolfgang (Hg.): *Wissenschaft:Kunst: Sind Künstler Forscher und Forscher Künstler?*, Klagenfurt/Celovec: Wieser Verlag, 2017. S. 124.

silent and originating from practical insight – i.e. it is not necessarily or exclusively discursive.¹⁴³

The derivation of attentiveness to mechanisms and structures is definitely one of art's opportunities: it can show us mechanisms and social implications and make them perceptible. In this way we can, for example, make the consequences of the digital turn (but of course many other topics as well) sensually palpable: the theory would be that this form of competence and knowledge gain need not be inferior to a discursive, factual treatment of the issues.

Even if one allows and values these forms of knowledge and insight as scientific results, this does not mean, of course, that this definition in the artistic context is exclusive. On the contrary, art should also be able to make use of conventional scientific methods – but not be limited to them. Last but not least, the interplay of “hard” and “soft” methods and facts can result in added value – and, as I am convinced, perhaps specifically at the dividing line between technical (digital) tools and emotional implications.

3.1.3 Forms of Artistic Research

In describing artistic research, I would like to orientate myself specifically according to the classification by Christopher Frayling¹⁴⁴ and the continuation of his categorization by Henk Borgdorff¹⁴⁵. In his essay "Research in Art and Design"¹⁴⁶, Christopher Frayling formulates three distinctions of art-related research: “research into art”, “research for art” and “research through art”.

“Research into art” describes the classical disciplines in which art is analysed theoretically and scientifically. The fields of music theory and musicology reflect this branch in the context of music. Here, for example, historical classification, aesthetic and perceptual research are as much a part of the core inventory as theoretical, sociological, technical, political contextualization, classification and analysis.

However, “research through art”, according to Frayling, refers to the branch in which research is the means to an end, to achieve an artistic result. Consequently, it is the development of technical, intellectual tools and materials which serve to produce an original work of art. On the one hand, this can be material research: the production of materials, hybrids, liquids or colours; on the other, the development or modification of a technical device that allows a manufacturing or modification process not previously possible. As per Frayling, this context can conceivably include activity-based research: the documentation and manual-like description of actions and activities. However, the main addition in the field of multimedia composition is

143 Mersch, Dieter: 'Kunst als epistemische Praxis', in: *Kunst des Forschens ['Art as Epistemic Practice', in: The Art of Research]*, Elke Bippus, Zürich: Diaphanes, 2012, p.37.

144 Frayling, Christopher: 'Research in Art and Design', in: *Royal College of Art Research Papers 1.1. (1993)*, pp.1-5.

145 Borgdorff, Henk: 'The debate on research in the arts', in: *Künstlerische Forschung – Positionen und Perspektiven [Artistic Research–Positions and Perspectives]*, A. Rey and St. Schöbl, Zürich: Museum für Gestaltung [Museum for Design], 2009, pp. 23-51.

146 Frayling, Christopher: 'Research in Art and Design', in: *Royal College of Art Research Papers 1 / 4 (1993)*, p.5.

the development of software implementations. Application-specific algorithms and computer programs, developed for an innovative result, represent a significant tool for the implementation and development of new content. The spectrum begins with programs for editing, manipulation and content transformation (audio, video...). This can mean pure sonic/visual manipulation, but also the complete reinterpretation and rearrangement of data under data science. Extraction of features, creation of VR interactions or production of artificial intelligence are just a few examples among many. At this point, it should be stressed that it is precisely here that the dissemination, recycling and transfer of research results is a very obvious parallel to classical scientific research.

The third category, “research for art”, is, however, less obvious and is therefore particularly controversial. Frayling attempts to outline it as follows:

*Research where the end product is an artifact - where the thinking is, so to speak, embodied in the artifact, where the goal is not primarily communicable knowledge in the sense of verbal communication, but in the sense of visual or iconic or imagistic communication.*¹⁴⁷

This category is the most difficult to grasp – but also a genuine opportunity to gain knowledge through art. In this category, knowledge can be conveyed which is less clearly verbalizable or materially definable. This form of research is closely linked to the question of the knowledge to be generated or the knowledge type (as described in Chapter 3.1.2).

Before attempting to compare this categorization with my own artistic practice, I would like to discuss the continuation of this division by Henk Borgdorff. In his essay *The Debate on "Research in the Arts"*¹⁴⁸, Borgdorff continues Frayling's thoughts and clarifies them further.

Borgdorff's definition of “research in the arts” is virtually congruent with Frayling's definition of “research into art”, describing analogously the process of theoretically analysing an artistic practice from a distance, to draw robust conclusions. In this case, there is an explicit distance between the object to be investigated and the subject under investigation. This approach can be found, for example, in the disciplines of musicology, literary and theatre studies.

“Research for the arts” follows Frayling's term “research through art” in his classification, although Borgdorff's formulation seems more intuitive to me. In addition to the above examples, Borgdorff cites for example the development of extended techniques for an electronically modified cello. This category, which he also calls “instrumental perspective”, thus describes a variant of research that generates tools and knowledge necessary in the creative process or the resulting product.

147 Frayling, Christopher: 'Research in Art and Design',
In: Royal College of Art Research Papers 1 / 4 (1993), p.5.

148 Borgdorff, Henk: 'The Debate on Research in the Arts', 2006.
online: https://konst.gu.se/digitalAssets/1322/1322713_the_debate_on_research_in_the_arts.pdf
(Retrieved: 20.1.2020)

With “research in the arts”, Borgdorff continues the category “research for art”, choosing a more intuitively fitting term here as well. Donald Schön speaks of “reflection in action”¹⁴⁹ in this context, and Borgdorff continues the concept as “immanent” and as a “performative perspective”. Still significant is the lack of separation between object and subject – and thus the lack of distance between the researcher and the observed object. According to Frayling, there is no fundamental distinction here between theory and practice in art. Borgdorff summarizes this pursuit in the context of research in the arts as follows:

*Research in the arts hence seeks to articulate some of this embodied knowledge throughout the creative process and in the art object.*¹⁵⁰

3.1.4 Production Aesthetics

In the artistic research context, not only is the form of the knowledge produced sometimes defined differently to the traditional notion of science but the object of observation also varies to some extent: not only the completed work of art but also the path leading to it, with its various facets and implications, can be regarded as an essential component and not just as an accessory or aid. In a particularly exploratory, experimental and intuitive approach, the process can be a relevant form of expression and a carrier of knowledge.

The work is at the centre of artistic production in classical aesthetic discourse. This is the actual result, the actual object of the creative process. Although the working process may involve a research process, or research may be carried out on the work afterwards, in this traditional view, the focus is primarily on the created work. Dieter Mersch presents the work aesthetic as follows:

*So it also won't be possible to “find out” or show something through a work, but instead, to make a statement or show something that is self-contained and can stand for itself.*¹⁵¹

In the course of the twentieth century, the pure work aesthetic has been increasingly questioned or successively expanded. Dieter Mersch describes the change from a work aesthetic via an aesthetic of reception to production

149 Schön, Donald: *The Reflective Practitioner: How Professionals Think in Action*. New York: Basic Books, 1982, pp.49ff.

150 Borgdorff, Henk: ‘The Debate on Research in the Arts’, 2006.
online: https://konst.gu.se/digitalAssets/1322/1322713_the_debate_on_research_in_the_arts.pdf.
(Retrieved: 20.1.2020), p.7.

151 “Es geht also auch nicht, durch ein Werk etwas „herauszufinden“ oder vorzuführen, sondern eine Aussage zu machen oder etwas zu zeigen, das in sich abgeschlossen ist und für sich selbst stehen kann.”
Mersch, Dieter: ‘Rezeptionsästhetik/Produktionsästhetik/Ereignisästhetik’, in: *Künstlerische Forschung. Ein Handbuch*, [‘Aesthetics of Reception/Production Aesthetics/Event Aesthetics’, in: *Artistic Research. A Manual*], Jens Badura; Selma Dubach; Anke Haarmann; Dieter Mersch; Anton Rey; Christoph Schenker and Germán Toro Pérez, Zürich, Berlin: Diaphanes, 2015, p.49.

aesthetic (and event aesthetics).¹⁵² In reception aesthetics, the viewer's perception and relationship to the work of art are now incorporated into theoretical reflection, becoming an essential component of artistic creation. Production aesthetics goes one step further, including the production process of an artwork as an essential (exploratory) component:

*Production aesthetics describes and reflects ... the causes, rules and functions of human production, within a field of reference that may encompass the art product ..., its (pluri)media forms of representation and the elimination of boundaries ... in the fields of technology, crafts and services. Since antiquity, successful production has resulted as a complex process, out of the interaction between the factors of knowledge and craftsmanship, each of which has to be determined, as well as their communicative initiation of action under the auspices of an active, author-emphasised effect.*¹⁵³

This involves not only the purely technical part of the creation process but in fact a very multilayered and more complex, searching activity; meaning, above all, that also the process is planned and considered as a tool and expression form, not merely as a tool to be used on the pathway to the end result.

This conversion is to be found within the context of a change in practice in the humanities and social sciences, in which, according to Henk Borgdorff, comparable developments can be observed:

*Occasionally it even represents a shift from text-centred to performance-centred research, whereby the practices and products themselves become material: symbolic forms of expression, as opposed to the numerical and verbal forms used by quantitative and qualitative research. Artistic research fits into this frame of reference too, since artistic practices form the core of research in a methodological sense and are also part of the material result of research.*¹⁵⁴

152 Mersch, Dieter: 'Rezeptionsästhetik/Produktionsästhetik/Ereignisästhetik', in: *Künstlerische Forschung. Ein Handbuch* ['Aesthetics of Reception/Production Aesthetics/Event Aesthetics', in: *Artistic Research. A Manual*], Jens Badura; Selma Dubach; Anke Haarmann; Dieter Mersch; Anton Rey; Christoph Schenker and Germán Toro Pérez, Zürich, Berlin: Diaphanes, 2015, pp.49-57.

153 "Produktionsästhetik beschreibt und reflektiert [...] die Ursachen, Regeln und Funktionen menschlicher Herstellungen in einem Bezugsfeld, das das Kunstprodukt [...], seine (pluri)medialen Darstellungsformen und Entgrenzungen [...] in den Bereichen von Technik, Handwerk und Dienstleistung umfassen kann. Die gelungene Produktion resultiert dabei seit der Antike als ein komplexer Prozess aus dem Zusammenwirken der jeweils zu bestimmenden Faktoren von Wissen und Kunstfertigkeit sowie deren kommunikativer Handlungseinlassung im Zeichen eines aktiven, autorbetonten Wirkens."

Semsch, Klaus: 'Produktionsästhetik', in: *Historisches Wörterbuch der Rhetorik*, ['Aesthetics of Production', in: *Historical Dictionary of Rhetoric*], Gert Ueding, Nr. 7, Tübingen: de Gruyter Mouton, 2007, pp.140-154.

154 "Mitunter repräsentiert sie sogar einen Wechsel von text- zu Performanz-zentrierter Forschung, wodurch die Praktiken und Produkte selbst die materiellen-symbolischen Ausdrucksformen werden, im Gegensatz zu den von der quantitativen und qualitativen Forschung benutzten numerischen und verbalen Formen. Auch künstlerische Forschung passt in dieses Bezugssystem, da künstlerische Praktiken den Kern der Forschung im methodologischen Sinne bilden und außerdem Teil des materiellen Ergebnisses der Forschung sind."

Borgdorff, Henk: 'Forschungstypen im Vergleich', in: *Künstlerische Forschung. Ein Handbuch* ['Types of research in comparison', in: *Artistic research. A Manual*], Jens Badura; Selma Dubach; Anke Haarmann; Dieter Mersch; Anton Rey; Christoph Schenker and Germán Toro Pérez, Zürich, Berlin: Diaphanes, 2015, p.72

Consequently, a shift in focus onto the work process may be observed in certain areas. As such, the process of origin is of increasing relevance and can indeed be seen as the actual content of a work, as Anke Haarmann describes:

*...a shift in emphasis in the concept from the work as a finished product to the process as the work.*¹⁵⁵

Of course, the resulting work does not have to become meaningless; rather, a connection and equality are conceivable, as Julie Harboe also postulates:

*The work and the process are to be thought of as one.*¹⁵⁶

Anke Haarmann sees the shift towards a process-oriented approach as a core characteristic of artistic research:

*The term "artistic research" refers to a general tendency in contemporary art: artistic practice is not only understood in terms of the completed work – i.e.its work aesthetics – but also in terms of the practices and strategies of artistic production – i.e.production aesthetics. The process of a work's creation shifts into the centre of attention. Artists perceive this process as a phase of the work's exploration or development.*¹⁵⁷

In fact, it can be said that the exploratory and experimental character claimed by artistic research for itself can be found very easily in its process. The emphasis on searching, on finding out – as opposed to merely making a statement – is evident. In the same way, as described in the previous chapter, the form of knowledge transfer and cognitive education does not necessarily have to be bound to textual and strictly scientific result forms, but can also manifest itself in other ways. It seems to make sense that, within this experimental idea, the production and (more generally speaking) the process stand in the foreground and are appropriate mediums.

155 "[...] eine Schwerpunktverschiebung im Konzept vom Werk als abgeschlossenes Produkt hin zum Prozess als Werk leisten." Harboe, Julie: 'Werk und Prozess', in: Künstlerische Forschung. Ein Handbuch ['Work and Process', in: Artistic Research.A Manuel] ,Jens Badura; Selma Dubach; Anke Haarmann; Dieter Mersch; Anton Rey; Christoph Schenker and Germán Toro Pérez, Zürich, Berlin: Diaphanes, 2015, p.243.

156 "Werk und Prozess sind als Einheit zu denken." Harboe, Julie: 'Werk und Prozess', in: Künstlerische Forschung. Ein Handbuch ['Work and Process', in:Artistic Research. A Manuel], Jens Badura; Selma Dubach; Anke Haarmann; Dieter Mersch; Anton Rey; Christoph Schenker and Germán Toro Pérez, Zürich, Berlin: Diaphanes, 2015, p.243.

157 "Der Begriff der Künstlerischen Forschung – artistic research – verweist auf eine generelle Tendenz in der zeitgenössischen Kunst: Künstlerische Praxis wird nicht nur vom abgeschlossenen Werk her begriffen – also werkästhetisch, sondern von den Praktiken und Strategien der künstlerischen Produktion her – also produktionsästhetisch. Der Prozess der Entstehung einer Arbeit rückt in das Zentrum der Aufmerksamkeit. Künstlerinnen und Künstler nehmen diesen Prozess als Phase der Untersuchung oder Entwicklung einer Arbeit wahr." Haarmann, Anke: Artistic Research – Künstlerische Forschung. online: <http://www.aha-projekte.de/HaarmannArtisticResearch.pdf>. (Retrieved: 20.1.2020)

Last but not least, this approach also includes the “author-emphasized action”¹⁵⁸ described by Semsch – and this already indicates the synthesis of the subject and the object under investigation.

3.1.5 Subject and Objectivity

While classical scientific research strives for the greatest possible separation between the object to be studied and the observing subject, this can certainly be different in artistic research. The form of research can – not least because of the process-like form described above – involve the researching artists, and indeed make them the object of investigation themselves. Henk Borgdorff presents this circumstance parallel to other research disciplines – for example, in ethnography:

*Particularly in ethnographic and action research, strategies have been developed that can be useful for artists in their practice-based research; these include participatory observation, performative ethnography, autobiographical narrative, dense description, reflection-in-action and cooperative investigation. The often critical and engaged ethnographic research strategy recognises the interweaving of the fieldwork's subjects and objects. Given that the artist's own artistic practice is the “field” of investigation, it could serve as a model for several kinds of research in the arts.*¹⁵⁹

It is therefore conceivable that the involvement of the artist does not lead to a falsification of the object to be researched, but is an effective means of researching and revealing certain processes and facts in the first place. Scenarios are conceivable in which the person conducting the research must go into a situation, a context, a communication, a technical setting, to make effects and implications perceptible, experienceable: and then in the next step, make them describable and communicable. Accordingly, artistic research can mean that a setting is created or visited in the course of artistic work, which then allows for aesthetically communicable insights on levels of perception, interaction or realization. The role of artistic experience is postulated by Julian Klein as a relevant step before intersubjective communication:

158 Semsch, Klaus: 'Produktionsästhetik', in: Historisches Wörterbuch der Rhetorik ['Aesthetics of Production' in: Historical Dictionary of Rhetoric], Gert Ueding, Nr. 7, Tübingen: de Gruyter Mouton, 2007, pp.140–154.

159 “Vor allem in der ethnographischen und in der Aktions-Forschung wurden Strategien entwickelt, die für Künstler in ihrer praxisbasierten Forschung nützlich sein können; hierzu zählen teilnehmende Beobachtung, performative Ethnografie, autobiografisches Erzählen, dichte Beschreibung, Reflection-in-Action und kooperative Recherche. Die häufig kritische und engagierte ethnografische Forschungsstrategie erkennt die wechselseitige Durchdringung der Subjekte und Objekte der Feldforschung an. Angesichts der Tatsache, dass die eigene Künstlerische Praxis des Künstlers das »Feld« der Untersuchung ist, konnte sie als ein Modell für einige Arten der Forschung in den Künsten dienen.”

Borgdorff, Henk: 'Forschungstypen im Vergleich', in: Künstlerische Forschung. Ein Handbuch ['Research Types in Comparison', in: Artistic Research. A Manual], Jens Badura; Selma Dubach; Anke Haarmann; Dieter Mersch; Anton Rey; Christoph Schenker and Germán Toro Pérez, Zürich, Berlin: Diaphanes, 2015, pp.71ff.

In the mode of aesthetic experience, perception itself becomes present, opaque and tangible. Artistic experience can be defined analogously as the mode of perceived interfering framing. Accordingly, to have an artistic experience means to look at oneself from outside a framework and simultaneously enter it. Framings crossing our perception in this way are also present and palpable. Both the artistic and the aesthetic experience are modes of our perception and, as such, constantly accessible, not only in art-works and art-places. In “experiencing”, the subjective perspective is furthermore constitutively included, for experiences cannot, by their very nature, be delegated and can only be intersubjectively negotiated in a second order.¹⁶⁰

Here, the artistic practice can be a (researching) tool, providing access to subjective – inherent to the author – experiences, memories and immanent building blocks of knowledge. This circumstance can, of course, first be accepted and postulated in any emotionally orientated art. But just then, when the work of art is not a mere description of pre-existing knowledge (or emotion, assumption...) but creates a context of introspection; then, an inquiring character can be inherent within it. For here it can be a tool, in the true sense of the word, with which to unlock knowledge or generate insight. Artistic practice can be seen here as an access – a method of measurement. It can be determined that this process is not completely arbitrary by various framework parameters: setting design, experimental structure, documentation form and type of aesthetic presentation. Julian Klein describes this distinction as follows:

It is particularly true for artistic experiences that they cannot be separated from underlying experiences. Artistic experience is an active, constructive and aesthetic process in which mode and substance are inseparably fused. This distinguishes artistic experience from other implicit knowledge, which can usually be thought out and described separately from its acquisition.¹⁶¹

160 “Im Modus des ästhetischen Erlebens wird Wahrnehmung sich selbst präsent, opak und fühlbar. Künstlerische Erfahrung kann analog bestimmt werden als der Modus gefühlter interferierender Rahmungen. Demnach bedeutet eine künstlerische Erfahrung zu haben, sich selbst von außerhalb eines Rahmens zu betrachten und gleichzeitig in denselben einzutreten. Rahmungen, die in dieser Weise unsere Wahrnehmung durchqueren, sind auch präsent und fühlbar. Die künstlerische Erfahrung wie das ästhetische Erleben sind Modi unserer Wahrnehmung und als solche ständig verfügbar, auch außerhalb von Kunst-Werken und Kunst-Orten. Im „Erfahren“ ist zudem die subjektive Perspektive konstitutiv enthalten, denn Erfahrungen lassen sich naturgemäß nicht delegieren und erst in zweiter Ordnung intersubjektiv verhandeln.”

Klein, Julian: ‘Was ist künstlerische Forschung?’ [What is artistic Research?], in: Künstlerische Forschung... Artistic Research..., Annette Matthias and Julia H. Schröder, 2011.

online: http://www.kunsttexte.de/Index.php?id=6&tx_zjdspaceviewer_viewer%5Buid%5D=ac7541f3-3e13-4511-ab19-905951c8e635&tx_zjdspaceviewer_viewer%5Baction%5D=showCollectionItems&tx_zjdspaceviewer_viewer%5Bcontroller%5D=Viewer&cHash=b3a3f777eae458b655e04a4f0a39cfe (Retrieved: 20.1.2020)

161 “Für künstlerische Erfahrungen gilt in besonderem Maß, dass sie nicht von den zugrunde liegenden Erlebnissen zu trennen sind. Künstlerische Erfahrung ist ein aktiver, konstruktiver und ästhetischer Prozess, in dem Modus und Substanz untrennbar miteinander verschmolzen sind. Das unterscheidet künstlerische Erfahrungen von anderen impliziten Kenntnissen, die in der Regel von ihrem Erwerb getrennt gedacht und beschrieben werden können.”

Klein, Julian: ‘Was ist künstlerische Forschung?’ [What is artistic Research?], in: Künstlerische Forschung... Artistic Research..., Annette Matthias and Julia H. Schröder, 2011.

online: http://www.kunsttexte.de/Index.php?id=6&tx_zjdspaceviewer_viewer%5Buid%5D=ac7541f3-3e13-4511-ab19-905951c8e635&tx_zjdspaceviewer_viewer%5Baction%5D=showCollectionItems&tx_zjdspaceviewer_viewer%5Bcontroller%5D=Viewer&cHash=b3a3f777eae458b655e04a4f0a39cfe (Retrieved: 20.1.2020)

3.1.6 Artistic Research: Opportunities and Summary of Relevant Aspects

In the previous sections, aspects of artistic research relevant to this thesis were briefly presented. As indicated at several points, this fledgeling discipline is still in the discovery phase and is sometimes controversially debated. In any event, these classifications and reflections can nevertheless be used constructively to classify and describe one's own approach. The concept of world disclosure is just as appropriate to this work as is the form of the transported immanent knowledge. The basic classification of artistic research aspects is undoubtedly a relevant structuring of one's work steps and components. The idea of an experiment and experimental systems is particularly appealing and descriptive in any way of working that also designs technical settings. The associated procedural nature of the artistic work, the focusing and inclusion of the subject in the researching and exploratory process: these represent essential elements of my work. In the following chapter, therefore, building on this fundamental state of artistic research, I would like to illuminate and explain my own methods and procedures in this context.

3.2 Exploratory Approaches in my Composition

In considering essential features within the discourse surrounding artistic research, I have presented some core elements and would now like to link these to my own artistic practice, in order to highlight parallels and differences; and also, to use the perspective of artistic research as a starting point to categorize and subdivide my work processes.

3.2.1 World Disclosure and Changing Perspectives

Before I come to concrete subdivisions and characteristics, I would like to emphasize the concept of world disclosure as an essential goal of artistic research using aesthetic knowledge. In the context of such work, which deals with changing perspectives – and opposing worlds – the process of world disclosure is an obvious element. Using the resources of art, different worlds are to be brought into connection with each other and, in so doing, compared and contrasted. The aim is, therefore, not only to depict the world that surrounds us as a singular entity but to make precisely those of its various inherent modes palpable and representable. Jens Badura describes artistic research as world disclosure through artistic practices:

[Artistic research is...] world disclosure using artistic practices. The idea is that artistic processes are understood, recognised and articulated accordingly as processes of knowledge....The arts are believed to play a relevant and perhaps even necessary role in the context of our knowledge production.¹⁶²

162 “[Künstlerische Forschung ist...] Welterschließung durch künstlerische Praktiken. Es geht darum, dass künstlerische Prozesse als Erkenntnisprozesse verstanden, anerkannt und entsprechend artikuliert werden. [...] Den Künsten wird zugetraut, im Zusammenhang mit unserer Wissensproduktion eine relevante und vielleicht gar notwendige Rolle zu spielen.” Badura, Jens and Hedinger, Johannes: ‘Sinn und Sinnlichkeit’ [Sense and Sensibility], in Schweizer Monat [Swiss Month]1001 (2012), p.68.

Of course, there are many texts and theories on the topics of virtuality and post-digitality which are of great importance (also for the art context). There are also various musicological texts which consider and analyse pieces in this context. Last but not least, there are numerous (musical) works of art that deal with this circumstance. Often these works are created to illustrate, exemplify or comment on a given situation: a piece is made about a theme. The content transports this theme (more or less abstractly). In such approaches, communication is always via a theme and the theme itself – in this case, virtuality and post-digitality – is not made into a tool or actual object. The difference is whether a topic is described or directly depicted. In terms of sensual cognition, this is an opportunity to explore these themes in an immersive, immediate way.

It is precisely the interplay of hard and soft facts that can represent an opportunity to adequately approach this complex. In artistic work, clearly conceived experimental setups, technical arrangements, and conceptual interaction modes encounter sensual, immediate experiences and subjective reactions. Using such a setting, the emotional implications of technological innovation can be accurately depicted, under certain circumstances, as Jens Badura also notes:

A central assertion now expressed in the talk of artistic research is that the modes of insight – sensual or rational – are not to be put into a hierarchical order, but are to be thought of as complementary to one another. An appropriate world disclosure must therefore include "unclear" and "clear" dimensions and related modes of articulation, and adopt the experience of world disclosure as an interplay between undefined (such as artistic-creative) and conceptual (such as scientific-theoretical) forms of articulation as a productive dynamic.¹⁶³

Thus, the interaction of these modes can be regarded as an artistic tool, enabling a knowledge acquisition in the form of experiential insight. It is perhaps also in the postdigital nature and virtual thematic complex that this dichotomy is implied. Moreover, it is not only the interplay but also the abrupt change between these working modes, which in itself also represents a thematization of the thematic complex. The choice of means here already reflects the object under investigation.

Due to my training as a computer scientist (with a focus on the cognitive area) and my musical education, the meeting of these two worlds is deeply anchored within me and, to a large degree, mirrors my intuitive way of working. Anke Haarmann describes artistic research as a new dispositive, within which art is challenged to

163 "Eine zentrale Behauptung nun, die in der Rede von der künstlerischen Forschung zum Ausdruck kommt, lautet nun: die Erkenntnismodi – sinnlich oder rational – sind nicht in eine hierarchische Ordnung zu bringen, sondern als komplementär zueinander zu denken. Eine angemessene Welterschließung muss somit „unklare“ und „klare“ Dimensionen und an diese anknüpfende Artikulationsmodi umfassen und die Erfahrungen der Welterschließung als ein Wechselspiel zwischen unbegrifflichen (wie künstlerisch-kreativen) und begrifflichen (wie wissenschaftlich-theoretischen) Artikulationsformen als eine produktive Dynamik annehmen."

Badura, Jens and Hedinger, Johannes: 'Sinn und Sinnlichkeit' [Sense and Sensibility], In Schweizer Monat [Swiss Month] 1001 (2012), p.68.

intervene in the exploration of the present.¹⁶⁴ I find this view very motivating – it precisely describes my desire to use artistic tools to explore and understand a contemporary domain of the present. In this way, I feel that music is a tool with which I can achieve this goal. In my opinion, this viewpoint does not necessarily represent a degradation of musical independence and that this is especially true when art does not speak about a theme, but rather when the theme speaks directly through art.

In the following sections, I would like to elaborate on some specifics of my work, concerning artistic research, which have already been mentioned above. First to be discussed will be the production of tools and their role in the process and in achieving the artistic result. Subsequently, I will outline the use of experimental set-ups, and then go on to discuss aspects of research using art and the relationship between subject and object in artistic research. I would also like to discuss different methods of validation in the working process (i.e. development and verification of working methods) and suggest different approaches to documenting works and knowledge.

3.2.2 Tools, Interfaces and Research for the Arts

The development of tools, methods, programs and approaches for artistic project implementation can be an essential part of the artistic research process. In terms of the category "research for the arts" (see Chapter 3.1.3), this refers to the steps and developments necessary to produce and develop a work of art. It is therefore also possible to discuss how strongly this process or achievement represents the actual research achievement or how elementary it is for the resulting work. The developed approaches and tools can take many forms: software, hardware or methodical procedures – and of course their combination.

The development of software solutions for the realization of a project is an essential part of my artistic work. In working with live electronics, interaction and the synchronization of several media, a certain amount of programming has become standard. However, there is a difference between primarily manual implementations and the successive development of a non-standard software solution. In this text, I would like to concentrate on the latter. Furthermore, it can be distinguished whether the programming process is primarily aimed at realizing a general program or a concrete tool for the development of a singular piece. In the first case, the software as a product is brought to the fore; and exemplary pieces are realised with it, or it is used as a decisive tool for an artist's entire creative period. Examples of this are Georg Hajdu's "Quintet.net"¹⁶⁵ Diemo Schwarz's (at IRCAM) "CataRT"¹⁶⁶,

164 Haarmann, Anke: 'Transformationen der Wissensordnung', in: *Künstlerische Forschung. Ein Handbuch ['Transformation of Knowledge Regulation', In: Artistic Research. A Manual]*, Jens Badura; Selma Dubach; Anke Haarmann; Dieter Mersch; Anton Rey; Christoph Schenker and Germán Toro Pérez, Zürich, Berlin: Diaphanes, 2015, p.99.

165 Hajdu, Georg: 'Quintet.net - A Quintet on the Internet', in: *Proceedings of the International Computer Music Conference 29 (2003)*, pp. 315-318.

166 Schwarz, Diemo & Beller, Grégory & Verbrugge, Bruno & Britton, Sam: 'Real-Time Corpus-Based Concatenative Synthesis with CataRT', in: *Proceedings of the 9th International Conference on Digital Audio Effects (2006)*. p.91.

Daniele Ghisi's "dada Library"¹⁶⁷, Maximilian Marcoll's "Quince"¹⁶⁸ or Karlheinz Essl's "Real Time Composition Library" (RTC-lib)¹⁶⁹. In these cases, besides the programmers' own compositional work, the intention is clearly evident that these tools also be used by a (preferably broad) public. A contrasting approach is one in which the programming is primarily aimed at a work's concrete execution. In their concrete implementation, these solutions are often less generally applicable in their scope of use and in their user guidance. Consequently, the transfer capacity of these solutions is not directly related to their distribution. Nevertheless, the ideas, approaches and specifics of these software solutions are easily adoptable and adaptable by other artists. The transfer of a specific idea is usually still present here, even if the distribution is not directly made (by an accessible software). The fact that an approach in itself can be used elsewhere is also the primary focus of such an endeavour's scientific orientation. Examples of such implementations are the software solutions developed for the implementation of Stefan Prins' "Generation Kill" , Maximilian Marcoll's "Amprofications", Hannes Seidel's "Mehr als die Hälfte" [More than Half], Johannes Kreidler's "Product Placements" or Michael Beil's video compositions.

I can place my work predominantly within the second category¹⁷⁰: the software solutions I have developed have always been tied to specific projects. However, within the series of works (sensor, light, community and VR pieces) there were also continuities where I continued to use and develop modules and algorithms. In this fashion, an internal software library is built up. At present, I have not published these results as a self-contained distribution. This is mainly due to the fact that, although I have focused on content issues (physicality, post-digitality and virtuality) over the past ten years, I have researched them with varying technical means. I was less interested in developing a technical solution capable of distribution than in using a range of approaches to illuminate a topic from different perspectives. Nevertheless, I do try to support the exchange and dissemination of my (technical and compositional) work (see also Chapter 3.2.4).

The software programs¹⁷¹ written for the realization of my works fall into three major classes:

1. *Programs for sensor interaction*
2. *Programs for lighting control*
3. *Website development*

167 Ghisi, Daniele und Agon, Carlos: 'Real-Time Corpus-Based Concatenative Synthesis for Symbolic Notation', In: Proceedings of the TENOR conference, 2016, p.1.

168 Quince 1.2.2019. online: <http://quince.marcoll.de> (Retrieved: 1.10.2019).

169 Essl, Karlheinz and Günther, Bernhard: 'Realtime Composition: Musik jenseits der Schrift', in: Positionen. Beiträge zur neuen Musik ['Realtime Composition: Music on this side of Writing', in: Positions.Articles on New Music] 36, 1998, pp.4–9.

170 Exceptions are a Max/MSP timeline object and a notation inversion software (based on the piece Black Out BRD): <http://www.alexanderschubert.net/works/Blackout-Software.php>

171 I do not include programs here that simply implement live electronics or video processing.

Several (partly commercial) software solutions already exist in these three areas. In truth, no new forms of programming have been developed here but the programs have been designed to allow new functionality and expression. Regarding sensor compositions, it is basically not new to control electronic sounds with hardware sensors: examples being the programs of the STEIM Institute, the works of Michel Waisvisz, Sensorband, Atau Tanaku, Alex Nowitz, Max Mathews, Chikashi Miyama, Tomomi Adachi, Georges Aperghis, Jon Rose, David Rokeby, Franziska Baumann or Biomuse. The form of linking and programming can however certainly be reinvented and explored. A specific form of control and mapping (i.e. the assignment of input and output signals) challenges a performer's specific interaction and communication. The mapping form also directly says something about causality, logic and interaction and, in this sense, is not only a technical assignment but also a content metaphor. These statements are, to a not inconsiderable extent, already fixed in the programming itself, where it is already decided whether the control (and thus, the implicit statements of the piece) is, for example, artificial, expressive, virtuoso, hierarchical, technical, sensual, distanced, physical or chaotic. The development of the software modules significantly determines the character of the work with which it is realized. In my compositions, I first tried to enable and challenge the most expressive control possible. For example, the programming in "Laplace Tiger" is intentionally designed in such a way that it requires a strong physical and powerful interaction. In the development process, I adapted the modules specifically for this and tested them with video documentation. "Point Ones", on the other hand, pursues an interaction concept combining this approach with a control flexible in time and content, in order to navigate through a score. Here, too, expressiveness and score-following are placed in the foreground. "Your Fox's, A Dirty Gold" and "Serious Smile" extend this aspect by the targeted inclusion of virtual links – i.e. an increasing alienation between gesture and sound or light result. The causality of action and the sonic result are partially brought into focus here.

The situation is similar in light programming. Of course, numerous commercial solutions already exist for the control of all kinds of spotlights. There are already approaches also in the artistic context, in which light is controlled by self-written software. Some examples of different approaches would be Robert Henke's "Lumière" , Marko Ciciliani's "Alias", Jacob Sello's "Hexenkessel", Pierre Jodlowski's "Mad Max", Uwe Schneider and Robin Fox's "Double Vision", Adam Basanta's "Music for Lamps", Michael Vorfeld's "Glühlampenmusik" [lightbulb music], Frank Bretschneider's "circle in the round", Thierry de Mey's "Light Music" or Simon Löffler's "b". Of the light control concepts I have developed, the main focus is primarily characterized by very fast and synchronic timing to tonal and performative events. This is a use of light that cannot be realized with conventional lighting consoles and the associated programs without detours. The millisecond-precise interlocking of choreography and sound is the basis for all my light-based pieces. Light is therefore no longer used here as a mood or basic lighting, but as a scanning instrument (see also Chapter 2.1.1). This aspect is reinforced by the fact that the moving heads in the pieces are also precisely animated and synchronized. The scanning consequently takes place at a certain time and place. This process is

technically not very common in this form. The objective here is the two-dimensional digital representation of the person on stage (following the concept of the post-digital). In the program for "Codec Error", the interconnection of synchronized moving heads is used to create lighting effects that simulate a video error in a stage situation.

Special website solutions as a sub form of software development were developed for the pieces "Wiki-Piano.Net" and "Control". A detailed classification of this programming work can be found in section 4.8.3, and the "Control" website is described in more detail in section 3.2.3.1.

The development of technical hardware solutions follows a similar principle to the design of the software described above. Hardware development is, on the one hand, necessary for the realization of the compositions, and, on the other, an elementary part of the work. Here too, many established solutions and realizations already exist, from institutional developments like IRCAM¹⁷², STEIM¹⁷³, MIT¹⁷⁴ or CCRMA¹⁷⁵, to commercial products like the „K-Bow“¹⁷⁶, „dada machines“¹⁷⁷, x-OSC¹⁷⁸ to DIY solutions using the Arduino boards. An overview of existing hardware approaches can be found here.^{179 180 181}

I have prepared video eyewear with cameras and audio intercom circuits for numerous pieces. The goal of these VR-like devices is to transfer one's own visual and auditory perception to another person – and, in some pieces, also to receive foreign perception at the same time. A detailed description of these hardware approaches and their classification in the research field can be found in Chapter 4.7.2. In the works involving such eyewear, it was possible to fall back on existing consumer technology to a large extent, so that the devices did not have to be manufactured from scratch. However, finding robust and continuously running wireless solutions was a very complex process. Nevertheless, technology was used here which can be bought as a consumer product in its individual parts. The combination and arrangement of the elements, as well as their linkage, makes them innovative. For the piece "Control", I constructed the original setup with a clear goal; but in fact, the interface radiates such a wealth of implications and application methods that my subsequent works almost imposed themselves in the rehearsal process. The production of this device in itself was a powerful generator of further ideas and approaches. It soon became clear that the spectrum of forms

172 IRCAM online: <http://ircam.fr> (Retrieved: 4.4.2020).

173 STEIM online: <https://steim.org> (Retrieved: 4.4.2020).

174 MIT online: <https://mta.mit.edu/music> (Retrieved: 4.4.2020).

175 CCRMA online: <https://ccrma.stanford.edu/> (Retrieved: 4.4.2020).

176 Keith Mc Millen, online: <https://www.keithmcmillen.com/labs/k-bow/> (Retrieved: 4.4.2020).

177 Dada Machines, online: <https://dadamachines.com/> (Retrieved: 4.4.2020).

178 X-IO, online: <https://x-io.co.uk/x-osc/> (Retrieved: 4.4.2020).

179 Miranda, Eduardo Reck and Wanderley, Marcelo M.: *New Digital Musical Instruments: Control and Interactions Beyond the Keyboard*, Middleton: A-R Editions Inc, 2006.

180 Tanaka, Atau: 'Musical Performance Practice on Sensor based Instruments',

In: *Trends In Gestural Control of Music*, Miranda Wanderley and Marcelo Battler, Paris: IRCAM, 2000, CD-ROM.

181 Collins, Nicolas: *Handmade Electronic Music*, New York: Routledge, 2006.

of interaction, narration and communication was so broad that they could not be reproduced in a single work. This is certainly also due to this approach being a very general one, for example, more general than a sensor bow for a violin.

The construction of the video eyewear is a classic example of tool design and piece development overlapping and intertwining. Both are difficult to separate, and one causes the other. On the one hand, the developments described above have been carried out purposefully towards an implementation of a work; on the other, some of these tools and interfaces develop such a strong driving force that parts of the piece or the setting arise directly from them. Viewed in this way, the composition is then an application of the research results.

From a programming point of view, some parts are complex in sum and complex in the result – but the innovation lies here not in a new programming paradigm, but a new combination of existing components. Here, development follows an existing course, adopting ideas that have been worked on throughout the twentieth century. The objective of my work challenges the use of the tools in a new way so that their adaptation and further development is virtually inevitable. The development of these technical strategies is inseparable from the development/conception of the pieces. Without them, the works would not exist, but without the conception of the works, the technology would also be irrelevant.

3.2.3 Experimental Designs

Hardly any approach represents scientific research so well as the controlled or planned experiment and associated hypotheses genesis and testing. At first glance, the creation of a structure – as sterile as possible, and uncoupled from external influences in order to test a thesis – represents the opposite of an artistic, intuitive creative process. That this dividing line is less sharp, however, is evident, in disciplines of design, for example, in which the systematic exploration of materials takes place precisely at the interface between scientific and aesthetic research.¹⁸² But in other artistic disciplines, too, this approach is conceivable, desirable and already common practice. It can be observed that this way of thinking is increasingly gaining interest and – as Gabriele Gramelsberger, for example, has noted – is reflected in different currents:

*Artistic research, the world as a laboratory, the experimenting society, “art as epistemological engine”, and other concepts point to a tendency, similar to the sciences, towards wanting to systematically open up the world, develop coherent world views and anchor these in social consciousness.*¹⁸³

182 Borgdorff, Henk: 'Forschungstypen im Vergleich', in: *Künstlerische Forschung. Ein Handbuch* ['Research Types in Comparison', in: *Artistic Research. A Manual.*], Jens Badura; Selma Dubach; Anke Haarmann; Dieter Mersch; Anton Rey; Christoph Schenker and Germán Toro Pérez, Zürich, Berlin: Diaphanes, 2015, pp.69–76.

183 "Künstlerische Forschung, die Welt als Labor, die Experimentiergesellschaft, 'art as epistemological engine' und andere Konzepte deuten auf eine Tendenz hin, ähnlich den Wissenschaften, Welt systematisch erschließen, kohärente Weltbilder entwickeln und diese im gesellschaftlichen Bewusstsein verankern zu wollen." Gramelsberger, Gabriele: 'Epistemische Praktiken des Forschens im Zeitalter des Computers', in: *Kunst des Forschens* ['Epistemic practices of research in the age of the computer', in: *The Art of Research*], Elke Bippus, Zürich: Diaphanes, 2012, pp.91–108.

Music always has within itself an experimental, searching and playful character. Even if the borderline here is fluid, it can be stated that, beyond the omnipresent artistic practice, a concrete orientation towards scientific methods can be observed. Henk Borgdorff describes this in a comparison of research types as follows:

In this case, the empirical cycle of observation, theory and development of hypotheses, prediction and verification, as well as the model of the controlled experiment, serve as an ideal type in the often arbitrary context of artistic discovery (just as such principles are often applied in empirical social science research). Values inherent in scientific justifications – including reliability, validity, reproducibility and falsifiability – are also relevant in artistic research, provided that they are inspired by the scientific model.¹⁸⁴

The declared goal of a systematically achieved production of knowledge (of varying degrees) represents here a trend, according to which scientific research approaches in the arts are gaining in relevance. This research can either be carried out by a single person or be realized with the aid of cooperation across different fields of work, i.e. in cooperation with scientists from non-artistic disciplines¹⁸⁵.

In this frame of reference, Hans-Jörg Rheinberger inserts the concept of the experimental system in the context of artistic research to shed light on the experimental setups in the art context^{186 187 188}. In this regard, for him, epistemology interacts with the technical object. He notes on this point:

The experiment is, if one likes, a search engine, but with a strange structure: it creates things of which one can only ever say afterwards that one should have looked for them. In this respect, Bernard is absolutely right when he categorically states: “Knowledge is

184 “In diesem Fall dienen der empirische Zyklus von Beobachtung, Theorie und Entwicklung von Hypothesen, Vorhersage und Überprüfung sowie das Modell des kontrollierten Experiments als ein idealer Typus in den häufig willkürlichen Kontext der künstlerischen Entdeckung (so wie die derartigen Prinzipien oft auch in der empirischen sozialwissenschaftlichen Forschung angewandt werden). Werte, die den naturwissenschaftlichen Rechtfertigungen innewohnen – darunter Reliabilität, Validität, Reproduzierbarkeit und Falsifizierbarkeit –, sind auch in der künstlerischen Forschung relevant, sofern sie von dem naturwissenschaftlichen Modell inspiriert sind.”

Borgdorff, Henk: ‘Forschungstypen im Vergleich’, in: *Künstlerische Forschung. Ein Handbuch* [‘Research Types in Comparison’, in: *Artistic Research. A Manual.*], Jens Badura; Selma Dubach; Anke Haarmann; Dieter Mersch; Anton Rey; Christoph Schenker and Germán Toro Pérez, Zürich, Berlin: Diaphanes, 2015, p.74.

185 Wilson, Stephen: *Information arts*, Cambridge, Massachusetts: MIT Press, 2003.

186 Rheinberger, Hans-Jörg: ‘Experiment, Forschung, Kunst’, [Experiment, Research, Art] in: *Jahreskonferenz der Dramaturgischen Gesellschaft* [Dramaturgical Society Annual Conference], Oldenburg, 2012.

187 Rheinberger, Hans-Jörg: ‘Experiment, Forschung, Kunst’, [Experiment, Research, Art] in: *Kongress Experimentelle Ästhetik* [Experimental Aesthetics Conference], Düsseldorf, 2011.

188 Rheinberger, Hans-Jörg: *Experimentalsysteme und epistemische Dinge* [Experimental Systems and Epistemic Things], Heidelberg: Springer, 2014, p.221.

*always something a posteriori.” Or, to quote Christoph Georg Lichtenberg: “You have to do something new in order to see something new.”*¹⁸⁹

Within the scope of my work, I have used the approach of experimentation in two different ways. By this, I do not mean simple trial and error, rehearsing and testing, which is part of every creative process. Hardly any work is completely conceived from the outset and written down and then performed only in that form. The working process of a piece's development always includes searching, trying, experimenting and checking. But I do not mean these forms of elementary piece development: I am attempting here to show the aspects which differ from them in my work. This procedure can be divided into two different classes:

1. *Experimental setting as the objective of a work*
2. *Piece development as an experimental research process*

In both approaches, I follow procedures that are oriented towards experimental designs, even if these do not completely satisfy the strict procedures of a scientific experiment. In my opinion, working methods may be profitably adapted and used, without having to be complete replications of classical scientific designs.

3.2.3.1 Composition as an Experimental Trial Setup

First, I would like to introduce those works in which the objective is the development of an experimental setting. Each performance can be seen as a small experiment, in which certain assumptions and expectations may or may not come true. In the approaches to be described, however, this does not mean the examination and readjustment of artistic ideas and implementations: rather, it is about the creation of a setting in which a question is to be explicitly explored and analysed by artistic means. This means that although there are hypotheses, concepts and expectations, the outcome of the proceedings is not predetermined and the result is, therefore, an essential part of the piece. Consequently, the parameters for the experiment are defined and adjusted as clearly as possible during the development process, to conclude with observations and statements that are as enlightening as possible, as occurs in scientific research.

The work process for these projects can roughly be divided into the following steps:

1. Conception/Hypothesis/research topic
2. Development of tools and setting

¹⁸⁹ “Das Experiment ist, wenn man so will, eine Suchmaschine, aber von merkwürdiger Struktur: Sie erzeugt Dinge, von denen man immer nur nachträglich sagen kann, dass man sie hätte gesucht haben müssen. Insofern hat Bernard völlig recht, wenn er einmal kategorisch feststellt: „Die Erkenntnis ist immer etwas a posteriori.“¹⁰ Oder um es mit Christoph Georg Lichtenberg zu sagen: „Man muss etwas Neues machen, um etwas Neues zu sehen.“
Rheinberger, Hans-Jörg: ‘Experiment, Forschung, Kunst’, in: Kongress Experimentelle Ästhetik [‘Experiment,Research,Art’, in: Experimental Aesthetics Conference], Düsseldorf, 2011, p.10.

3. Testing and adaptation
4. Execution (concert/performance)
5. Documentation and evaluation

Initially, the idea and the desire arise to investigate a certain aspect and, with the help of an artwork, to fathom it. In my work, the themes are usually found in the context of the relationship between body and emotion on the one hand and between technology and digitality on the other. In most cases, the focus is on the consequences, possibilities, and critical points of dealing with digital techniques; examples would be the digital representation of humans and the resulting implications for communication, interaction and collaboration. The concept of uncoupling (between cause and effect, or body and representation) is a recurrent theme in these works. These objectives of a given setting are thus more abstract in nature, becoming more concrete in the following step.

The implementation of an experimental setup is closely linked to the creation of the technical tools. In this working method, the development of adapted software and hardware solutions (as described in 3.2.2), as well as the design of a suitable environment (whether physical-spatial or virtual-digital), are among the relevant steps of piece development. It is important to note that, in this case, these tools are not developed with the concrete goal of implementing a content, a piece or a performance, but to permit interaction, engagement or sensation. Consequently, these are tools that allow an action, but do not explicitly presuppose it.

In the following phase, the setups are tried out, adapted and readjusted with a test audience. In this process, both technical and performative details can be adjusted, the audience's leeway for reaction can be observed and, if necessary, the hypothesis adapted. This includes simple interface testing but also checking the interaction of the test participants regarding their perception and emotions. I understand it less as a rehearsal, but rather as a validation phase or study, aiming at developing the setting.

The execution – meaning in the musical context the concert/performance/installation – then constitutes the actual work. Without execution, these pieces do not exist. Music, in general, is sometimes said to do this – that it only exists in the fleeting moment. Nevertheless, most of the pieces can be regarded as a score and can be understood mentally with imagination and expertise. This is especially true for very conceptual pieces, where the performance is, in many cases, only a side effect of the work. In the cases described here, the piece is only a container for the actual content. It exists as an experimental arrangement, which in itself can be interesting. But then, the actual cognitive value of the piece takes place almost exclusively in its execution: in experiencing, observing, feeling, interacting and communicating. The actual content of the piece is the questioning of how the audience and participants behave and feel in the setting. An experimental setting does not have a clear outcome – it is knowingly designed to be so open, within a fixed framework, that even opposing events can occur, which are neither clearly anticipated nor planned in advance. The focus of these works is the observation of their execution – and this corresponds to its experimental character. The audience or the participants are the objects to be examined within this experimental arrangement.

Examples of this approach are the VR-based pieces "Control", "Unity Switch", "A Perfect Circle", and the online composition project "Wiki-Piano.Net". These VR-based pieces use video eyewear and cameras to transmit the first-person perspective to other performers, thus creating situations for the evocation of separation of digitally mediated physique representation and emotional interaction. In "Control", people in control rooms see via video transmission through the eyes of other participants and control their movements through a building with spoken commands (this setup is described in detail in Chapter 4. 7.2). The focus here is on the relationship between the participants in controlling and implementing roles; as such, dealing primarily with the question of external control, and consequently investigating predominantly hierarchy and cooperation. In "Unity Switch" and "A Perfect Circle", this technical approach is used to exchange perspectives between participants and thus change body perception (a detailed description is found in Chapter 4.7). In both pieces, the participants interact with each other in a very intimate and physical way, even when sometimes perceiving another person as their counterpart via the video eyewear, illuminating the relationship between intimacy and distance, in connection with medial uncoupling and physical interaction. The exact setups and results will be discussed in more detail in the following chapters. The online composition project "Wiki-Piano.Net" (described in detail in Chapter 4.8.3) is also, as per content, initially an empty setting, in which website users can work online on a piano piece, which is then performed live by a pianist in various concerts.¹⁹⁰ The online platform started without actual content and does not represent a platform to change or adapt a work, but rather, enables a controlled creation process for an internationally scattered online community. Here, too, there is an uncoupling from the digital work process and the on-site physical performance. The outcome and course of this project could not be predicted concretely in advance – and it was not the goal to achieve a specific result with this tool, but to depict and reflect cooperation, destruction and creative processes on the Internet and to enable an interface to the real world of the concert hall.

It can accordingly be established that, in these cases, the pieces would not exist without the participants and would remain empty in content. These are setups that are intended to make interaction in certain technical settings palpable, perceptible, observable and analysable. The outcome of the pieces is deliberately chosen to be open. In fact, different perceptions of different visitors can sometimes vary considerably. Nevertheless, generalized observations can also be established. Consequently, an essential aspect of these works, apart from direct experience (and, ideally, sensual insight), is the documentation of process and results. This provides a special opportunity for this type of piece, often going beyond mere documentation in the form of a concert recording. Statistical information can be collected, testimonies used or sensually experienceable material (such as recordings of first-person perspectives and communications) made accessible. A more detailed list of documentation forms can be found in Chapter 3.2.4.

190 Compare also with the composition project "Silent Post".

3.2.3.2 Piece Development as an Experimental Research Process

The previous section has described how an experimental design can function as a final work form, in that the experiment with an open outcome constitutes the finished work. In contrast, the following section describes a working method that uses an experimental setting to develop a piece, to ultimately generate a self-contained work. This form of work genesis provides a concrete and clearly defined setting (or experimental arrangement), in which the piece's development takes place. Of course, all creative work takes place within given limits (e.g. requirements regarding length, material, instrumentation, etc.). Whether they are internal or external, limitations are always found in the manufacturing process. However, these are often either pragmatic conditions (casting, type of commission...) or deliberately conceptual reductions (e.g. minimalist, aesthetic, theoretical...). In this case, however, limitations refer more to the design of an experimental process or scenario, which describes the framework of the piece's development, and not an aesthetic orientation. These two aspects cannot be completely separated, but this approach places its emphasis more upon setting rules within which the piece then develops. This is possible if the experimentation process is not simply a necessary step en route to a result, but becomes the actual content.

In this approach, the object to be observed is therefore no longer the audience, as described above, but the composer (and/or the participating performers). What remains common here is the fact that a framework, a structure or a directive is created, which lies at the intersection of the analogue and digital worlds. The subject then addresses this setting – and the documentation of this process is the resulting work. What is important is that here too, the experiment is set up in such a way as to make the outcome uncertain. This may sound paradoxical, since, strictly speaking, one cannot surprise oneself and could therefore assume that the outcome of a self-determined experiment with oneself is already known. However, one can create a setting in which the way one will relate to it is not entirely clear – and what reactions this will trigger on a subjective, emotional, psychological level. It is accordingly possible to provide a structure and thus evoke one's own reaction together with its unconscious part. This method can be helpful to summon up immanent knowledge and experiences and to let them flow into the genesis of the work. Within a defined framework, one can then absolutely surprise oneself with the content which is first revealed, unfiltered and unreflected. The access to direct and intuitive activity allows an expressive form, which can contain and transport knowledge not previously fixed in the experiment's configuration, nor verbalized in advance. In contrast to a completely free way of working, in which everything is allowed, such a framing already provides a kind of questioning, theme or focus. In this procedure, therefore, freedom within a fixed frame is used, particularly with specified tools or technologies. This method suggests itself since the objects of investigation in many of my works are the explicitly emotional and sensually experienceable implications of technological and digital practices. They allow access to the subjective by observing and documenting it within the piece. In this process-oriented perspective of a work, the progression and analysis of the process are of central relevance to the piece's meaning (see Chapter 3.1.4).

Examples of this working method would be "f1" and, in particular, "Acceptance". In the work "Acceptance", a clearly defined setting is sketched out, followed, observed and documented. In this performance work, a performer is called upon to spend five days in the wilderness on her own, and during this time to construct six large wooden sculptures and subsequently erect them. During this time, she communicates with no-one.¹⁹¹ This physically very challenging task can also be perceived by the performer as emotionally demanding and as a process of self-awareness. The piece consequently centres on the performer's confrontation with the situation.

The genre of the work is "documentary piece". Based on the defined initial setting, the piece consists of the documentation of the events that follow. In the course of preparing, performing and evaluating the piece, both the performer and I observed our experience within this setting in a relatively unfiltered way, and then verbalized it. In terms of content, the themes of self-abandonment, loss, distancing and projection were incisive. Central to this is the relationship between myself – the initiator of the project – the action carried out, and the erection of the sculptures. They are meant to symbolize the coming to terms with a loss – and they also find current equivalence in my motivation for the piece. The uncoupling of my person from the content and the execution of the actions is central in addition to the self-perception of the performer. My interaction, therefore, took place exclusively on a cutting, editing and commentary level. Despite the clearly emotional content of the piece and the physicality of the performance, there is a maximum distance from the events on my part. The interaction through post-production, virtual rendering of computer graphics, commenting in a meta-view and the presentation of the editing tools clearly illustrate this aspect. However, these contents and the form were not fixed at the beginning and only emerged of their own accord in the course of the piece. The duration, objective and form of the action to be performed were described at the beginning in the score, but the further course of the piece is exclusively a transcription and documentation. The alternation between the analogue, physical and direct world on the one hand and the computer-mediated, distanced and virtual world on the other is very clearly perceptible here.

3.2.4 Documentation

In a scientific, researching context, the documentation of the results is an elementary part of the assignment. The recording, distribution, discussion and making available of results and observations is an integral goal of the research. In an artistic context, documentation is also common – and, in the classical form

¹⁹¹ The description of the piece reads in the original text as follows:

The performer stays in nature for five days, without speaking to anybody, and constructs six wooden sculptures. The performer writes down everything relevant in text form during the process. The work period is documented by a camera man. The process and the development of the piece are shown and explained in the presentation. This includes both the actual work phase but also the period leading to these days and the time after. The topic of the work is just as much about the process, personal factors and constraints of an art context. It deals with the impossibility of creating a just artwork.

of concert recording or studio recording, is suitable when it comes to making the artistic result accessible. At this point, I take this traditional form of documentation for granted. I prefer instead to employ other formats of documentation, which are either more scientific and empirical than traditional ones; or which allow a creative, artistic approach to the material. This refers to formats which, according to the respective piece, make the contents artistically palpable, experienceable and accessible.

In analogy to a scientific survey, the documentation of some of my pieces includes an empirical assessment. In "Wiki-Piano.Net", for example, statistics on user numbers, forms of interaction, lengths of stay, etc. are collected and made publicly available. After the concert installation "Control", Gina Emerson conducted a questionnaire for the ULYSSES Audience Research Blog, to statistically record the reactions and impressions of the participants.¹⁹² This served as a model for further installation works, in which the subsequent discussion and reappraisal represent an essential part of the works.

On the "Wiki-Piano.Net" page there is also an archive function, in which every version of the piece can be reconstructed and analysed. The changes (currently numbering approx. 25.000) can be recorded chronologically. All performances are centrally archived here, in the same way, to be able to compare versions and interpretations: the core idea of the piece. A repository is also created in "Silent Post", allowing access to the work's differing versions and materials. Here, too, the entire history and the included media contents are made freely accessible (comparison in Chapter 4.8.4).

The documentation of working processes, tools, and piece developments, in the form of databases accompanying the finalized works, is a further aspect of the compositions that are currently being developed. For example, tutorial videos for using the live electronics and sensors are available for most of the pieces; for others, such as "Codec Error", visualizations and software-capturing of the lighting control programs exist.

On an artistic level, I am increasingly trying to create documentation that not only captures the piece as a recording or as factual material but also depicts the content in a form tailored to the work, making it palpable. For "Control", for example, I designed a website to provide permanent streaming of recorded, first-person perspectives from the installation, via a web interface. This enables an interaction that evokes a feeling of immediacy; thereby emulating a component of the visitors' interactions at the moment of performance. A tool, specifically developed for this purpose, is made available here to present the content as directly experienceable as possible. Furthermore, having more than ten hours of raw material, the database also provides a comprehensive insight into the range of interactions and communications within the installation. In the documentation for "A Perfect Circle", recordings from the perspectives of the first-person, the control room, and a documentary overview are juxtaposed in split-screen-mode. Here, the

192 'ULYSSES Audience Research Blog #13 – Alexander Schubert's Installation 'Control' at Ultima Festival (NO)', 12.11.2019. online: <https://project.ulysses-network.eu/event/ulysses-audience-research-blog-13-alexander-schuberts-controlInstallation-at-the-ultima-festival-no/> (Retrieved: 12.11.2019).

declared objective is to show the different perspectives of the piece in interplay (personal perspective, supervision and VR view). The juxtaposition of different perspectives has become a central theme in my recent work, which will here, also in its reappraisal, be shown and made experienceable. In these cases, content explaining the situation in a documentary way, and content allowing the situation to be relived directly, complement each other. Consequently, the documentation should integrate the immersive subjective as well as the factually tangible. I regard the artistic processing and presentation of material as an elementary part of the work, and not merely as a final component of compositional activity. In some cases, the documentary form can also be explicitly regarded as a work of art in its own right.

The documentation of the light fog installation "Solid State" is, alternatively, a collection of mobile phone videos. In contrast to documentation from an outside perspective, the aim here is a collection of various individual perspectives and experiences. Here too, the goal is the multi-perspective representation of first-person perspectives and the reproduction of immersive experience.

Also artistic, and not at all factual, is a part of the documentation or explanation of the piece "f1". Fifty pages of supposed hints for its interpretation are provided in the piece's secondary literature. Here, the accompanying material extends the content: the game of illusion and fiction. Therefore, here too, no objective view of the piece is established, but an immanent perspective maintained. That the book mainly contains screenshots of the piece's creation is, therefore, a continuation of the interface view (see Chapters 4.3.2 and 6.1.5) – i.e. the presentation of the means – of the actual piece. In the book, screen interfaces and the collection of material are printed in an inherently computer-specific manner. In the context of postdigital presentation, this form of depiction can also be read as a post-screen representation.

The borderline between documentation and the actual piece is most blurred in the work "Acceptance", in which it is no longer possible to clearly distinguish between descriptive documentation and constructed narration. An artistic approach to aspects of documentation is elementary here (following on from the previous pieces "HELLO", "Star Me Kitten", and "f1").

In summary, it can be said that I follow two categorical approaches to documentation, which differ significantly from the classical concert recording: the archival processing of the entire material, or an immanent, sensitive presentation, which is also oriented towards perceptible emotions. This also includes the special use of the chosen media (own website, printing). The aim is to find a form for each piece that can convey the content in a meaningful way (factual or sensory) so that the work's components are as accessible as possible.

3.2.5 Objective Subjectivity

As fundamentally discussed in Chapter 3.1.5, within the context of artistic research, the object of investigation can be close to – or even exactly the same as – the subject under investigation. I find this approach particularly interesting when not exclusively signifying that art tracks emotions and illustrates them; or

when it is not about art underscoring with music, illustrating, or representing a given circumstance. On the contrary – in the sense of an experimental setting – an artwork can create a framework enabling introspection, emotional interaction or recollection of memories and inner states. To me, the investigative character is then recognizable, (and can be used as a tool, in that it carries within it the chance of gaining insight), when the setting does not have a clearly predictable recognizable outcome, even for me. In this case, it is more likely that the parameters are set – and often fixed very technically and rationally. Progressing further, I allow myself a primarily intuitive, gradually unreflected way of working. This often brings previously unplanned things to the surface. These contents can then often form the actual core of a piece – they can be the actual engagement with the technical setting and its implications. Of course, these two stages of work can never be separated into black and white: the comparison of both components in the creation process is often a common procedure. Nevertheless, underlying separation into two phases is a recurring and central motif in my work.

Surprisingly, it has turned out that some pieces, from which I wanted to remove my individual self completely, reflect the strongest personal references. To some extent, a central tool in my work is also the process of disclosure, disenchantment or looking behind the façade. I use this consciously and reflectively. Nevertheless, this process always opens up access to personal content in my work, so that this form of introspection – or the circumvention of barriers, walls and curtains – also works for me. This bypassing of control mechanisms is also supported by working very quickly. Even if planning, technical design, and many other components are very detailed and labour-intensive (and sometimes implemented over two-year periods), there are often phases of an unrestrained, stream-of-consciousness way of working, based on the principle of “automatic writing”. In this way, I make myself into an observed object and inevitably become part of the process. The pieces thus often have a component of self-awareness: in the first stage mostly for me; in some pieces, afterwards, also for the audience. It is a great challenge to find a balance between autobiographical, self-referential portrayals on the one hand and more general, abstract representations on the other. I am not primarily interested in turning my private life inside-out in an autobiographical sense. Rather, I intend to extract and aestheticize sensations, experiences and subjective views, and then to transport them intersubjectively.

In the context of this work, such a contrast between a rational setting and a subjective way of working is often clearly linked to the technical tools and resulting interaction and communication. It is, therefore, the construction and development of the technical framework and then its exploratory, explorative utilization. In my opinion, this procedure method is consequently particularly suitable within the context of investigating digital, media and virtual implications. Of course, these theories can be “tested” and verified with larger audiences here. But it is also a context in which new theories and knowledge can be developed, in the sense that these previously either did not exist or could not be verbalized or conveyed. New insights can thus be achieved, or existing, immanent knowledge made accessible. For one thing, immanent knowledge can be purely personal-emotional; then again, it can also bring to light immanent, person-related facts. Examples include the

unveiling of digital and virtual media use, communication, representation and physical interaction. Concrete examples of this are forms of proximity and distance – on the one hand deeply human, and, on the other, mediated, prevented or negated via the use of digital tools. The settings of the pieces may contribute towards making these modes of distancing experienceable, comprehensible and understandable.

3.2.6 Concrete Methods and Tools

In the previous sections, I have outlined several procedures from my artistic work within the context of artistic research. These approaches can be described as being general methods in my work. Finally, I would like to give a brief overview of several very concrete (non-technical) tools and methods that I use in my compositions.

A basic principle is the use of errors and terminations, referring to digital, technical errors as well as to breaks in narration and presentation. Chapter 6.1 deals with this subject in more detail.

A central tool is the principle of (digital) rastering. The process of discretizing continuous processes – meaning audio and video sampling – selects individual elements from a sequence and then exposes them. Technical details and their aesthetic implications are presented in Chapter 2.1.1, and their compositional application is explained in more detail in Chapter 4.3.

A recurring tool in my work is the disclosure of the production environment and the software used – i.e. the representation of the tools and techniques used – within the compositions. I have titled this approach "interface view" and will explain it in more detail in Chapter 4.3.2 using several compositions, whilst more examples can be found in Chapter 6.1.5.

The effects of immersion and an "overwhelming aesthetic"¹⁹³ appear regularly in many of my compositions. The basic aim is to deeply involve the audience in a setting and to make a reality or perspective experienceable and perceptible. This creates a mode of perception or perspective which isn't viewed from the outside, but which one can adopt oneself for a period of time. For me, this is often a prerequisite to making the subject matter emotionally palpable, not just theoretically. Some explanations of this can be found in Chapters 6.3.2 and 6.5.3. It should be noted that this approach can be understood as the opposite of the production environment being unveiled, as described earlier. In fact, both approaches initially pursue a contradictory goal: immersion, using artistic resources, and presentation of the deceptive methods in the artistic context. In my opinion, however, the disclosure of deception (and the means used to achieve it) is only ever possible if a functioning deception and appropriation have already occurred. If the audience becomes part of the setting, adopting its rules of play and modes of action (as is the case in an immersive situation), then these mechanisms too can be reflected upon and addressed in the following step. Last but not least, contrasts between control and loss of control, between proximity and distance as well as between physicality and

193 The German text uses "Überwältigungsästhetik" to express an aesthetic of overwhelming, overpowerment, e.g. by the sublime in art.

dehumanization are a central theme in many compositions, for which the combination of these two techniques can be seen as a helpful tool.

3.2.7 Summary and Objectives

In the previous sections, I have outlined the aspects of artistic research relevant to my work (Chapter 3.1). Central to this was the question of the form of (implicit or explicit) knowledge, the concept of sensual insight, as well as reflections upon the processual nature of artistic practice. Besides the development of tools for art, the focus was also on research through art. The rapprochement between the investigating subject and the object under investigation is of central importance in this setting.

I then related these categories to my work (Chapter 3.2), in which I described the development of tools and experimental systems and the documentation forms, an essential component being the self-observation or observation of the audience within the experimental settings. Following this, I outlined some concrete approaches and methods regularly used in my compositions. Particularly relevant are the use of the error, the "interface view", rasterization and immersion.

These described approaches and methods will be used to explore and make palpable the topics, questions, and hypotheses described in Chapter 2, in which questions about the effects of digital and virtual factors led to the implications of a postdigital turn or post-internet state. The question of virtuality, deception and authenticity are also a central issue. These topics will be explored using the methods described in Chapter 3.2.

The following Chapter 4 sets out and illustrates several concrete implementations. Different classes of compositions and their objectives within this context will be examined, and the generally described methods are used as examples and described in the concrete compositional process.

4. **POSTDIGITAL CHANGE OF PERSPECTIVE AS COMPOSITION STRATEGY**

Do we already speak in everyday life as we do in internet forums? ¹⁹⁴ Do children first learn to swipe pages and not turn them? Do food couriers¹⁹⁵ in the “gig economy” feel that they are part of a decentralized computer system? Do we see an “Airbnb” flat as a physical protrusion of a platform capitalist algorithm? Does an empty office building feel like a scene from a detailed animated computer game? Do we evaluate the colour gradient of a sky according to resolution criteria of a graphics card in bit depth? Are we, today, trying to become more like our social media profile rather than creating an image of ourselves? Do we go offline because today's normal state is online?

To put it more generally: do we see the analogue world with digital eyes or the analogue with digital eyes? And what role can art take on to reveal and address these views? How characterized have digital media and technologies become so that we cannot help but reflect these aspects in art? These questions drive me in my own perception and my compositional activity. In the following, I would like to examine these aspects step by step.

In Chapter 2, I outlined an inventory that reflects the impact of digitalization on human perception, communication and media use, and attempts to describe its manifestation in the physical, analogue world. The central theme was a sensitivity to the interface between the analogue and digital world, a focus on the interweaving and permeation of virtual and physical elements. Besides, changing visual and communicative languages were accompanied by a more differentiated evaluation of technology.

It is the sum of these phenomena and points of friction in terms of content that motivates me to deal with this thematic field. On the one hand, multimedia composition or (even more generally speaking) media art is the perfect tool and means to deal with these themes; on the other, one can also claim that these themes are so socially and culturally present, and media platforms and techniques so imprinted by them, that one should not or must not ignore them in the media-oriented art process.

In the following shorter sections, I would like to present how I have dealt with these themes in my compositional work. To this end, I will begin by proposing the principle of “changing perspectives” as a basic compositional strategy. This approach, with its focus on digital content in the analogue world, provides the framework for my work. It will be asked how media art can be used as an active tool for reflecting upon the perception of the digital world (Chapter 4.1). I would then like to explain which options for action generally arise from a post-digital perspective and to what extent this is now quasi integral to media art (Chapter 4.2). The digital error has been identified as an essential characteristic of the

¹⁹⁴ McCulloch, Gretchen: *Because Internet: Understanding the New Rules of Language*, New York: Riverhead Books, 2019.

¹⁹⁵ Comparison: Jonas Lund - Gallery.Delivery 24.7.2019.
online: <https://jonaslund.biz/installationviews/gallery-delivery/> (Retrieved 24.7.2019).

postdigital – and also of my practice. How this can be used, purely in terms of media and content, will be discussed in Chapter 4.4. Subsequently, the principle of uncoupling (in the virtual) will be discussed (Chapter 4.5), to then derive the proposal of a “virtual imperative” (Chapter 4.9). The interface has already been discussed as a central aspect of digitality. Under the heading "Interface View", a technique will be presented which artistically addresses its presentation and use (Chapter 4.3.2). In the context of the “post-internet” two artistic practices will be presented which consciously incorporate the effects and characteristics of the internet in compositional work (Chapter 4.8). Based on the postdigital implications and the potential consequences of digital errors, aspects of deception through digital techniques will then be reconsidered at content level (Chapter 4.6). Finally, the aspects are brought together once again under the overall theme of the change of perspective (Chapter 4.9).

The techniques and compositional approaches presented in this chapter are also to be placed in a historical – i.e. current – context. For this purpose, I describe my techniques more generally in an overview and give examples with several works; here, the intent is to first present the main ideas of my work. I understand my compositional work or the exploration of these questions as a process of artistic research. I try to approach the social-cultural thematic complexes described earlier (Chapter 2) with concrete compositional approaches, as outlined in this chapter. This examination is often not only an artistic description or depiction but rather, an experimental, exploratory process with an open outcome; so that I understand it as an exploratory working method (Chapter 3). From Chapter 6, these compositional approaches will be illustrated with concrete examples and further elaborated.

4.1 Composed Refocussing

“Sensate Focus” is the name of a sexual therapy in which the participants gradually readjust their perception and sensitivity. It is a guided programme, designed to help them to readjust their focus onto specific actions and receptions. "Sensate Focus" is also the title of my composition for musicians and stroboscopic lights from 2014, in which the first step was to experience a readjustment of attention away from the action of making music towards abstract movement, and from pure sound to the visual. Speaking more generally, it is an attention shift from the analogue human musicians onstage to a postdigital perspective, in which the concert situation is rasterized with light into short video-clip-like excerpts from the continuous performances. Accordingly, this title is to be understood symptomatically as an orientation towards digital representation in a non-digital setting. We look at a stage as if we were looking at a screen; we look at the people as if they were GIF loops. The stage setting corresponds to an editing software's compositing process. The programme notes for "Sensate Focus" is also nourished with quotes from a neurobiological publication¹⁹⁶, describing an

¹⁹⁶ Cynader, M.; Berman, N. and Hein, A.: 'Cats reared in stroboscopic illumination: effects on receptive fields in visual cortex', in: *Proceedings of the National Academy of Sciences of the United States of America* 70/5, 1973, pp.1353–1354.

experiment in which cats were reared in a completely dark environment, illuminated by a stroboscopic flash only every two seconds. This resulted in the unfortunate young cats developing almost no perception of the direction and orientation of an object's movement. For them, the world is a sequence of flat pictures, a collage with reduced continuity. The two references for the title chosen here are extreme, slightly provocative examples, intended to highlight the content of the piece and provide us with an introduction to the theme of the induced perception change. Symbolically, the two scenarios stand for techniques of sensitization towards a changed mode of perception and the shaping of our perception by (technical) environmental influences.

In this section, I wish to explain the basic principle of my compositional technique (which I understand to be the creation of a postdigital setting), which is exposed from different perspectives in an experimental or immersive context. Particularly this illumination from different angles and the conscious creation of changes in perspectives are the focus of my work. I would first like to classify this approach in general terms. Its sub-aspects will be discussed in more detail in the following sections from Chapter 4.3 onwards.

4.1.1 Focus in the Art Field

Art is fundamentally a possible means of pointing out and representing social and societal issues and, in any case, bringing about changed perception of such situations. If the topic to be negotiated is, however, directly linked to perception, it is possible that the artwork doesn't simply describe or illustrate a circumstance, but works with the perceptive means itself. For example, whereas an artistic song may deal with interpersonal relationships quasi from the outside, a media art object can be not only descriptive but also self-examined. Examples include "Music for Piano with Slow Sweep Pure Wave Oscillators" by Alvin Lucier, the "Shepard scale" by Roger Shepard, "Mehr als die Hälfte" [More than Half] by Hannes Seidl, the "Risset rhythms" by Jean-Claude Risset, the compositions based on white noise by Peter Ablinger, or the "Lecture about Bad Music" by Matthew Shlomowitz. In all these cases, the audience's perception is involved and the piece's object is realized via the material or medium itself. It accordingly concerns not a description, but rather an implementation. Furthermore, as Wolfgang Welsch points out, art is particularly capable of depicting the plurality of an increasingly complex society and making its contradictions perceptible:

Reality-based thinking today has to face up to a reality that ... is characterized by plurality. For this, aesthetic thinking inspired by artistic experience is particularly competent. Because art is an exemplary sphere of plurality. It demonstrates its structure in detail as well as in its entirety, and the catalogue of norms of such a

*plural basic constitution can be read more clearly and more evidently practised here than elsewhere.*¹⁹⁷

In Welsch's postmodernism, the staged comparison of perspectives or the contrasting representation of perspectives regarding a situation is a fundamentally established artistic technique (and opportunity). In the twentieth century, conceptual and perceptually questioning works – such as the futuristic sound aesthetics of Luigi Russolo, surrealism, the readymades of Marcel Duchamp, pop art, minimalism or the concentration on silence of John Cage – are examples of how new framings can be set and perception (in the art context) readjusted. These works and trends make it possible to pick up on changed perceptions in society and make them tangible, alongside a progressive understanding of art. In the further course of the twentieth century, re-contextualisation and remediation¹⁹⁸ continued to be used and differentiated as focusing techniques. The spectrum of approaches is so broad that only a few practices can be mentioned here as examples. The trend towards self-reflection and perspective comparison has become firmly established, particularly in contemporary theatre and related disciplines: the technique of highlighting a situation in differing ways is found in post-dramatic theatre (for example, in the works of René Pollesch) or in multimedia music theatre (for example, in the video operas of Michel van der Aa). In both cases, video technology is used to break up a narrative and to set a technical, factual antipole as a contrast. Manos Tsangaris regularly stages works (e.g. "Abstract Pieces") which enable a situation to be experienced from different perspectives: here, forms of presentation are often juxtaposed, varying the parameter of distance. Hannes Seidl and Daniel Kötter also create music theatre productions (e.g. "Ingolfs Oper"), which position and juxtapose a theme's different formats, perspectives and narratives.

If one now looks more specifically at postdigitality, the case in question, it is characterized by its location at the dividing line between analogue and digital. Thus, multimedia or intermedia works are ideally suited for the implementation of themes from this context. In this art form, technical and digital contents and media are set in relation to an analogue stage situation involving physical musicians or a human audience. In this way, the friction of the analogue and digital world is already pre-programmed. Of course, the mere use of media is not enough to classify it as postdigital. If a video is added, simply as an illustration to an orchestral work, or if an ensemble accompanies a visual work as a film score, this postdigital effect may not be present. As soon as the two contents enter into an integral relationship

197 "Wirklichkeitsbezogenes Denken muss sich heute einer Wirklichkeit stellen, die [...] durch Pluralität gekennzeichnet ist. Dafür ist ein durch Kunsterfahrung inspiriertes alsthetisches Denken in besonderer Weise kompetent. Denn die Kunst ist eine exemplarische Sphäre von Pluralität. Sie demonstriert deren Struktur im einzelnen wie im ganzen, und an ihr kann man den Normenkatalog einer solch pluralen Grundverfassung deutlicher ablesen und evidenter einüben als anderswo." Welsch, Wolfgang: *Das Ästhetische Denken [Aesthetic Thinking]*, Stuttgart: Reclam, 1991, p.111.

198 Kwastek, Katja: 'How to Be Theorized: A Tediously Academic! Essay on the New Aesthetic', in: *Postdigital Aesthetics*, David M. Berry and Michael Dieter, London: Palgrave Macmillan, 2015, pp. 72–85.

going beyond accompaniment, a spectrum of possibilities opens up for thematising their mutual influence. Since the 2010s, practices have established themselves in contemporary music taking a multi-perspective view of a technically mediated setting. The use of media elements in the concert context has successively given way to coexistence, and the contemplation of the resources and their (cultural and social) connotations has become increasingly important. For example: in Brigitta Muntendorf's piece "iScreen, YouScream!" , the performers are first shown in a YouTube vlogger perspective, to contrast this view with a presentation of the real musicians onstage. In "Third Space", Stefan Prins explicitly creates a setting that the audience can perceive twice in succession: once via a screen, and once directly surrounded by the musicians. Pierre Jodlowski, on the other hand, combines in "Outerspace" a physical level, taking place on stage, and a video level, both levels interlocked by the movement and rotation of the musicians. In the course of the piece, video recordings of the stage area create a virtual doubling or overlapping. These pieces are connected by how they create a setting, consisting of space/video/physicality, and contrast this setting with another perspective during the course of the work. A trend can be detected in this selection of current examples, in which the use of electronic means and media follows an altered objective. The media techniques are used here less as an end unto themselves: instead, the means and media become the content of the piece. A further explanation of this development can be found in a discussion¹⁹⁹ by Ian Andrews; containing additionally an examination of postdigital practice within the context of minimalism and media art, also in terms of its self-referentiality, on which Kim Cascone comments too:

*I have always felt that the term minimalism has been misused. It is difficult to create a work which is emptied of content and refers to itself. All artwork references external reality in some way... I find minimalism to be an aesthetic dead end.*²⁰⁰

From this statement, we can conclude that a postdigital perspective is no longer solely engaged with its own medium per se. The pure concentration or exclusive use of the digital has become obsolete at this point. It is the disclosure of the operation modes and implications beyond the medium itself which can represent the potential of this approach. The friction of the digital against an external analogue reality is its point of concentration.

4.1.2 The Focus of my Compositional Work

I perceive post-digitality's thematic areas (Chapter 2.2) as a relevant complex which I try to explore compositionally. I comprehend this as a research process (Chapter 3.2), the starting point of which being often the establishment of a

199 Andrews, Ian: Post-digital Aesthetics and The Return to Modernism. online: <https://ian-andrews.org/texts/postdlg.pdf> (Retrieved:12.1.2020)

200 Turner, Jeremy: 'The Microsound Scene: An Interview with Kim Cascone', in: CTHEORY, Arthur and Marilouise Kroker, 2001. online: http://ctheory.net/ctheory_wp/the-microsound-scene-an-interview-with-kim-cascone/ (Retrieved:12.1.2020)

technical setting (Chapter 3.2.3). This can be realized with virtual video settings (Chapter 4.5 and 4.7), designed with the help of internet solutions (Chapter 4.8), immersive installations (Chapter 6.4.6 and 6.5.3), video-stage interactions (Chapter 6.2.11), hologram-like body representation (Chapter 6.2.2) or by rastering the stage situation (Chapter 4.3.3). An essential element is that technology is initially used to create a digitally mediated or postdigitally influenced setting. In almost all cases, the refraction, contrasting, or inversion of this setting, and the view established with it, are then the actual content or focus of the piece. This can be done by clear breaks within the piece or by a continuous change between two perspectives. I often realize the interruption of a performance by using a digital error aesthetic, as introduced in Chapter 2.2.5 in relation to post-digitality. In Chapter 4.4, I present this approach within the context of my work and in Chapter 6.1, I elaborate upon it. Here, the error serves both as a (postdigital) media tool and as a means of bringing about narrative leaps, content-related comparisons and subjective-rational changes of perspective.

To achieve an effect explicitly involving the audience, or which the audience cannot easily escape, many pieces use an immersive and overwhelming aesthetic. For me, this approach is a way of making the content actually experienceable, so that instead of detachedly watching an event on stage, one either becomes a part of it oneself or, at least, feels physically involved by its intensity (see Chapters 6.3.2 and 6.5.3). It is not uncommon for the setting or the included techniques to be intensified (Chapter 6.1.8), or scrutiny attempted by way of absurd and humorous elements (Chapter 6.3.4).

These juxtapositions aim to offer comparison and to provide an opportunity to correlate and question the perspectives. Sometimes evaluations, connotations or implications already resonate in these contrasts. Nevertheless, the result is more one of ambivalence than of a clear moral statement (see 6.2.12 and 6.3). I aim to enable the experiencing of digitality's different aspects and its consequences in their entirety: in other words, to create a form including both negative and positive aspects. Such insights are rarely formulated theoretically or even verbalized in these pieces. They are not narrated or illustrated. I do not want to make art about this subject, but with the materials themselves. The result should be palpable, tangible and personal. The artwork's message is not one of abstract academic conceptual art, but of a process concerning perception. The action mechanism of the works takes place explicitly at the interaction threshold with the people – be it the visitors or the performers.

These changes of perspective always take place at the dividing line between a digital and analogue representation or interaction. The view consequently switches back and forth between the following poles: a non-technical view of the environment and a representation modelled on a software interface (“Interface View”, Chapter 4.3.2); between a direct view of a human figure and a representation, conveyed by the media and imprinted by the postdigital (Chapters 4.3.3, 6.2.2 and 6.1.9); between a fixed location, for example, the concert hall, and the internet's networked community (Chapter 4.8); between one's own body and a virtually mediated, foreign body (Chapter 4.5); between performers' physically expressive action mode and

a superimposed, virtual, invisible interaction space (Chapter 4.5). On the content level, the perspective jumps between poles such as affirmation and disappointment (Chapters 4.6 and 6.2.9) or between a surface and the background (Chapter 6.1.5). In this representation, an ambivalence and duality stand out, seemingly attaining an increasing presence. In the following chapter, I would like to discuss the extent to which we can or should yet evade this presence in the artistic context.

4.2 Post-Digital Inevitability

Initially, post-digitality in this text has primarily been viewed as a perspective, an observation (Chapter 2.2). Post-digitality could therefore be understood as awareness-raising, concerning the impact of digital factors in our society and perception. This sensitization could well be seen as a more conscious recognition of digital factors (Chapter 2.2.6) or as an evaluation of them (Chapter 2.2.4). Post-digitality is also understood in discourse as an option for action, as a reaction to the previously described contexts. In the following, I would like to give a brief overview of possible interpretations of these action options, and then outline my main focus.

4.2.1 Post-Digital Courses of Action

Post-digitality does not describe an age in which digital technologies no longer exist, but rather have been extensively established and increasingly taken on a formative character. Nevertheless, numerous protagonists, such as Florian Cramer, also describe a practice as postdigital when digital technology is deliberately dispensed with. In this sense, post-digital is then refusal, rejection of digital perfection, distancing from unconditional progress and, last but not least, turning away from marketing.²⁰¹ As described in Chapter 2.2.3, postdigital practice can take place without the use of digital technologies – it is the awareness of the digital level which then makes it relevant. The pure negation of digitality is therefore initially a divergent position. Cramer states:

*While a Thoreauvian-Luddite digital withdrawal may seem a tempting option for many, it is fundamentally a naïve position, particularly in an age when even the availability of natural resources depends on global computational logistics, and intelligence agencies such as the NSA intercept paper mail as well as digital communications. In the context of the arts, such a withdrawal seems little more than a rerun of the 19th-century Arts and Crafts movement, with its programme of handmade production as a means of resistance to encroaching industrialisation.*²⁰²

201 Cramer, Florian: "What Is 'Post-digital'?", in: Postdigital Aesthetics. Art, Computation and Design, David M. Berry and Michael Dieter, London: Palgrave Macmillan, 2015 (= Nr. 24), pp.12–26.

202 Cramer, Florian: "What Is 'Post-digital'?", in: Postdigital Aesthetics. Art, Computation and Design, David M. Berry and Michael Dieter, London: Palgrave Macmillan, 2015 (= Nr. 24), p.13f.

Cramer considers the retreat to analogue or non-digital technology to be naïve and inherently unproductive. A related mode is offline romanticism, for example, which likewise carries a strongly escapist flavour. It could perhaps be discussed whether or not a complete refusal of digital technology can also be seen as a positive-productive means: but this attitude has also become a popular hipster phenomenon, a lifestyle or form of individualization. In this context, the postdigital is reduced to the lowest value. If we again follow Cramer's formula for the use of "old" media, at least a postdigital contextualization results:

Post-digital = 'old' media used like 'new media' ²⁰³

The postdigital component is again clearly recognizable in the consideration of the digital impetus within the use of analogue media. In addition to the return to old technologies, the trend of emulating analogue techniques through digital plug-ins can also be observed.²⁰⁴ Filters and effects are intended to simulate the (supposedly) warmer aura and the originality of an analogue medium (at the very least, with the associated characteristics of authenticity). A related current, implementing a retro-aesthetic with digital means, is the music genre "vaporwave" (see also 4.8). This style, also strongly influenced by net culture, is initially a homage to or an adaptation of primarily background, advertising and easy listening music from the 1980s, realized with plunderphonics techniques. This explicit quotation of a particular past within a digitally processed context evokes an emotional non-space or the illusion of a past that did not exist in this form.²⁰⁵ It is, however, a return to a past in which the future of digitality already existed. Dylan Kilby describes the genre as an exploration of soulless shopping malls.²⁰⁶ Here, in the exploration of virtual, empty simulations (compare with Chapter 2.4), there is both a parallel to the new aesthetic, and to the "hauntology" concept of Jacques Derrida ^{207 208} and later also Mark Fisher ²⁰⁹. Originally, Derrida used the term to describe the recurrence or persistence of a past event (or way of thinking, amongst other ideas) in the present. In Derrida's thinking, the term is initially primarily related to Marxism and its influence upon the Western world. The phenomenon describes a temporal and ontological separation in which the present is replaced by the difference of a "non-place"²¹⁰. Since the 2000s, the term has also been discussed in media and cultural

203 Cramer, Florian: "What Is 'Post-digital'?", in: *Postdigital Aesthetics. Art, Computation and Design*, David M. Berry and Michael Dieter, London: Palgrave Macmillan, 2015 (= Nr. 24), p.21.

204 Cubbit, Sean: 'Case Study: Digital aesthetics', in: *Digital Cultures*, Glen Creeber and Royston Martin, Berkshire: Open University Press, 2009, p.27

205 Grafton Tanner wrote about this in his book *Babbling Corpse: Vaporwave and the Commodification of Ghosts*

206 Disconscious – Hologram Plaza, 7.8.2016.

online: <http://sunbleach.net/2016/08/07/disconscious-hologram-plaza/> (Retrieved: 12.11.2019)

207 Derrida, Jacques: *Specters of Marx*, New York: Routledge, 1993.

208 Lewis, Tom: *The Politics of 'Hauntology' in Derrida's Specters of Marx*, in: *Rethinking Marxism* 9/3, 1996, pp.19–39.

209 Fisher, Mark: *Ghosts of my life: Writings on depression, hauntology and lost futures*, Winchester, U.K: Zero Books, 2014.

210 Gallix, Andrew: *Hauntology: A not-so-new critical manifestation*, 17.6.2011.

online: <https://www.theguardian.com/books/booksblog/2011/jun/17/hauntology-critical> (Retrieved: 12.1.2020)

studies as a musical phenomenon, initiated by Mark Fisher. These nostalgic music genres are associated with vaporwave as well as with retro-futurism or the stylistics of "lost futures." Central here is a temporal (stylistic) and technical uncoupling. This art form is not a pure revival of past musical styles. It is not simply copying or reinterpreting. It is also not a pure refusal of digital technology or the present, because unmistakable practices of the present time are used. It may reflect a rift relating to the present. It is a longing for a past that has never existed. It is a past of the present or a future of the past. In any event, it is the opposite of a cold, digital sound aesthetic; but in other ways, it is at least as empty, as uncoupled, as free and meaningless. These practices evoke a "non-place" in their delocalization, by a further level, of styles belonging to the past's background music.

It can accordingly be concluded that the denial of digital content, languages, and modes can have very differentiated connotations. One could ask even more pointedly: is it at all conceivable that digital content not be used without postdigital connotations? We could also ask whether a naïve use of digital technology – i.e. freed of its implications – is still possible?

4.2.2 Postdigital Imperative

Based on the provocative theory that the digital revolution is already over (see Chapter 2.2) and that society's digitalization has progressed so far as to be taken for granted, I would like to propose the term "postdigital imperative". In my opinion, the phasing out or refusal of digital technology should now only be understood as an active process. Making a film on Super8, writing a novel on a typewriter, watching feature films on VHS or not having a mobile phone is always a statement: it is a conscious rejection of a certain form of technology or deliberately nostalgic escapism.

For myself, I even wonder why I should write a piece of music without electronics. Today, it would seem anachronistic to me to choose a mode of performance that has its origins and roots in the past. In the same way, I now ask myself why I use this or that specific acoustic instrument. I search for the role, function or implication of the acoustic instrument in an extended (technically embedded) setting. A conductor, for example, offers a gestural interface for digital measurement (Chapter 6.2.1)²¹¹; a string quintet is a synchronized movement apparatus (Chapter 6.5.1 or 6.3.5)²¹²; or speaking roles are actors in a digital experiment (Chapter 4.7.3): so I see an acoustic instrument as part of a digital age and want to answer for myself the question: what significance, today, has this instrument's setting on stage.

Of course, even more obvious and central for me is the question of the use of electronics. The use of electronic tools and representations can no longer be an end unto itself. Dealing with digital content has influenced our perception in such a way that ignoring these factors in an artistic work can only be a conscious decision. In my current working process, which is to be presented in the context of this text, a sensitivity to the bridge between these views has developed, and the thematization

²¹¹ See composition "Point Ones" (2012).

²¹² See composition "Scanners" (2013).

of this perspective change takes on the overriding role. In concrete terms, this means that currently, digital technology cannot be thought of without including the accompanying “dis-illusionments”²¹³ (Chapter 4.6). Surveillance, commercialization, omnipresence or manipulability of content are each firmly anchored in the collective consciousness as (not sole) consequences of digitalization. The use of digital media is therefore always a quotation of such connoted techniques. Of course, it is allowed, possible and desirable to create music or art that does not require digital content. But if it does so without the knowledge of the digital world, then it is naïve, historical or ignorant.

The duality or uncoupling between digitality and nostalgia, as described within the context of hauntology, is also an element in my compositions. The hard, often aggressive and digitally cold sounds and cutting techniques are often contrasted with a fragile, “longing” element. At a key moment in the piece “f1”, the statement “Just when you found it, it's gone” is faded in, in front of a green screen; and behind the digital crash noise in “Codec Error” lies an eternally protracted scream, in a continuous half-tone glissando. Perhaps this reflects the search as to how we are now to address our digital life situation, and what this situation does to us. There is no question for me that it shapes us, it is only a question of how we (artistically) relate to it.

The reflection of the postdigital perspective is a consistent and central element of my work. An essential principle is that of making digital contents, conventions or imprints visible. For this, I use settings that allow for the visualization or sounding of digital effects (Chapter 4.3), often choosing a contrasting representation of analogue and digital forms of representation. Two examples for the disclosure of the digital are the revelation of a digital raster (Chapter 4.3.1.3) or a computer interface (Chapter 4.3.2). These processes then also address the disillusionment with technology, both in the sense of a technical disenchantment and in the evaluative sense (Chapters 4.6 and 6.2.9), as also, for example, described by Florian Cramer:

We could metaphorically describe post-digital cultures as postcolonial practices in a communications world taken over by a military-industrial complex made up of only a handful of global players. More simply, we could describe these cultures as a rejection of such dystopian techno-utopias as Ray Kurzweil's and Google's Singularity University, the Quantified Self movement, and sensor-controlled 'Smart Cities'.²¹⁴

213 In the German text, the word “Enttäuschung” is used, not only to describe disillusionment but also the revelation of an illusion.

214 Cramer, Florian: “What Is ‘Post-digital’?”, in: Postdigital Aesthetics. Art, Computation and Design, David M. Berry and Michael Dieter, London: Palgrave Macmillan, 2015 (= Nr. 24), p.24

4.3 Postdigitale Praxis als Werkzeug der Sichtbarmachung

If art is to be assigned a critical function in the context of digital transition, this must be sought in the reflection of the perception modes of technical changes. For if technology and its influences become invisible, then the humanities (and art) must become active, as Cathy Davidson writes:

*When technology is accepted, when it becomes invisible, [we] really need to be paying attention. [...] The more technology is part of our lives, the less we think about it, the more we need rigorous humanistic thinking that reminds us that our behaviors are not natural but social, cultural, economic, and with consequences for us all.*²¹⁵

A decisive function of postdigital art can therefore be to address specifically this invisibility, to reflect upon it, to question it, and ultimately to disclose it.²¹⁶ In this way, mechanisms can be revealed, visual codes cited or, on the contrary, ways found to hide things from digitality. A substantial part of postdigital art is thus concerned with the visibility of technologies. "Disclosure" is meant here in the sense that it becomes fundamentally – and not just visually – perceptible or palpable. The invisibility or disappearance in our perception, as described in Chapter 2.2.1, forms the basis for this. The disclosure of digital contents, logics and programmes is an artistic practice that has become increasingly differentiated over the past ten years.

4.3.1 Overview of Existing Practices

The unveiling of digital gateways and the disclosure of the interface can be classified within several traditions and ways of thinking. As early as Russian formalism, writers began to question how literary texts are created and constructed. Thus, alienation procedures were used to draw the reader's attention to the fact that the text is constructed, and the auto-reflexive character used to indicate its construction process. In his essay "Art as a process", Wiktor Schklowski describes that a literary work is a tool to "de-automate" the habitual patterns of perception of everyday life:

*...precisely to restore the feeling of life, to feel things, to make the stone into stone, there exists that which is called art. Art aims to convey a sense of the object, as seeing, and not as recognizing; the process of art is the process of "alienating" things and the aggravated form process, a process that increases the difficulty and length of perception because in art, the process of perception is an end unto itself, and must be prolonged; art is a means of experiencing the making of something; what is made, on the other hand, is unimportant in art.*²¹⁷

215 Davidson, Cathy: *When Technology Is Invisible, Humanists Better Get Busy*, 2007. online: <https://www.hastac.org/blogs/cathy-davidson/2007/06/07/when-technology-invisible-humanists-better-get-busy> (Retrieved:23.12.2019).

216 In the German text, the phrase "sichtbar zu machen" is used not only to mean "to make visible" but also to disclose or reveal.

216 Šklovskij, Wiktor: 'Die Kunst als Verfahren', in: *Russischer Formalismus. Texte zur allgemeinen Literaturtheorie und zur Theorie der Prosa* ['Art as process', in: *Russian Formalism. Texts on general literary theory and the theory of prose*], Jurij Striedter, 1969, p.15.

The choice of alienation has a slightly different component here than one of simply showing or revealing the structures, but the objectives are the same.

The unveiling of an artworks' software environment is additionally comparable to "breaking through the fourth wall". Found in all artistic genres from theatre to literature and film, this technique has a long tradition and has been used in various eras for both dramatic and comic purposes. The elimination of the invisible dividing line between the audience and the actors or performers is achieved by an interruption of the performance, in which the audience is directly confronted or addressed. A piece of music can interrupt the flow just as well as panning from the action to a (linguistic) contemplation of the piece. The content and form of the piece are then commented upon, at a meta-level, and the illusion of the artwork and fiction is broken. Bertolt Brecht gave this stylistic device the name "alienation effect", and it was an elementary component of his epic theatre. Here, too, we can stay with the concept of disclosure: since, through this process, the inexistent fourth wall becomes directly perceptible, despite its transparency.

The complete presentation of the connected software content and digital processes equally shows overlap with the concept of information aesthetics.²¹⁸ In this view, not only the display of the digital interface gateway is prioritized, but also the use of digital content, media, and, in particular, access to them. As Artie Vierkant describes, the networking, indexing and archiving of digital content can be a decisive criterion:

*The possibilities for these transformations, alternative methods of viewing "media" which essentially amounts to an arbitrary assemblage of data, has thus far been most thoroughly examined in the field of "information aesthetics," a field as distanced from Post-Internet art as it is close to design, cartography, and indexing. Its fault is in its attempt to encapsulate large amounts of data—practical information, experience—into an aesthetic and understandable shorthand. In other words, information aesthetics provides in one object both a representation and the components which make up its source in an attempt to illustrate or arrive at knowledge.*²¹⁹

Just as this small excerpt illustrates the self-portrayal and auto-reflexive processes in art history, the revelation of artistic construction structures and production means was an existing practice long before digitalization. As will be shown, comparable techniques in postdigital modus can be applied to digital media. The changes resulting from this transfer should be of particular interest. Notably different is that, in the postdigital context, the fourth wall does not only run between artwork and audience but more generally between the analogue and digital worlds. The metaphorical fourth wall of the postdigital is, if one likes, an omnipresent phenomenon, which is then taken up in the art context; unlike the

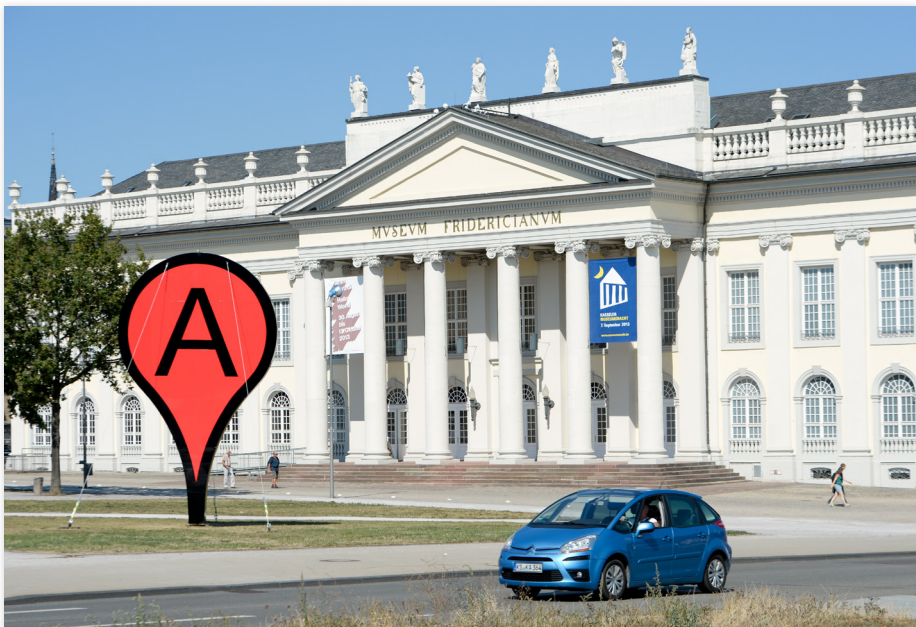
218 Nake, Frieder: 'Information Aesthetics: An heroic experiment', in: *Journal of Mathematics and the Arts* 6/2-3, 2012, pp.65–75.

219 Vierkant, Artie: 'The Image Object Post-Internet', 2010.
online: http://jstchilln.org/artie/pdf/The_Image_Object_Post-Internet_us.pdf (Retrieved: 12.1.2020)

fourth wall in the theatre, it is not erected only for the artwork. Therefore, it may be claimed that the disclosure of digital content is not limited to a purely art-specific context.

4.3.1.1 The Digital Surface in the Physical World

One approach is the integration of digital surfaces or content into the physical world. In "Hello World" ²²⁰, for example, Aram Bartholl places an oversized Google Maps "pin" in front of the Kunstverein in Kassel. The sculpture, several metres high, is an object otherwise exclusively located on a digital map, transferred by Bartholl into the physical world. In so doing, the overlapping of a digital map and the physical world is thematised and made visible. Scott Kelly and Ben Polkinghorne take a similar path with their series "You might also like". Here, large signs are placed in front of landmarks. On one of them are three illustrations under the title "You might also like", suggesting similar places of interest. This view and practice of linking content is initially a clear internet phenomenon, as the visual and interaction habits of a programme are transferred to the physical environment. In her installation "Brush Stroke", Elisa Giardina Papa created a curved object covered with a grey-white chequerboard pattern. This pattern corresponds to the Photoshop code for a transparent – i.e. cut out or exempted – surface. The placement of this object consequently suggests that a section of reality has been cut out and that we are looking at the empty area behind it. Here, too, a view of the physical world is explicitly transformed in such a way as to create the impression that we are looking at a screen or a program surface.



1 Aram Bartholl: "Hello World"

²²⁰ Hello World! video documentation, 14.12.2014.

online: <https://arambartholl.com/de/blog/tag/helloworld/> (Retrieved: 12.11.2019)

Ruben Wu photographs drones equipped with light fixtures, which fly geometric shapes outside in the open, for long exposures.²²¹ The results are bright stripes of light drawing abstract, minimalist patterns in the air, against an ultra-clear, realistic background. This gives the impression of seeing a picture that has been reworked in post-production. It looks as if a digital design has been placed on the naturalistic photo. I use a comparable technique in my piece „Acceptance“ (comparison Chapter 3.2.3.2). Here, a 3D-rendered form is inserted into the end of a documentary film in post-production. It is a floating polygon of light, wafting surreal and unreal over a lake in the Alps.



2 Screenshot "Acceptance"

4.3.1.2 The Digital Surface in Analogue Art

Another way is to integrate digital elements into analogue media or works of art. In his series of works "Word Paintings", Wayne White creates oil paintings upon which 3D lettering is placed against naturalistic backgrounds. This meeting of traditional landscape painting and three-dimensional letters in a digital render aesthetic creates a disconcerting contrast. In turn, David O'Reilly draws the displays of classical computer programs with oil in his series "Software Paintings". After their transfer into the painted form, these programs, with their open, empty, default documents, radiate their own melancholy. In his work, Arno Beck adopts the 8-bit aesthetic, transfers it into paintings and also transfers the digital-genuine practice of ASCII-art into analogue typewriter pictures.

221 Herzig, Ilana: 'In Reuben Wu's Photography, a View of Another World', 1.1.2019.

online: <https://www.artsy.net/article/artsy-editorial-reuben-wus-photography-view> (Retrieved:23.12.2019).

4.3.1.3 Representation of Digital Processes

The postdigital aesthetics propagated by Kim Cascone allowed a shift in focus towards the digital medium and digital processes themselves. The artwork's subjects increasingly became the digital working method and the revelation of the digital storage media. A further aspect is the exposure of the digital tool itself. In "Jennifer in Paradise", Constant Dullaart uses the first sample photo²²² delivered with Photoshop's first version and creates an exhibition consisting only of this image, to which the classic, standard Photoshop effects have been applied. This exhibition thus becomes an exhibition of iconic effects in itself.²²³ Referencing Alvin Lucier's "I Am Sitting In A Room", Patrick Lidell transferred this principle to the YouTube converter algorithm in his video work "I Am Sitting In A Video Room 1000". Lidell uploaded a video of himself to YouTube one thousand times in succession, first uploading, then downloading it, only to upload the result once again. As a result of the repeated uploading and associated conversion and compression by YouTube, the video contained increasingly more artefacts. These artefacts are described for the codec and processing on the video platform. Consequently, the original video becomes increasingly unrecognizable, and as the iteration progresses, the converter artefacts are the leftovers. Similar work is also available with Facebook and Instagram image coders. Hannes Seidl chooses a similar way to visualize the algorithm in his composition "Mehr als Die Hälfte" [More than Half], in which he applies an inverse MP3 encoding process to audio material. In this way, only those parts are made audible that would otherwise be omitted in MP3 encoding. Processes of data moshing²²⁴ or applying software operations to another medium (e.g. applying audio effects to image material) also fall into this category.

4.3.1.4 Closure

An opposing practice regarding visibility is the active process of "making-invisible". This refers to activist processes that pursue the goal of breaking through digital visibility. In this case, it also includes processes of digital tracking, face recognition, computer vision in general, data protection and personal rights in digital space. It is not about the previously mentioned exit from digital society ("going off-grid") or the simple fading out of digitality, but about actions which, in full awareness of the technology, actively deal with it and boycott, satirize or illustrate it.

Meanwhile, there are multitudinous technical and artistic realizations with which to circumvent face-tracking. The Bentel Brothers' "Anti-Face-Recognition-Glasses" combine this objective with fashion design, for example, but various semi-trans-

222 'Jennifer in paradise: the story of the first Photoshopped image', 13.6.2014.

online: <https://www.theguardian.com/artanddesign/photography-blog/2014/Jun/13/photoshop-first-image-jennifer-in-paradise-photography-artefact-knoll-dullaart> (Retrieved: 23.12.2019).

223 Dörig, Raffael: 'Constant Dullaart, Jennifer In Paradise', 2018.

online: <https://www.artlog.net/de/art/constant-dullaart-jennifer-paradise> (Retrieved: 23.12.2019).

224 zu Hünigen, James: 'Lexikon der Filmbegriffe - datamoshing' [Dictionary of Film Terms - datamoshing], 30.01.2012.

online: <https://filmlexikon.uni-kiel.de/index.php?action=lexikon&tag=det&id=7458> (Retrieved: 23.12.2019).

parent masks or headgear with beamer devices also exist that have a similar function.²²⁵ In her video work "How Not to be Seen: A Fucking Didactic Educational. MOV File", Hito Steyerl has specifically dealt with masking techniques. This work functions quasi as a tutorial video. It lies precisely at the analogue-digital border in its design and blends opposing aesthetics into a new whole. In her work, Steyerl engages with digital images as a whole, with their function and value in a digital, capitalist and globally networked system. The disclosure of the inherent properties of digital images (beyond their actual representation) is a recurring theme.²²⁶

The network-based works "I know where your cat lives"²²⁷ by Owen Mundy or "Please Rob Me"²²⁸ by Barry Borsboom introduce the themes of data protection and GPS localization. Both projects visualize publicly accessible photos or Twitter posts and then present them collectively on a map. As a result, attention is drawn to the fact that this content has not been provided by users with sufficient restrictions to access rights. These artistic works find their equivalent on questionable websites, which likewise bundle open content. At the very least, these pursue the goal of illegal use rather than any goal of raising awareness of the issue.²²⁹

In postdigital practice, Josephine Bosma emphasizes the aspect of the post-screen as an action or perspective. She sees a post-screen perspective as a necessary strategy for making essential aspects (of a work of art, of a social phenomenon or a phenomenon through a work of art) visible rather than remaining superficial:

Not only does the screen get overvalued. What is not directly visible is also less likely to get noticed. Additional problems for art in the context of digital media seem to be the visual impermeability or the spatial dispersion of specific works and practices. What I mean with visual impermeability is the presence of somehow 'hidden' structures, like network technologies, code and software processes, and even indirect influences of the Internet or of computer technology, in specific works of art. Spatial dispersion on the other hand points to works in which the various elements of a work are out of reach physically, hiding them in another way.²³⁰

225 Holmes, Aaron: "These clothes use outlandish designs to trick facial recognition software into thinking you're not a human", in: Business Insider, 2019. online: <https://www.businessinsider.de/international/clothes-accessories-that-outsmart-facial-recognition-tech-2019-10-3/> (Retrieved:12.1.2020).

226 Steyerl, Hito: *The wretched of the screen*, Berlin: Sternberg Press, 2012.

227 Mundy, Owen: *I Know Where Your Cat Lives*, 2.4.2020, online: <https://iknowwhereyourcatlives.com/cat/d893c13226> (Retrieved:23.12.2019).

228 *Please Rob Me*, 2.3.2020. online: <http://pleaserobme.com/> (Retrieved:23.12.2019).

229 *IP cameras: Russian Federation*, 23.12.2019. online: <https://www.insecam.org/en/bycountry/RU/> (Retrieved:23.12.2019).

230 Papadopoulos, Georgios: *'Post-Digital is Post-Screen – Shaping a New Visuality – Josephine Bosma'*, in: *post-digital-research*, 2013. online: <http://post-digital.projects.cavi.au.dk/?p=580> (Retrieved: 23.12.2019).

4.3.2 Interface View

The active thematization of the screen and the interface runs through most of my work. In this section, I would like to talk primarily about interfaces realized via a screen. The use of sensor interfaces and their active thematization will be discussed in Chapter 4.5.2. I would suggest the term “interface view” for this approach, whose objective is to achieve an artistic procedure that reveals the interface. This reflects the medial production process of the artwork's content and therefore refers on the one hand to the manipulability and fiction of digitally mediated content and, on the other hand, heightens awareness of a general perception shaped by digital interfaces. Consequently, it also deals with the change in perception of the surface and the content and technical processes hidden behind it, as David Berry also writes:

*Here I am thinking not just of the surfaces created in and through the digital, but, moreover, of the kinds of logics that this inspires more broadly across society and culture.*²³¹

A recurring resource that I use is the establishment of a piece with the help of a stage situation and a video projection. A connection is usually established in terms of content, communication or interaction between the two elements. Increasingly often, I draw attention during the progression of these pieces to their creation process and the programs used (Chapter 6.2.8). First, an intact setting is established in which the video/screen is used conventionally and a coherent, non-disruptive form is created. The fracture of a software representation is at this point to be understood as a computer error (comparison Chapter 4.4), whereby the focus is hence directed to the medium itself. However, it may equally well be a cut motivated by content; a cut that views the content in a detached, non-dramatic way. In any event, the constructive element of the artwork is made clear. It becomes apparent that the content is fiction, a partially conscious deception or manipulation. It also illustrates the more general digital condition: any content is invariably editable and any content can be interacted with. There is no intact structure, nor any final, self-contained documents in these works. This demonstrates that something can be changed or deleted at any time. Moreover, in the pieces "Star Me Kitten" and "f1", new content is always added in some passages in each concert, so that the pieces are never really identical. This underlines the demanding character of the digital contents. The theme: that no digital surface can be trusted (Chapter 6.2).

Of course, the personality of the composer also shines through. In the process, I too become visible, as a formative instance behind the façade of the piece. This has an element of disenchantment, but also something of self-portrayal and self-reflection. In social networks, most people have now become more or less experienced digital self-promoters. Sometimes self-deprecating, these works take this too into account.

²³¹ Berry, David M.: 'The Postdigital Constellation', in: *Postdigital Aesthetics. Art, Computation and Design*, David M. Berry and Michael Dieter, London: Palgrave Macmillan, 2015 (= Nr. 24), p.44. online: <http://www.aprja.net/what-is-post-digital/?pdf=1318> (Retrieved:20.07.2019).

In "Star Me Kitten" and "Hello", the audience and/or the ensemble is also directly addressed. Video interview formats or Skype calls are used for this. The screen doubles here as a communicative interface between author and recipient (Chapter 6.2.11). This procedure also illustrates a currently typical observation: that content is rarely received uninterrupted, and in one piece, but is extended or interrupted by other programs or a second screen.

In the compositions, some programming processes involved in their realization are reproduced in parallel with the piece's content, in a small window at the edge of the screen. The piece hereby becomes a kind of tutorial video of itself. I have called this aspect "Tutorial World" in lectures and texts (Chapter 6.2.10).

In addition to the use of the editing tools, some pieces, such as "f1", also embed the research process of the contents in a tutorial format. In this manner, it is intermittently shown how image content was searched for on the internet, on which page it was found and how it was then released and manipulated.

The use of the artistic technique "interface view" is therefore postdigital, in the sense that it uses digital media, focuses on the media itself and thereby addresses its effects, connotations and implications. It is, therefore, as described in Chapter 2.2.4, a view that includes digitality's (negative) consequences in the use of digital content. These pieces are accordingly realized with an awareness of digital works and their social use. However, postdigital practice does not necessarily have to use digital means, but can also implement the manifestations of digitalization in an analogue setting, as will be shown in the following section.

4.3.3 Composite-View and Analogue Discretization

The omnipresent permeation of the analogue world by the digital world leaves, as already discussed, consequences in human perception and interaction (Chapter 2.2.2). This also explicitly means a perception of the analogue world according to the standards of the digital world. In a series of light-based compositions, I try to bring this circumstance to a head and make it palpable using stroboscopic flashes. In this case, "interface view" means a representation of the physical stage space without video technology, but which nevertheless evokes the visual language of a computer interface and a digital representation.

At the discretization level, this aspect can be found in the visual arts as well as in art music. Gerhard Richter has found transference to the analogue world with his "Richter Window" in the Cologne Cathedral at the pixel level, and with the "11 Glass Panes" at the temporal frame level. In both works, we experience the digital world's rasterization in an explicitly non-computer-related context. In his series of works "Amproprification", Maximilian Marcoll rasters already existing (classical) pieces by scanning them with a digital envelope in the concert context, in real-time, at millisecond speed, as atomic samples.²³² Here, too, an analogue setting (the

232 'Amproprification #6.1', 21.7.2019. online: <http://www.marcoll.de/archives/pieces/amproprification6-1> (Retrieved:21.7.2019).

classical concert format) is looked at from a different digital perspective. Ricardo Eizerik takes a comparable approach in his composition "in steps", in that he transfers a vocal ensemble into an additive synthesizer or an analogue drum machine.²³³ In his series of works "Between Me and Myself", Andreas Eduardo Frank uses light and projection to grid the stage space in an analogue way.²³⁴ Such visual rastering techniques can be seen in the contemporary dance works of Klaus Obermaier (e.g. "Vivisector") or Ula Sickle (e.g. "Atomic 5.1").

In my pieces „Sensate Focus“, „Scanners“, and „Codec Error“, I use short light pulses to spotlight musicians on a black stage for short periods of time. The performers consequently appear in a dark setting only for a moment, during which they usually perform an action (6.1.9 and 6.2.2). Thus, only short segments – i.e. samples – are ever taken out of a continuous whole and displayed. This process corresponds to a discretization of the analogue stage situation with analogue means. Even if the process itself is quasi non-digital, the representation of the figures onstage is very digital and technically artificial. Although controlled by a digital computer, the process could theoretically also be realized with an analogue device. It is the look that has a digital quality. As a result, the musicians onstage are no longer perceived as people, but appear more like a video snippet, a GIF-loop or a film frame. A temporal reduction to a sample takes place, which then stands on its own and is temporally detached. This representation finds its counterpart in a digital editing program, in which video and sound elements can be placed, selected, arranged and transformed next to each other against a black background. The black box of the stage becomes the black box of a computer programme. Consequently, the view of the stage from above corresponds to the prospect of a digital arranging surface: therefore, I suggest the term "composite view". In contrast to the "interface view" the focus here is on the reduction of human musicians to a digital image and their placement in an empty (black) setting. The process hence includes the two steps of analogue discretization and the subsequent representation in a composite representation ("composite view").²³⁵

We take a computer interface as a gateway to a black box, as a self-contained surface. It offers the foreseen modes of interaction, thereby creating an affordance; but it is bound to a fixed GUI with clear user actions. The disclosure and fracturing of this logic can be effectively brought about by the method of digital error, with a glitch, as Hugh Manon also points out:

A computer interface, by contrast, is immersive—we cannot help but misperceive skeumorphic user interfaces such as buttons, drop-down menus and browser windows as bearing a real physicality. We do not expect two windows to become entangled or intertwined. When glitches manifest, they are a sudden phenomeno-

233 'in steps' by Ricardo Eizerik, 21.7.2019.

online: <http://microphonesandloudspeakers.com/2019/05/16/in-steps-ricardo-eizerik/> (Retrieved:21.7.2019).

234 'Between Me and Myself – II', 21.7.2019.

online: <https://www.youtube.com/watch?v=tB41pbo8uI0> (Retrieved:21.7.2019).

235 This presentation also deals with the digital representation of bodies (Chapter 6.2.4, 6.1.9 and 6.3.5) and hologram-like representation (Chapter 6.2.2).

*logical intrusion, a break in the order of logic. The shock comes because when we work with the machine we are contained by it. A glitch ruptures this immersive environment, undercutting the sovereignty of the digital by revealing its pervasiveness.*²³⁶

Digital error usage for this very purpose will be examined in the following section. How can the immersive, closed, opaque digital surface be broken through – and what characteristics can be revealed?

4.4 The Digital Error as a Visibility Tool

The concept of the digital error is integrally linked to the original definition of the postdigital and can be seen as an essential tool, enabling or even provoking a self-referential engagement with the medium and its technologies. In this text and my work, I like to understand the glitch aesthetic and the digital error primarily as tools that make technical surfaces, codes and conventions visible.

Almost without exception, we perceive digital images as analogue images – as a smooth, consistent surface and not as discrete digital parts. An error or a glitch disturbs the data behind a digital representation in such a way that the analogue simulation can no longer remain hidden. That which otherwise would have been passively received – such as a video feed, an online photo or a music recording – is now corrupted, digitally imprinted and distorted. Whether intentionally or accidentally, a disruption suddenly destroys the communication platforms upon which we depend as subjects of digital culture, and which we take for granted.²³⁷

An error can be seen as an “antidote to standardized systems”²³⁸. In such cases, they represent a deviation from a system, directing attention to the system itself. In a technical context, this system can refer to aspects such as network connections, algorithmic computability or digital representation and storage. Since errors lead not only to complete system failures, the error can also show operative and intrinsic operating logic.²³⁹ The gateway to the human being is also directly influenced by the internal digital modes, manifesting itself in requests for action (“affordances” – see also Chapter 2.2.2) and limitations, as Mark Nunes also postulates:

Errors can reveal distinct and overlapping aspects of the technologies that mediate our lives and the designers of those technologies. First, and perhaps most

²³⁶ Manon, Hugh S. and Temkin, Daniel: ‘Notes on Glitch’, in: world picture 6, 2011.
online: http://worldpicturejournal.com/WP_6/Manon.html (Retrieved: 23.12.2019).

²³⁷ Manon, Hugh S. and Temkin, Daniel: ‘Notes on Glitch’, in: world picture 6, 2011.
online: http://worldpicturejournal.com/WP_6/Manon.html (Retrieved: 23.12.2019).

²³⁸ Ingold, Felix Philipp and Sánchez, Yvette (Hg.): Fehler im System: Irrtum, Defizit und Katastrophe als Faktoren kultureller Produktivität [Error in the System: Error, Deficit and Disaster as Factors of cultural Productivity], Göttingen: Wallstein-Verl., 2008, p.12.

²³⁹ Nunes, Mark: ‘Error, Noise and Potential: The Outside of Purpose’, in: Error, Mark Nunes, New York: Continuum, 2011, p 3.

*fundamentally, errors can reveal the affordances and constraints of technology that are often invisible to users. Through these affordances and constraints, technologies make it easier to do some things, rather than others, and either easier or more difficult to communicate certain messages. Errors can help reveal these hidden constraints and the power that technology imposes.*²⁴⁰

The glitch's manifestation occurs at the interconnection of the analogue and digital. It can be argued (see above) that the glitch destroys the analogue appearance of digital content. The inclusion of the raw and erroneous in a clean digital representation could also be interpreted as analogue. But the manner of glitch is in itself completely digital and occurs in explicit awareness of the digital, as Hugh Manon states:

*Although it brings together analog and digital modes, glitch is a not at all a refusal of that binary. Glitch is very much a practice situated within digital culture, and with full knowledge of its difference from analog. Glitch is combinatory, but (self-evidently) not a blending or dissolution of the two signal types.*²⁴¹

Furthermore, Nunes also describes the error as a corrective in society and the economy. It can be understood here both as an activistic, artistic corrective, which questions a controlled system. Paradoxically, however, the error function is also a component of system optimization and not automatically subversive and critical in every case:

*In effect, in the growing dominance of “the network” as social space, we are witnessing the transcendence of a social and cultural system that must suppress at all costs the failure to communicate. This system operates within a paradoxical moment of maximum flow and maximum control. Error, in effect, serves its purpose as a corrective—what keeps purpose on purpose and tasks on goal.*²⁴²

Benjamin Hill then derives from this an explicit mandate for activists (and artists). Hill describes that the task now is to make technology and its properties visible, exposing the black box and revealing the intentions of the people who created the digital system:

240 Hill, Benjamin Mako: 'Revealing Errors', in: *Error: Glitch, Noise, and Jam in New Media Cultures*, Mark Nunes, New York: Continuum, 2011, p.29.

241 Manon, Hugh S. and Temkin, Daniel: 'Notes on Glitch', in: *world picture* 6, 2011.
online: http://worldpicturejournal.com/WP_6/Manon.html (Retrieved:23.12.2019).

242 Nunes, Mark: 'Error, Noise and Potential: The Outside of Purpose',
in: *Error*, Mark Nunes, New York: Continuum, 2011, p 5 ff.

*Scholars and activists must do more than contextualize and describe technology. They must first render invisible technologies visible. [...] These errors can reveal several important features of technologies connected to the power that it, and its designers, have over users. In particular, these examples can speak to the power of technological affordance constraints, technologies that act as intermediaries, and the technology that uses "black boxes" in explicit attempts to hide the technology in question. In all three cases, errors can also reveal the values of the technologies' designers.*²⁴³

4.4.1 Glitch Art

The influences of "glitch art" can be traced back to the Futurists and Luigi Russolo's manifesto "L'arte dei Rumori" at the beginning of the twentieth century. The use of mechanical noise apparatus found its origin here. Faulty technology was then repeatedly used by artists throughout the twentieth century. Examples include Bruno Munari ("Movimento d'Arta Concreta"), Franz Walther, Christian Marclay, Nicolas Collins and Yasunao Tone. "Glitch art" as a digital software phenomenon is specifically influenced by the history and mindset of hardware-circuit bending, which was introduced by Reed Ghazala in the 1960s. Artists explored the sonic qualities of electronic noise by modifying guitar effect pedals and electronic children's toys, building new instruments from electronic waste and using existing equipment in unexpected ways. These approaches were used increasingly in the late 1990s and early 2000s in the software VJ context. The transition to software modification took place through the use of digital storage media (e.g. CD edits by Markus Popp under the alias "Oval"). Instead of manipulating toys and consumer devices, programs were now edited and used contrary to their intended purpose. With edited programs or their unconventional combination, glitch artists could, for example, manipulate an image file in such a way that a digital inscription was burned onto a photo's flawless surface and the numerical structure of the file became obvious.²⁴⁴

A wide range of software-based approaches to glitch art has become established: prominent among these is the technique of data moshing, where false formats are loaded into programs; for instance, photos edited in sound editors, music edited in Photoshop, an album of data recorded as sound, video files edited in text editors. The post-media turn is also indirectly noticeable here, according to which digitalization is said to make differing media more similar by their reduction

²⁴³ Hill, Benjamin Mako: 'Revealing Errors', in: *Error: Glitch, Noise, and Jam in New Media Cultures*, Mark Nunes, New York: Continuum, 2011, p.40.

²⁴⁴ Manon, Hugh S. und Temkin, Daniel: 'Notes on Glitch', in: *world picture 6*, 2011. online: http://worldpicturejournal.com/WP_6/Manon.html (Retrieved: 23.12.2019).

to numerical representation.^{245 246} Digital software levels the difference between traditional media formats²⁴⁷ and these techniques exploit this phenomenon. Artistic use according to the “generation loss” principle is one technique that likewise exposes program structures. This term refers to the qualitative loss arising from repeated use of a process or storage medium ("Video Room 1000", "Sitting In Stagram").

Other examples include operating systems with glitches ("Satromizer OS" by Ben Syverson and Jon Satrom), glitched fonts (Antonio Roberts' "Dataface"), a glitch programming language (Daniel Temkin's „Entropy“), glitched wikis and a variety of tools, from the handy "n0tepad" (Jeff Donaldson and Daniel Temkin) to Anton Marini's automated tools that create glitch-like visuals for live performance.²⁴⁸

245 "In der allgemeinen Digitalisierung von Nachrichten und Kanälen verschwinden die Unterschiede zwischen einzelnen Medien. Nur noch als Oberflächeneffekt, wie er unterm schönen Namen Interface bei Konsumenten ankommt, gibt es Ton und Bild, Stimme und Text. Blendwerk werden die Sinne und der Sinn. Ihr Glamour, wie Medien ihn erzeugt haben, überdauert für eine Zwischenzeit als Abfallprodukt strategischer Programme. In den Computern selbst dagegen ist alles Zahl: bild-, ton- und wortlose Quantität. Und wenn die Verkabelung bislang getrennte Datenflüsse alle auf eine digital standardisierte Zahlenfolge bringt, kann jedes Medium in jedes andere übergehen. Mit Zahlen ist nichts unmöglich. Modulation, Transformation, Synchronisation; Verzögerung, Speicherung, Um-tastung; Scrambling, Scanning, Mapping - ein totaler Medienverbund auf Digital basis wird den Begriff Medium selber kassieren. Statt Techniken an Leute anzuschließen, läuft das absolute Wissen als Endlosschleife."
[In the general digitalization of news and channels, the differences between individual media are disappearing. Sound and image, voice and text are now only available as surface effects, as they are known to consumers under the beautiful name Interface. The senses and the sense become dazzling. Their glamour, as created by the media, survives for an interim period as a waste product of strategic programmes. In the computers themselves, however, everything is number: image-, sound- and wordless quantity. And if the cabling of previously separated data streams brings them all together in a digitally standardised sequence of numbers, each medium can merge into any other. Nothing is impossible with numbers. Modulation, transformation, synchronization; delay, storage, keying; scrambling, scanning, mapping - a total media network on a digital basis will take the term medium itself. Instead of connecting techniques to people, absolute knowledge will run as an endless loop.]

Kittler, Friedrich: Grammophon, Film, Typewriter, Berlin: Brinkmann & Bose, 1986, pp. 1-2.

246 "No single medium is dominant any longer; instead, all of the different media influence and determine each other." This condition is portrayed as the conciliatory climax of a struggle spanning the history of arts and sciences ever since the ancient Greece."

Weibel, Peter : 'The Post-Media Condition', in: Metamute (2006).

online: <http://www.metamute.org/editorial/lab/post-media-condition> (Retrieved:20.7.2019)

247 "A possible explanation is the so-called post-medium condition. Most computer softwares use elements from traditional media as a graphic user interface: the design of word editing programs is derived from typewriters, digital audio workstations from tape machines, video editors from analog film editors, etc. Underneath this representational layer, however, all medium-specific elements which the interfaces still suggest exist have dissolved. From a technical point of view, all information looks the same and is interchangeable at the data level. With a few simple tricks I can import a sound file into a photo editing program and look at it as a visual representation of the same data, or – vice versa – I can listen to the noise my favorite cat photos produce when I import them into a sound editor."

Cicilliani, Marko: 'Music In the Expanded Field – On Recent Approaches to Interdisciplinary Composition',

In Darmstädter Beiträge zur Neuen Musik 23 [Darmstadt Articles on New Music],

Michael Rebhahn and Thomas Schäfer, 2017, p.24.

248 Manon, Hugh S. and Temkin, Daniel: 'Notes on Glitch', in: world picture 6, 2011.

online: http://worldpicturejournal.com/WP_6/Manon.html (Retrieved: 23.12.2019).

Several other examples, such as Helmut Smit, David O'Reilly, Arno Beck and Google Map glitches, can be found in Chapter 6.1.

Within the context of music, a glitch is certainly most prominent in experimental electronics. Entire labels, such as Mille Plateaux, Scape~, 12K or Raster Noton, and artists like Ryoji Ikeda, Alva Noto, Kit Klayton, Oval, Kim Cascone, Pole or Pan Sonic have been established around this genre. A clearly identifiable sound language was formed here, with overlaps to genres like "clicks'n'cuts", "glitch hop", and "noise". This style has also found its way into contemporary composition and can be found more and more regularly in the generation of younger composers. This language asserts itself similarly to Helmut Lachenmann's "musique concrète instrumentale" playing techniques and has to endure the same questions of relevance and impact in the process. Prominent representatives from contemporary music include Stefan Prins; in his piece "Generation Kill" musicians are projected onto semi-transparent gauze in a glitch aesthetic. Matthias Kranebitter, Martin Schüttler, Kaj Duncan David, Andreas Eduardo Frank and Marko Ciciliani also make use of this style.

This aesthetic has a long tradition, and it can be asked what its prospects are and to what extent this method is still relevant. A fundamental development can be recorded in that the playful DIY character of the glitch from the circuit bending scene has changed. This practice often had something anarchic, but also infantile about it. Although the modification of children's toys can be understood as a criticism of consume-obsessed capitalism, it always had something of an amateurish aura. The transfer to the digital software space does not change anything fundamental about this at first. Here too, a glitch, e.g. as a jump in a lo-fi bit representation, can be more like a reduction to something naïve. A nostalgic moment sometimes resonates here, too. As described in Chapter 2.2, however, the use and presence of digital content and media have changed fundamentally, and so the devices in which a fault occurs are also of a different relevance. Most people today are able to grasp the direct and personal impact from errors in computers, mobile phones, ATMs, bank servers or data centres. By now we can imagine the influence these malfunctions have on our personal lives. Additionally, the devices have taken on a new closeness and intimacy, more connected to the world we live in. So it is conceivable that perhaps only now – in advanced post-digital age – the digital error is relevant. This can be refuted by the assumption that this technology's consistent development and introduction into the mainstream will lead to a habituation effect. If glitch becomes a quote, a hipster aesthetic or a standard effect, then the power of such disruption is naturally lost a little in the process. If, however, glitch is understood not so much as a visual or sonic effect, but as a means of breaking with content, then it is possible, even or especially today, to argue for an application of this aesthetic. Hugh Manon says about this characteristically:

*Glitch art does not –dirty up a text, but instead undermines its basic structure. Glitch damage is integral, even when its effects manifest at the surface.*²⁴⁹

249 Manon, Hugh S. and Temkin, Daniel: 'Notes on Glitch' in: world picture 6, 2011.
online: http://worldpicturejournal.com/WP_6/Manon.html (Retrieved:23.12.2019).

4.4.2 Analogue Glitch Art and Surface Error

In my compositional practice, the digital error, the glitch aesthetic and the interruption of a setting play a central role. Regarding this, I would like to present here two of my basic approaches. One is the transfer of a digital error into an analogue (and thus postdigital) situation, the other is the use of the error as a compositional tool of interruption and for viewing behind the surface layer.

I was already being socialized with this music as a teenager, and it is one of my musical origins. Ever since I began making music with computers, my work method has been characterized by cutting, copying and pasting procedures. Working with hard cuts, digital artefacts and the emphasis on "clicks" and "cuts" was an almost natural language for me. This was also the result of a very studio – or music production-oriented – policy, which had a decisive influence on my musical procedure in the first years. For me, it was never about simply recording acoustic pieces or producing naturalistic mixes or illustrations. The artificial digital product had always been my focus from the beginning. The contrasting of field recordings with digitally emulated soundscapes was a common practice of mine. From early on, I always let the fact that it was an artificial production shimmer through in the pieces, albeit mostly by intuition. Tracks were suddenly switched or broken off, or sounds looped in a clearly recognizably digital form. As already mentioned, the glitch aesthetic has become more and more mainstream since that time (the mid-1990s). In many programmes, it is already a standard effect which can be used for embellishment. I still enjoy this tonal language – perhaps almost with nostalgia – but for me, the reason for its further use is actually more like a tool, and not so much as a sonic-visual stylistic device.

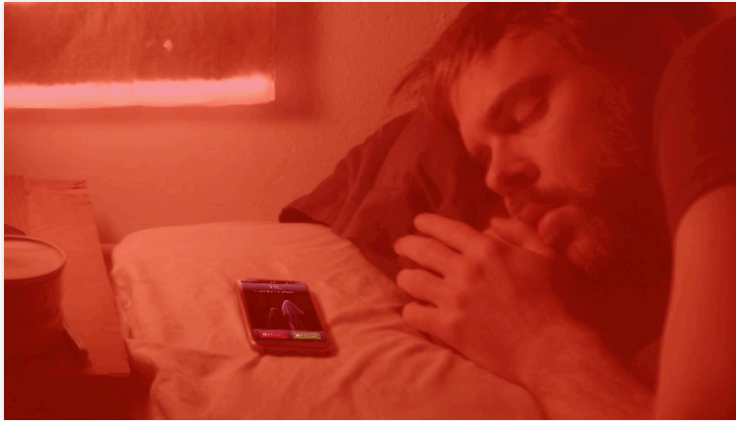
The postdigital use of the error first focused on the digital medium, revealing its structure, storage characteristics and nature. An interpretation of the postdigital perspective is, as described, also the application of digital operations and modes to the analogue world. An artistic approach I derive from this is the simulation of digital errors in a physical, non-digital context. This method could therefore also be called "post-post-digital", as it detaches the digital medium's self-reflection from itself, illustrating it in the analogue. In "Sensate Focus", the performers' artificial playing movements are spotlighted in short intervals to give them a machine-like, defective representation. They resemble digitally cut, arranged, defective versions of a human being. This approach is further exaggerated in the composition "Codec Error", where too, onstage musicians are lit up by flashes of light. In this case, the musicians are illuminated from different directions with varying colours in very brief intervals. As a result, the light captures them from changing angles during the progression of a movement and with alternating colours. If, for example, the arm is moved quickly from top to bottom, the result may be that, in its uppermost position, the arm is illuminated red from behind, a few milliseconds later green from the left, and then blue from the right. As with frames in video editing and colour planes in image processing, the movement is broken down into its individual parts. Of course, this impression is basically familiar from stroboscopes – but not in the colour shift, the lighting angles and the millisecond timing. This effect analogously emulates video glitch processing by suggesting RGB frame offsets. (The technical procedure is described in more detail in Chapter 6.1.9.) This effect is actually a

clearly technical one and inevitably bound to a screen and a video signal. It is, therefore, a visual language, which is normally communicated via a computer. The transfer to an analogue stage situation makes this visual language now palpable in analogue and, in so doing, comments on the increasing presence of digital codes and aesthetics in our visual habits. This process can be understood as an intensification. Taken to the extreme is a trend in which representations and perception are increasingly influenced by digital languages. A circumstance we might otherwise experience unconsciously or unreflectively is made perceptible and experienceable. The intensity, urgency and aggression of this representation can also be understood as a reference to the vehement assertiveness of the digital in society. Further explanations of this approach can be found in Chapter 6.1.9.

The second basic use of the digital error in my compositions is to be seen as a tool for interrupting, cutting and breaking through a surface. It is therefore also a function in terms of content, structure or form. Nevertheless, the error is always conveyed in a technical-medial way. So: there is no exclusively musical, theatrical or narrative break or error; but rather, a digital setting is always used and, with the help of digital platforms and tools, a content error always brought about. Most of the applications in my work have a common overlaying theme in allowing a look behind the façade or surface. There are a number of examples, which I would now like to cite.

The error leads to the termination of a program view or program interface. This means, for example, that a PowerPoint presentation breaks off and the system switches from the presentation view to the editing view. Here, the integrity of a presentation is suspended and sovereignty relinquished. A supposedly inviolable surface (and thus also assertion) becomes porous for the view of what is behind it. It is now shown that this content is also constructed and that it can be edited and changed. It also gives an insight into a less ordered, less clean version of what is shown, and has connotations of injury. The unintentional disclosure of content is initially associated with fear. A similar approach is used by pieces that quit and interrupt a coherent video projection, referring here to the interruption of a media setting established in a concert.

Another recurring element is the use of green screens and the sudden disclosure of the procedure, caused by errors. By definition, the green screen is intended to be hidden, and its appearance, or the artefacts of faulty colour-keying, are inevitably interpreted as a defect. The appearance of a green screen is a process visually connoted as an error, inadvertently revealing the production method and fiction of the scene. Thus, this process has something of a sense of "dis-illusionment" in that an illusion is removed (Chapter 4.6). A view of an empty, virtual world is consequently opened up, in addition to showing the scene's composite mode. The green screen room is the modern technical implementation of a "nothing". Like the grey and white chequered background of an empty Photoshop document, it is the postdigitally visualized symbol of a "non-space", a place where nothing is located. It is a place where people, objects and scenes can be collaged and put together at will. Along with the analogue "composite view" (Chapter 4.3.3), this is a representation using the actual digital means themselves.



3 Video-Still "f1"

In some pieces, the interface of digital terminals itself is also deconstructed and broken down into its components. In "f1", a mobile phone is shown, but in course, its display is proven to be retouched. At this point, the physical mobile phone in the video recording and the video retouched on the surface (with the interface of the mobile phone) are separated from each other. A complete uncoupling of physical and digital object underlines the device's black box character. The simple separation of the screen content from the object makes clear how much interaction with the technical interface is limited to the surface, and how little access we have to the black box behind it. In "Star Me Kitten", a similar process is executed with a desktop computer. Here too, the screen content and the mouse cursor are separated from the physical object of the screen. A similar effect is thus achieved. Both pieces embed these processes in dreamlike, unconscious or overwhelming narratives. On the one hand, this creates a metaphor of obscurity and misunderstanding – but it also constructs a space in which everything is theoretically possible. Here, the subjective narrative strand is also partly a metaphor for a digital technology, which is precisely what makes it so distinctive: it is only visible to us on the surface and is potentially omnipotent. The nightmarish sequences of these pieces also allow a critical reading of this situation. However, the connection between content and technique in these pieces is by no means unidirectional: the techniques are certainly used to the same extent as a metaphor, to implement the subjective and emotional narratives. It is therefore a fusion and interpenetration of these two aspects. This vanishing border between the worlds is the subtext of the pieces and should be experienced as an intoxicating effect.

I see the relevance of the digital error's usage consequently in its ability to be used as a tool for disclosure.²⁵⁰ I do not (only) use it as a digital sound or video effect, but try to use it both to illustrate the digital imprinting of visual habits in the analogue world and as an editing tool, to create a disclosure between two opposing worlds. These worlds are initially the analogue and digital, but in the next step, an

²⁵⁰ The German word "Sichtbarmachung" [making visible] is translated here, as elsewhere, to not only refer to visualisation but also to revelation of content.

entire subsequent series emerges of implicitly and explicitly contradictory pairings. I would like to choose the paraphrases “virtuality“, “uncoupling” and “deception” as generic terms for these antagonists and discuss them in more detail in the following sections.

4.5 Virtuality and Uncoupling

This text has addressed the permeation of the digital and analogue in the post-digital context in various ways. Technology's visibility and invisibility in the physical world was also explored, and, peripherally, the themes of disillusionment, reality and virtuality touched upon. These terms will now be discussed in detail within the postdigital context and in the approach of making visible and perceptible.

The previously discussed permeation of digital and analogue is not to be understood as equating or levelling their differences. It does not mean that analogue and digital are transformed into one – only that the interconnection increases. Figuratively speaking, one could talk about two levels which are brought together and from which we perceive or hide different aspects. In many cases, there are two coupled systems which are made to overlap in this fashion. This is done, for example, through interfaces, GPS coordinates, motion tracking, face tracking, “internet of things”, and computer-based tools. The further this (technical) development progresses, the more integral the linking and the accuracy of it should become. This overlapping then affects the aspects of virtuality and simulation under discussion.

I have introduced the visualization of digital content as a postdigital tool. This approach can be varied and specified in terms of the label's virtuality, simulation and reality. The uncoupling of the analogue and technically mediated world can be understood as an (artistic) practice that separates the processes of overlapping and connecting again and consequently makes them tangible and criticisable.

In a technical development which seems to pursue a goal of increased coupling, the concept of uncoupling must also be understood within the already introduced context of error. The coupling's breakdown fulfils the already presented criteria of a reflection of the underlying system.

Very concretely and referring to my compositional practice, I would like to discuss the topic of uncoupling in three contexts: first, fundamentally concerning reality and authenticity; then, on the one hand, concerning the uncoupling of instruments from gestures; and, on the other, dealing with the uncoupling of physical forms in VR settings.

As intriguing as this thematic complex is, its standpoints, historical and philosophical connotations, and implications are extensive. Given the danger of simplification and definitive incompleteness, I would nevertheless like to position this complex of themes relative to my artistic practice and refer to further literature on the specific subjects.

4.5.1 Fundamental Terms

A. (Plurality of) Reality

In discussing what is true, real or authentic in a digitally mediated world, we are picking up on a philosophical discussion which has already discussed these issues intensively even before technical progress was made. The wide range of philosophical and scientific standpoints shows how difficult it is, even without digital media, to find a general definition and to give binding names to the essential aspects of the construction of a reality.

By "true", philosophy generally refers to the totality of all that which, as a given, can be perceived and experienced by us at all, or which can become the object of our reflection. In contrast, "real" describes something that is the existence of a thing, its real mode of being.²⁵¹ It can, however, certainly be stated that – perhaps in different specifics – even before virtualization and technical permeation, the concept of "pure" reality, without constructivist, psychological, biological, social imprints and influences, had served its time, as too, Wolfgang Welsch observed:

*Reality was virtual to begin with*²⁵²

The real can thus be understood as a layering of different levels of imprinting and influence, which may complement or even contradict each other:

*'Reality' – where traits like naturalness and reliability are prominent – has proven basically to be a depth effect. It implies a variety of layers, and it is the inclusion of sedimentations of various kinds (bodily, emotional, semantic, conceptual, etc.) that creates the effect 'real'.*²⁵³

The metaphorical image of the layered levels can be important for the consideration here because reality and virtuality should not so much be seen as two opposites, but in the postdigital sense, rather as components "lying within each other." Paradoxically, the relationship or hierarchy of construction and reality can now be read in both directions:

*So construction, on the one hand, precedes and, on the other hand, follows reality. – Therefore we had better expect a complex instead of a simplistic architecture of things.*²⁵⁴

Since a more profound explanation here would go beyond the scope of the presentation, I would like to refer to the essay "Wirklich" by Wolfgang Welsch,

²⁵² Welsch, Wolfgang: 'Virtual to Begin With', in: *Subjektivität und Öffentlichkeit [Subjectivity and Publicity]*, Mike Sandbothe and Winfried Marotzki, Cologne: von Halem Verlag, 2000, p.16.

²⁵³ Welsch, Wolfgang: 'Virtual to Begin With', in: *Subjektivität und Öffentlichkeit [Subjectivity and Publicity]*, Mike Sandbothe and Winfried Marotzki, Cologne: von Halem Verlag, 2000, p.20.

²⁵⁴ Welsch, Wolfgang: 'Virtual to Begin With', in: *Subjektivität und Öffentlichkeit [Subjectivity and Publicity]*, Mike Sandbothe and Winfried Marotzki, Cologne: von Halem Verlag, 2000, p.15.

which can provide a good overview of variants of meaning and models of reality.²⁵⁵ Here, the idea of truth in its basic meaning is spoken of as a “total of being, which, independent of interpretations, underlies everything” – thus, the virtual and the trivial is also included. The non-existent, faked, simulated, untrue, and inauthentic things are cited as counterparts. Benjamin Jorissen²⁵⁶ sees art as a cultural form of experience which, on the one hand, can only function based on the distinction “real vs. unreal”, while, on the other hand, the experiences of reality and the non-reality (in the sense of illusion, fiction, appearance) are related to each other. Thus, the borderline is fluid and the fictional is inscribed in the “really” experienced. For art, it can be deduced from this that, beyond the discourses specific to art, it is in a multi-layered and multi-perspective starting position, which can be its chance to depict or reflect:

*(Art as a model sphere for plurality) is not the effect of a fashion, but an expression of the normative constitution of a reality that has become plural.²⁵⁷
 ... Ambivalence is the least that can be expected in the present world conditions²⁵⁸*

The concept of reality will now be examined in the context of virtuality.²⁵⁹

B. (Independence of) Virtuality

Whether the virtual is the opposite of the real or a part of it, or whether virtual objects are to be perceived categorically differently, is likewise the subject of different perspectives and is undergoing historical change. The genesis of the concept of virtuality and its perception over time can be summarized as follows²⁶⁰: for a long time, there was only one use: the virtual was understood as the potential, thus it belonged to the same order as the real. This characteristic goes back to the ontology of Aristotle and extends through the Middle Ages to Leibniz’s extension of the model to epistemology. However, the limitation of this property is obvious. The virtual, if we understand it as potential, has no value of its own; its only destiny is to be realized and thus disappear as virtual. This is an imperative that is inherent in traditional ontology and epistemology: being and cognition should be perfectly

255 Welsch, Wolfgang: ‘Wirklich’ in: Medien, Computer, Realität [‘True’ in: Media, Computer, Reality], Sybille Krämer, Frankfurt am Main: Suhrkamp, 2003, p.169 ff.

256 Jorissen, Benjamin: ‘Beobachtungen der Realität: Die Frage nach der Wirklichkeit im Zeitalter der Neuen Medien’ [Observations of Reality: The Question of Truth in the Age of New Media], Bielefeld: transcript Verlag, 2007, p.17.

257 Welsch, Wolfgang: Ästhetisches Denken [Aesthetic Thinking], Stuttgart: Reclam, 1991, p.112.

258 “[Kunst als Modellsphäre für Pluralität] ist nicht Effekt einer Mode, sondern Ausdruck der normativen Verfassung einer plural gewordenen Wirklichkeit. [...] Ambivalenz ist das mindeste, womit man bei den gegenwärtigen Weltverhältnissen rechnen muss.”

Welsch, Wolfgang: Ästhetisches Denken [Aesthetic Thinking], Stuttgart: Reclam, 1991, p.192.

259 Since the discussion will focus mainly on this aspect, for an overview of the literature of the concept of reality in relation to media I recommend the essay by Benjamin Jorissen ‘Beobachtungen der Realität: Die Frage nach der Wirklichkeit im Zeitalter der Neuen Medien’ [Observations of Reality: The Question of Truth in the Age of New Media], Bielefeld: transcript Verlag, 2007, p.13f.

260 Welsch, Wolfgang: ‘Virtual to Begin With’ in: Subjektivität und Öffentlichkeit [Subjectivity and Publicity], Mike Sandbothe and Winfried Marotzki, Cologne: von Halem, 2000, p.6.

realized, potentiality should be transferred into reality as completely as possible.

It was only later that a different understanding emerged, distinguishing the idea of a status of the virtual from the order of the real. This understanding, prepared by Kant, was significantly further developed by Bergson. However, Bergson did not turn from simple monism to simple dualism but also dealt with the connections between the virtual and the real. Although the real is superimposed on the virtual, a separation remains fundamental.

Welsch concludes that the following orientation can be derived from this historical overview: the relationship between the virtual and the real is a complex relationship that cannot be reduced to a traditional, realistic or postmodern virtual monism. Therefore, he recommends that a differentiation – taking into account both interdependence and distinction – should prevail. In contrast to this, or in an escalation of such understood virtuality, it is worth looking at the concept of simulation.

C. (Complete) Simulation / Hyper-reality

Simulation theory is a central element in Jean Baudrillard's work. The principle of simulation is also generally known in everyday language as a model or as a computer-aided imitation. In a time that generates signs and images to a high degree, the question arises as to what extent these change from having a simulating to having a replacing, integral character. It is based on this question that Baudrillard describes the age of simulation – the world in such an advanced state of visualization that it becomes increasingly impossible to determine the difference between image and reality at all. “The principle of simulation overcomes the principle of reality.”²⁶¹

If there is a (technical) artificial exaggeration or intensification of the “true”, the “real”, one speaks of hyperrealism. Here, either reality and simulation are no longer distinguishable or, in the art form of the same name, exaggerated to such an extent that the natural becomes unreal. As can be read from historical and aesthetic experience, reproduction technology in art and mass culture has equally become an efficient technology for the reproduction of the “ever-same” in the field of social imaginary.²⁶² Jean Baudrillard saw in this a destruction of reality through the hyperrealism of electronic image media, which would exactly duplicate the real; the visual media being in a continuous cycle of reproduction, in which copies are continuously made, from one medium to the next. This process leads not only to the destruction of reality but even to the dissolution of the real itself. It would become tangible and communicable for us only through its similarity to itself. But the “resemblance of the real to itself” is hallucinatory and consequently nothing else but its “unreality”: a suspension of the real.²⁶³ In the simulacrum, the real is

261 Strehle, Samuel: Zur Aktualität von Jean Baudrillard: Einleitung in sein Werk [On the Actuality of Jean Baudrillard: Introduction to his Work], Wiesbaden: VS Verlag für Sozialwissenschaften, 2012, p.98.

262 Schweppenhäuser, Gerhard: Ästhetik: Philosophische Grundlagen und Schlüsselbegriffe [Aesthetics: Philosophical Fundamentals and Key Terms], Frankfurt am Main: Campus Verlag, 2007, p.182.

263 Schweppenhäuser, Gerhard: Ästhetik: Philosophische Grundlagen und Schlüsselbegriffe [Aesthetics: Philosophical Fundamentals and Key Terms], Frankfurt am Main: Campus Verlag, 2007, p.182.

then lost completely, since it consists of a simulation or the original without reality. A detailed history of the concepts of simulation, simulacrum and fiction can be found in Samuel Strehle.²⁶⁴

For Baudrillard, the concept of simulation serves above all as a cypher for the present age and its crisis of representation, and he describes this with four levels of simulation – and the increasing uncoupling from reality²⁶⁵:

1. *it is a reflex of a deeper reality*
2. *it masks and denatures a deeper reality*
3. *it masks an absence of a deeper reality*
4. *it refers to no reality: it is its own simulacrum*

So a shift is observed from the signs (or images) that dissimulate something to the signs that dissimulate that there is nothing.

Contrary to Welsch's proposal, Baudrillard describes a very absolute version of the simulation's intensification and with it a thoroughly black variant of postmodern diagnosis. For him, this also implies that the end of history has already come to pass – and that now, in the hereafter, there is an indifference to and irrelevance of all oppositions and findings. Regarding the information society, in which reality is created by information, he concludes that it has become difficult or impossible to distinguish reality from appearance. Baudrillard assumes that virtuality has an absolutist character:

*Virtuality aims only for prostitution, for the extinction of the real by its double.*²⁶⁶

Whether the simulation will completely replace and erase the real may yet be questioned at this point in time. Nevertheless, the influence of the digital world on the shaping of the physical world is clearly noticeable. Algorithmic services of the gig economy, GPS maps, the organization of goods and rental services significantly shape our environment. Perhaps it is not that the hyper-real takes the place of the real; perhaps the analogue is so very permeated that it is infiltrated and transformed. In Elena Esposito's formulation, virtuality pursues even more far-reaching goals than simulation: it does not want to create false true objects, but true virtual objects.

*For them, the question of real reality is completely indifferent.*²⁶⁷

264 Strehle, Samuel: Zur Aktualität von Jean Baudrillard: Einleitung in sein Werk [On the Actuality of Jean Baudrillard: Introduction to his Work], Wiesbaden: VS Verlag für Sozialwissenschaften, 2012, p.96.

265 "es ist Reflex einer tieferliegenden Realität", "es maskiert und denaturiert eine tieferliegende Realität", "es maskiert eine Abwesenheit einer tieferliegenden Realität", "es verweist auf keine Realität: es ist sein eigenes Simulacrum" Strehle, Samuel: Zur Aktualität von Jean Baudrillard: Einleitung in sein Werk [On the Actuality of Jean Baudrillard: Introduction to his Work], Wiesbaden: VS Verlag für Sozialwissenschaften, 2012, p.100.

266 Baudrillard, Jean: 'Illusion, Desillusion, Ästhetik' In: Illusion und Simulation. Begegnung mit der Realität [Illusion, Dissillusion, Aesthetics' In: Illusion and Simulation. Encountering Reality], Stefan Iglhaut, Florian Rötzer and Elisabeth Schweeger, Ostfildern: Cantz, 1995, pp.90-101.

267 "Für sie ist die Frage der realen Realität ganz und gar gleichgültig."

This intensification raises the question of hierarchy: which object is given priority and which view and imprint will prevail in the digital context. A call to action can be read from this, to deal artistically with this area of conflict.

4.5.2 Uncoupling of the Tools

Using digital tools and forms of presentation, maximum uncoupling on several levels has become possible. Digital content can be freely linked or transferred to one another, gestures and actions can be combined with any causal outcomes and media results. Time and space can be bridged (at least more easily and comprehensively with the digital). This uncoupling – based on the calculability of all digital content – represents the basis for the increased occurrence of virtualization. The digital is quasi predestined for the virtual – for the possible, the alternative and the simulative. First, I would like to consider this aspect in relation to digital interfaces in general and in the musical context in particular. The musical context can be seen here as the use case of a generally valid circumstance in which progressive virtualisation can be observed via digital tools.

The importance of the virtual in the (musical) production process is increasing. Virtual studios, instruments, interfaces can be observed, and there is a trend towards free assignability and linkage.²⁶⁸ This aspect becomes particularly clear in the basic definition of a digital musical instrument: in a digital instrument, there is a completely freely definable mapping level between the input level (interface) and the output level (sound production).²⁶⁹ The freedom, capriciousness and expressivism of this layer can be seen as a metaphor for all linkage levels of digital implementations. In this digital context, there are consequently only virtual settings, an aspect which can be obscured when software emulates or replicates analogue devices.²⁷⁰ In some cases, analogue devices are completely digitally emulated – and completely simulated; in others, the surfaces merely simulate a pseudo-analogue interface. However, completely digital programs and technologies also exist (e.g. granular synthesis) which no longer have any analogue equivalents. In any case, the correlation between surface/interface/GUI/gestural i.e. control and the sonic result is a freely definable one – and consequently optional and arbitrary. For this reason, I have suggested the term "virtual imperative"(Chapter 4.9), to emphasize

268 Michael Harenberg: "Reicht das 'Neue' in der Neuen Musik nicht mehr aus, um zu beschreiben, was derzeit am 'Neuesten' passiert? Angesichts der Virtualisierung von musikalischen Produktionsprozessen bin ich geneigt, die Frage mit 'Ja' zu beantworten." [Is the 'Neue' in new music no longer sufficient to describe what is currently happening in the 'latest'? In view of the virtualization of musical production processes, I am inclined to answer the question with 'Yes.']. In Harenberg, Michael: 'Die Rationalisierung des Virtuellen in der Musik', in: Konfigurationen [The Rationalization of Virtuality in Music', in: Configurations], Sigrid Schade and Georg Christoph Tholen, Munich: Fink, 1999, pp.160–175.

269 Mirando, Eduardo Reck and Wanderley, Marcelo M.: *New Digital Musical Instruments: Control and Interactions Beyond the Keyboard*, Middleton: A-R Editions Inc, 2006, p.3.

270 Harenberg, Michael: *Virtuelle Instrumente im akustischen Cyberspace: Zur musikalischen Ästhetik des digitalen Zeitalters* [Virtual Instruments in acoustic Cyberspace: On musical Aesthetics in the Digital Age], Bielefeld: transcript Verlag, 2014, p.79ff.

that the examination of this (consciously or unconsciously) made interconnection is an elementary part of every digital implementation (and thus, of multimedia art). In taking this point seriously – i.e. the arbitrary nature of the interconnection – we may view this virtualization as a postdigital perspective. The focus is explicitly upon the type of connection – or rather, the fact of the connection: then it is no longer a mere use of the digital tool but addresses its role and connotation. One could conclude from this that it can be artistically meaningful to develop new concepts of embodiment and composition taking this postdigital situation into account.²⁷¹

In my compositional work, I have dealt with sensor-based interfaces in a series of pieces. In these works, I use motion sensors to couple gestures with media content. Within the context of a postdigital perspective, I consider the free linkage (mapping) of the input and output levels of a digital (musical) program to be an essential aspect. This virtual connection of input and output assumes a central role once the pure use of the digital instrument has become the standard. The reflection of this virtuality plays a decisive role in the postdigital context. Here too, I would like to propose the compositional approach as a postdigital tool that can contribute to elaboration and disclosure: in this case, concretely, it is uncoupling; in other words, an untangling or detachment of two levels that were previously coupled and which have permeated each other. In these compositions, this means in precise terms that an uncoupling takes place between the performative, gestural controlling level of the performers' actions on the one hand and the resulting sonic (and visual) results on the other.

This uncoupling of the two levels is, however, not only of a technical nature but also representative of the content transported with it. As a result, a link between cause and effect establishes a logic – even if this logic is freely selectable. In this way, a truth is asserted and, at the same time, a setting established, naturally creating a mental connection (coupling) between an action (a signifier) and what it stands for according to this attribution (signifier). A structure is defined – an assignment; and this coupling's randomness – and that it can be easily manipulated in the digital world – is then the object of uncoupling.

The first step in these works is to establish a connection or coupling between gestures and results. First, the recognition of playing movements and their tonal

271 Jin Hyun Kim: "So wurde es notwendig, sich mit relevanten Körper-Konzepten, die im Kontext der kulturwissenschaftlichen und medientheoretischen Körperdiskurse diskutiert werden, auseinanderzusetzen. Es konnte konstatiert werden, dass in den meist diskutierten Körper-Konzepten wie als Ding vs. Konstrukt die Idee der Trennung der materiellen von der nicht-materiellen Substanz aufrechterhalten bleibt, so dass die Exploration mit einem alternativen Konzept des embodiment unabdingbar wird." [Thus, it became necessary to deal with relevant body concepts discussed in the context of cultural studies and media theory body discourses. It could be stated that in the most discussed body concepts, such as thing vs. construct, the idea of separating the material from the non-material substance is maintained, so that the exploration with an alternative concept of embodiment becomes indispensable.] In: Kim, Jin Hyun: "Embodiment" in Interaktiven Musik- und Medienperformances, in: Osnabrücker Beiträge zur systematischen Musikwissenschaft ["Embodiment "In interactive Music and Media Performances", in: Osnabrück Articles on systematic Musical Analysis], Bernd Enders, Osnabrück: epOs-Verlag Osnabrück, 2012 (= Nr. 21), p.346.

translation takes place. In the next step, the movement is separated from the instrumental playing and the actions are transferred into an artificial action space: from this point on, there is no longer any physical equivalence of movement. In "Laplace Tiger", for example, the playing movement moves progressively away from the drums. Nevertheless, a type of rule system or logic is initially retained, even if it no longer concerns natural playing movements. We understand that sensor-based control is involved. Although the linkage is initially a black box – it is nevertheless intuitively comprehensible and understandable. The aim is therefore to establish a setting in which a mapping is more or less assumed; hence, initially an affirmative use of digitality, and we can adopt this virtual setting as such.

The uncoupling of these established settings accordingly takes place on two levels: technically and in content. Technical uncoupling means a dissolution (caused by errors) of the connectivity rules. Uncoupling in terms of content means that the established convention of the action character is abandoned and rewritten.

Technical uncoupling takes place, for example, in "Point Ones". Here, from one point in the piece onwards, the gestures are temporally decoupled from the tonal results. An increasing latency gradually removes the coupling between gesture and result. What is initially perceived as a small offset then leads to the complete separation of the two events. Similarly, some of the conductor's gestures suddenly no longer trigger sonic events, although this connection was clearly defined at the beginning. The setting's arbitrariness and artificiality are successively demonstrated using the error principle (Chapter 4.4). Whilst previously, the audience's attention was perhaps focused more upon the (electronically supported) gestures' impetus and expressiveness, this section leads to a reorientation and rethinking of the setting. Of further relevance for this aspect is, in this piece, the conductor's changing focus. His conducting movements alternately apply to the ensemble or the computer, thus continuously alternating between a virtual and a physically present ensemble. At times, both levels are additionally completely intermixed. Within this context, the permeation of both layers and the separation of the two levels are of interest.

I have extended these approaches in later pieces such as "Your Fox's, A Dirty Gold", or "Serious Smile". Here, the gestural repertoire plays an even more decisive role, and the combination of gesture and digital connection becomes more relevant. In "Your Fox's, A Dirty Gold", for a singer with an electric guitar and sensors, a catalogue of gestures is constructed, feeding off the hardcore and pop context. The strong, expressive movements support the powerful impetus of the piece and define one of the singer's roles. In the course of the piece, however, the autonomous character of the performance is contrasted and broken. The electric guitar, used in the piece only as a control interface and not as a sound generator, is used as the controller for an electric guitar solo and a feedback passage. In the solo, pitch and fingering position are completely uncoupled from each other, resulting in a feeling of inconsistency. Virtual control level and physical-performative level no longer coincide. This circumstance is less easily understood by the audience in the feedback sequence, but nevertheless, the once anarchic act of uncontrolled noise – epitomizing a musical revolt taking place in the here and now – is transformed into a virtual counterpart. The detached relic of the electric guitar degenerates into a controller and, deprived of its actual function, is held over the singer's head. It

is a demonstration of the actual loss of function. It is a representation of the interconnection level and the simulation. This image begins with the simulation of the real process and then becomes increasingly alienated from the real.

The successive distancing from the simulated performance mode becomes particularly tangible in its characteristics in the passage in which the singer takes a slow-motion bow, like a marionette facing the audience. A dominant and powerful performance turns here into a strangely artificial passage. While once technology obeyed man, here man seems to become the tool of the digital. Speaking on the simulation levels: the simulation of an original hardcore performance moves away, bit by bit, and loses its connection to a real origin. At some point, it suffices itself and abandons the connection. I subsequently understand the contrasting of these perspectives in the piece as an active process of visualization: the demonstration of any digital link and the different modes of simulation.²⁷² The mutual influence of the virtual and the real is also described by Wolfgang Welsch, who also emphasizes the mutual condition:

Likewise when dealing with what is obviously real, we should (at a reflective level at least) be aware of the degree of virtuality entailed by the various sedimentations on which this reality is based. We should recognize – and might even admire – that both age old as well as more recent cultural, and perhaps even specifically personal, fictions are, as it were, frozen in this reality, and that this is how the apparent solidity of this reality comes about. So there is intertwinement between the virtual and the real. They are largely coextensive. Reality is the result of the clotting of virtuality; it is frozen virtuality. If we consider the various degrees of virtuality which are built in reality of every kind, then we may very well say – and this is how I answer the question raised in the heading of this essay – that reality was already virtual to begin with.²⁷³

The aspect of simulation is further intensified in the composition „Serious Smile“, in which three musicians and a conductor are equipped with sensors. The piece begins and ends with a very dense and loud interweaving of acoustic and sound events, piloted and achieved purely by extreme gestures. Two aspects from the piece’s progressive course are to be emphasized here. Firstly, the arbitrariness of the combination of gesture and sound is increasingly taken ad absurdum. Gestures trigger almost any sound effects that depart from the musical stage context and are explicitly selected from Sound FX libraries. Access to a digital sound archive is taking place, quasi within the performance process. Above all, however, the focus shifts at this moment to the possibility of virtually any interconnection. In some cases, the playing movements simulate the appropriate action to the sound, while in other cases the opposite is true.

272 This reflection naturally also touches on the question of the authenticity of the performance and the established persona of the singer. This aspect will be discussed in more detail in Chapter 4.6.

273 Welsch, Wolfgang: ‘Virtual to Begin With’, in: *Subjektivität und Öffentlichkeit [Subjectivity and Publicity]*, Mike Sandbothe and Winfried Marotzki, Cologne: von Halem, 2000, p.20.

The second aspect of the composition is the increasing elimination of acoustic playing actions in its middle section. Instrumental parts disappear completely, leaving only a virtual simulation space controlled by sensors. The previously coupled acoustic and digital levels are, at this point, completely separated from each other, and a strangely empty interaction space remains, in which the musicians control merely virtual sound sources. This process robs the previously energetic setting of its power and dynamics. Strangely enough, the emptier the piece, the more soulless the sound and the more physically irrelevant the movements, the more touching the work becomes. It cannot be said that this transition to virtualization or simulation must necessarily be seen as negative. Perhaps something is allowed in this space that, because of its wear and tear, no longer feels allowed in the physical space. Perhaps it is possible to feel something real in this apparently unreal space?

The comparison of physically experienceable – and thus perceived as “real” – interactions and communications with simulated, virtual content is a continuous theme of my work. Here the question arises as to what is “real” or “true” in this context, and which parts are “faked” or “simulated”. Against the background that digital technologies are allowing deception, manipulation and simulation to a new extent, this question is worth further attention.

4.6 Truth and Dis-Illusionment ²⁷⁴

The reflection and thematization of forms of creation and representation altered by technology in terms of authenticity and reality is an opportunity for post-digital aesthetics. Here, too, a postdigital practice can be understood as a tool of disclosure, revealing²⁷⁵ the complex construction of “true” or “authentic” content in a media context. A work of art can establish a logic or a view and is, therefore, a suitable tool with which to illustrate the mechanisms and processes of digital reality generation. In continuation of the concept of reality and simulation (Chapter 4.5), this chapter will discuss the extent to which the topic of authenticity and reality can be addressed by digital means. As previously described, truth and reality had become a complex and inconsistent concept with constructivist components long before digitalization. The role of the media in the postdigital disillusioned age suggests that this approach should be examined once again in a topical way. It can be assumed that digital media contribute another level to the construction of reality and deception. A work of art realized with digital means now already contains these technical elements within itself by definition and thus has a digital-constructivist character. With this, it establishes (within the artwork) a reality. In an auto-reflexive approach, such a work of art can now use these aspects of truths, logics and identities.²⁷⁶ and make them critically experienceable.²⁷⁶

²⁷⁴ Here, as elsewhere, the German word “Enttäuschung”[disappointment/disenchantment] has been translated as “dis-illusionment”, in order to express the removal of an illusion.

²⁷⁵ The German word “Sichtbarmachen” [Making Visible] has here, as elsewhere, been translated as “disclose”, in order to emphasise revelation.

²⁷⁶ Rusch, Gebhard and Schmidt, Siegfried J. (Ed.): *Konstruktivismus in der Medien- und Kommunikationswissenschaft* [Constructivism in Media and Communication Sciences], Berlin: Suhrkamp, 1997.

As already discussed in Chapter 3.2.3, I create settings in my compositions that always initiate a certain assertion, which is then questioned, abandoned, destroyed or satirized. These are always technically mediated contents, which often thematise the form of representation and interaction itself (Chapter 4.3) and thus respond to postdigital codes. If postdigital is not interpreted in the sense of an analogue approach to the digital, then the term refers to a perspective that is conscious of and critical of the digital. This position therefore often negotiates the negative connotations of digitalization. Among many other topics in my work, this includes primarily the (conscious) deception and manipulation with digital means: here meaning processes of digital and media techniques which can lead to a conviction, a sense of reality or the impression of authenticity. I would like to discuss these aspects against the background of the concept of reality, as briefly discussed earlier on, and consider them in relation to a postmodern, poststructuralist perspective; according to which, sign and image functions are subject to a – technologically intensified – change.

4.6.1 Deception

Essential aspects of my video-based compositions are pseudo-narratives, with a mixture of personal, surreal and partly formal (compositionally structural) elements. These formats always make assertions or create a form of logical progression or convincing façade. The materials here include a wide variety of digital documents, techniques and media such as:

- *FaceTime-Messages*
- *Skype-Calls*
- *Websites*
- *Social Media-Profiles*
- *YouTube-Uploads*
- *Browser-Views*
- *PowerPoint-Presentations*
- *Video-Tutorials*
- *Desktop-Screen-Sharing*
- *Online-Advertising*

Using digital techniques, settings are created that are mediated by media and transport a (supposed) content. In these representations, it is possible to observe a constant alternation between – on the one hand – the establishment of a claimed truth or authenticity and – on the other – a presentation of the content's production process; for example, jumps from lecture-performances, horror film sequences, interviews, documentary sequences, conducting videos and dream passages to software views and all the digital formats described above. I use what I call “interface view”(Chapter 4.3.2) to illustrate this process. This aspect reveals the digital tools and directs the eye towards the digital techniques themselves. But it is also a game with fiction and reality beyond the technical. The constant jumping between the two perspectives leads to a constant balancing of the other. Thus, for one thing,

the claimed narration is devalued or cancelled; it is exposed as something fictitious, constructed. For when we see how the material has been cut together, it loses its original authenticity. Then again, however, the stylization of the annulment process and the production tools' aesthetic use open up yet another form of meta-narrative level, which, in itself, becomes functional and stirring. Through its aestheticization and staging it becomes a narrative of its own and, in a way, similarly credible or convincing. The process of deception, manipulation and construction is equally a part of the whole and not just a negative counterexample. It is consequently not a black and white juxtaposition of two points of view, such as real and fake and true or untrue. They are different modes of construction and/or presentation of reality, and it is not necessarily said that one is better than the other. Rather, attention is drawn to the levels' interpenetration and influence upon one another. It can therefore be understood as a representation of the concept of reality in the postdigital age, as Gerhard Schweppenhäuser also summarizes:

*The real is therefore not in its death throes, but in a state of transformation. The direction of this transformation has been taken over by the (highly real) simulation technology of computer-aided reality production.*²⁷⁷

The media content used in the pieces oscillates between different levels of function or simulation. If we look again at the levels of simulation in Baudrillard's work (Chapter 4.5.1), we find four (simplified) levels: 1) reflection of reality, 2) masking of reality, 3) masking of the absence of a deeper reality and 4) reference to no reality. In these four steps, we can observe an increasing distance from the "real". As the simulation increases, it distances itself further and further from reality. This can also happen in iterative loops; for example, when the stylized social media image of a person becomes a more realistic object than the person himself and then, subsequently, the person imitates his online profile. It is not necessarily essential to go through these steps successively. They can influence and also merge into each other. In the pieces discussed, what I wish to present is the interplay between these levels as something that can be experienced. There is no clear level of simulation or drawing/image function used, but the change between them. In the compositions, I try to let these components appear next to each other and thereby create uncertainty about the form of abstraction or uncoupling one is dealing with. In many places, it should remain unclear whether something real is depicted, is veiled or is completely arbitrary and detached. What can be concluded from this or what does it then mean? "Anything goes" and thus the abandonment of any statement? In a sense, yes and no.

277 "Das Reale befindet sich demnach nicht im Todeskampf, sondern im Zustand der Transformation. Deren Regie hat die (höchst reale) Simulationstechnik der computergestützten Realitätsproduktion übernommen."
Schweppenhäuser, Gerhard: *Ästhetik: Philosophische Grundlagen und Schlüsselbegriffe*
[Aesthetics: Philosophical Fundamentals and Key Terms], Frankfurt am Main: Campus Verlag, 2007, p.187.

4.6.2 Nullification

First, this leads to a postmodern statement according to which, in the words of Lyotard, the decisive moment is the pull towards reflection. Traditional art had relied on a truth that it could reproduce, exaggerate or embellish. In contrast, postmodern art no longer does so. As Wolfgang Iser sums it up, it is based on a veritable nihilism:

*She has recognized that there is no such thing as truth and that painting consequently must not start out from reality but from itself, that it must proceed reflexively, in other words: it must constantly search for the rules of its actions and always carry out new rule experiments. The dramatic experience of a "broken reality" [is] the starting point for the artistic experiments. The bursting of truth was its initial spark. If [postmodern] painting refers to the truth once again, it is precisely to show "how little true truth is;" to put it another way: to carry Nietzsche's lesson of the fictional character of everything true to its extreme consequences.*²⁷⁸

In my work, the constant constructing and deconstructing and the urgency of this process can definitely be read as nullification. It is a mosaic of elements, effectively strung together, which, despite fragmentation, manage to establish a contemporary narration. "Anything goes" however, perhaps does not mean here that anything is possible in a composition but rather, that means and techniques are exemplified which show "anything is possible" and that any truth can be constructed (and deconstructed). With digital media "anything is possible", and postdigital representation takes this to the extreme to question this social circumstance and its influence upon our perception of authenticity. It is an emptying of the meaning of signs, which in my case, however, evoke direct reactions as strong stimuli and, in their urgency, reach the audience personally and emotionally. It is not an abstract, theoretical battle of images that can be coolly reflected upon. Loaded content and signs are used, then collaged.

However, it would be too easy to say that these pieces are completely nullified in their intention. I think their statement (and also their origin) can be described more aptly with ambivalence. The quoted contents, some of which even having personal reference, are not only material with which to illustrate the previously described situation. It is not only about composing the swan song of a truth. The search for an authentic form of expression can nevertheless be found in this pile of broken fragments. One could understand it as a search to find a form of serious

278 "Sie hat erkannt, dass es mit der Wirklichkeit nichts ist und dass die Malerei folglich nicht von einer Realität, sondern von sich selbst ausgehen, mithin reflexiv verfahren muss, will sagen: sich je auf die Suche nach der Regel ihres Tuns begeben und immer neue Regel-Experimente durchführen muss. [Sie bildet] die dramatische Erfahrung einer 'geborstenen Realität' den Ausgangspunkt der künstlerischen Experimente [ab]. Das Zerplatzen der Wirklichkeit war deren Initialzündung. Wenn die [postmoderne] Malerei sich noch einmal auf Wirklichkeit bezieht, dann gerade, um zu zeigen, 'wie wenig wirklich die Wirklichkeit ist', andersgesagt: um Nietzsches Lektion vom Fiktions-Charakter alles Wirklichen bis in ihre äußersten Konsequenzen auszutragen."
Iser, Wolfgang: Ästhetisches Denken [Aesthetic Thinking], Stuttgart: Reclam, 1991, p.87f.

communication in the given setting (from the dissolved reality of devalued signs). Umberto Eco describes the postmodern handling of quotations as an opportunity – whilst aware that signs and forms of expression are used up – but as a form of expression and, as such, the chance to find a serious message, one which is not already devalued by its history:

*Two ideas [could] be finally clarified. Firstly, that the plot could also be rediscovered in the form of quotations of other plots, and secondly, that a quotation might then be less well-behaved and conciliatory than the plot itself...populating the dreams of the readers does not necessarily mean appeasing them, comforting them with conciliatory images. It can also mean to startle them: with nightmares, obsessions.*²⁷⁹

Eco describes, for example, that a confession of love can be freed from hollowness caused by overuse if it is formulated and contextualized as a quotation. In this double masking or irony, according to Eco, such a statement can be reformulated and to a certain extent freed from its legacy (through reflection). This is also how I experience the content I use, often ironically (or humorously), and it is never quite clear how the content should be read, whether directly, ironically postmodern or simply as an exemplary sign for the implementation of theoretical content. In this game with authenticity, I try first to reveal the fiction of authenticity, but I also take it upon myself to transport my own personal content with the same means – and/or to illustrate a process in which I am nevertheless looking for a post-postmodern form of serious expression. On the one hand, this can be understood as a postmodern search for authenticity, as Andreas Kilb describes it:

*The question of authenticity thus becomes the touchstone of postmodern aesthetics. Postmodern works of art can only be cleared of the accusation of being epigonal if their structure does not reflect previous patterns, but reflects the state of epigonal alienation itself, in which the present consciousness is located in relation to all conventions and tenets of past art epochs. Postmodernism as art ex negatione is not capable of a genuine creation of form; the epigonal is its essential principle. Authenticity is granted to it only as a paradox, in the contortion of distortions, with which the alienated subjectivity of the museum forms' marble landscape imprints its traces.*²⁸⁰

279 "Zwei Gedanken [ließen sich] endgültig klären. Erstens, dass man die Handlung auch in Gestalt von Zitaten anderer Handlungen wiederentdecken konnte, und zweitens, dass ein Zitat dann womöglich weniger brav und versöhnlich sein würde als die zitierte Handlung selbst. [...] die Träume der Leser zu bevölkern nicht unbedingt heißen muss, sie zu besänftigen, mit versöhnlichen Bildern zu trösten. Es kann auch heißen sie aufzuschrecken: Mit Alpträumen, Obsessionen." Eco, Umberto: Nachschrift zum Namen der Rose [Afterword to *The Name of the Rose*], Frankfurt a.M.: Büchergilde Gutenberg, 1984, p.77ff.

280 "Zum Prüfstein postmoderner Ästhetik wird so die Frage nach dem Authentischen. Vom Vorwurf der Epigonalität sind postmoderne Kunstwerke nur dann freizusprechen, wenn sie in ihrer Struktur nicht vorgängige Muster abbilden, sondern den Stand epigonaler Entfremdung selbst reflektieren, in dem sich das gegenwärtige Bewusstsein gegenüber allen Konventionen und Gehalten vergangener Kunstepochen befindet. Die Postmoderne ist als Kunst ex negatione zu keiner genuinen Formschöpfung fähig; das Epigonale ist ihr Wesensprinzip. Authentizität wird ihr nur als paradoxe zuteil, im Zerrbild der Distorsionen, mit denen die entfremdete Subjektivität der Marmorlandschaft musealer Formen ihre Spuren einprägt." Kilb, Andreas: "Die allegorische Phantasie. Zur Ästhetik der Postmoderne", in: *Postmoderne: Alltag, Allegorie und Avantgarde* ["The Allegorical Fantasy. On Postmodern Aesthetics"], Frankfurt am Main: Suhrkamp, 1988, pp.84–113.

This paraphrase captures a characteristic aspect of my pieces. It reflects the alienation and paradox of the authentic. But I am looking for something honest in my process. And this honesty is perhaps most likely the inability to communicate content. Therefore, for me, the ambivalence depicted is not merely theoretical, but then, in its entirety, a personal expression. My theme is perhaps most likely to be the search for an expression, the search for authenticity in a time in which signs, functions and media have lost their reliability and unbrokenness. It is becoming apparent that the vocabulary of digital techniques is encumbered and has lost its directness and innocence. These pieces are, therefore, at best, experiments (comparison Chapter 3.2.3), wishing to explore this state of affairs; and this, on a subversively subjective level: and not as a theoretical conceptual experiment. Lyotard describes this stepping out of romanticism as follows:

At the same time, the avant-garde leads the way out of romantic longing, because they seek to represent the non-representable not as a lost origin or purpose in the distance in the subject of the painting, but in proximity, in the conditions of artistic work itself... [They] devote themselves ...to the task of experimenting.²⁸¹

I want to comprehend these settings as experimental starting situations, both in the postdigital research context and in the sense of introspection. In these compositions, I often use means of immersion and overwhelming aesthetics to implement the experimental character and generally to establish a drop height. This often involves an exacerbation of the stimulus density – both in its intensity and in its quantity. Most works are characterized by a high density of images, sounds and information. The audience is deliberately exposed to an intoxicating maelstrom, a “stream of consciousness” or an oversupply of information. This makes it difficult for listeners to escape the flow of the piece. At first one is quasi run over by the content: at the beginning, there is no pausing within the piece, which could provide an opportunity to reflect on the content. The transported content always evokes a certain logic or a (supposed) statement. This can be structural (type and progression of the piece) or emotionally personal (narrative plot lines). The intensity of the audio-visual stimuli can have a similar effect or support these points. This strategy always happens together with the establishment of a media setting. This can consist of video, sensors, light, stage design or gesture repertoire and is always technically mediated. Overall, a setting is asserted and rigorously executed in this way. The intensity of this assertion provokes correspondingly contradictory reactions in the audience – from joyful surrender to outraged horror. This assertion of a logic, a narration, or a truth is always counteracted in the pieces by a break, a mistake or a disconnection. This process should then reflect and thematise the reception of the foregoing information overload. Only by virtue of the immersive

281 “Zugleich führen die Avantgarden aus der romantischen Sehnsucht heraus, denn sie suchen das Undarstellbare nicht als einen verlorenen Ursprung oder Zweck in der Ferne im Sujet des Gemäldes zu repräsentieren, sondern in der Nähe, in den Bedingungen künstlerischer Arbeit selbst. [... Sie] widmen sich [...] der Aufgabe des Experimentierens.” Lyotard, Jean-François: *Immaterialität und Postmoderne [Immateriality and the Postmodern]*, Berlin: Merve-Verl., 1985, p.99..

effect of the pieces is it even possible to establish a real setting that can then be broken: it is a tool, with which a situation that is accepted by the audience and difficult to reject is created; because only that which has been credibly constructed can be torn down afterwards. As it is not intended to be a theoretical treatise, but rather to make this phenomenon perceptible, it is essential to first construct the façade credibly before looking behind it.

The contents, even if deconstructed, still have something “sublime” or “romantic” about them. They are strongly connoted with emotional and personal content (love, loss, death, disappointment, fear), but in the pieces, the role of this content and its sublime character is continuously questioned, and Wolfgang Iser summarizes this as a postmodern technique:

So does the sublime...become the motor of an incalculable series of experiments in possibility and reality. This version of the sublime – its transformation into a series of experiments – is critically opposed to any assertion of finality, to the positivism of the real, to all overt or covert claims to absoluteness.²⁸²

In this context, I would like to cite as an example the piece "f1", in which there is a constant alternation between an overloaded narrative and green screen exposures. This issue is also addressed here in the central text passages of the piece itself:

It's amazing what devices, you will synthesize

This is a clear reference to the fascination of media constructs. At this point, the piece is consequently auto-reflexive. At another place in the piece it says:

Just when you found it, it's gone. Now that you feel it, you don't

Here too – parallel to the construction of the piece – the same thing is transferred to the subjective level. The alternation between the desire to feel and express something on the one hand and the inability to do so on the other here reflects a more emotional disruption. The loaded and striving for the "sublime" is always perceptible here. How can something so seemingly anachronistic be regarded in this context? According to Wolfgang Iser, Lyotard describes the sublime in a post-modern context in this way:

Lyotard does not want the sublime to be understood as edifying, but...experimental... Lyotard does not represent a metaphysics of transcendence but an ontology of incalculable possibilities and the sublime is not to be declined vertically but horizontally and gains critical function precisely through this. For in the diversity

282 "So wird das Erhabene [...] zum Motor einer unabsehbaren Reihe von Möglichkeits- und Wirklichkeitsexperimenten. Diese Version des Erhabenen – seine Transformation in eine Serie von Experimenten – wendet sich kritisch gegen jegliche Endgültigkeitsbehauptung, gegen den Positivismus des Realen, gegen alle offenen oder verdeckten Absolutheitsanmaßungen." Iser, Wolfgang: *Ästhetisches Denken [Aesthetic Thinking]*, Stuttgart: Reclam, 1991, p.92.

*of realizations applies: no work of art is the work of art, no style the style, no approach the approach. Rather, all design moves on a "floor" of nihilism and in a room of unlocked potentiality...This and nothing else means the sublime in the postmodern sense. It is not retrograde, but critical and experimental.*²⁸³

And so too ends the piece "f1" as a space of potential possibilities, as options, as a juxtaposition of elements that allow several levels of interpretation. The piece ends with two sentences that fold the narrative space up again and make the audience into confidants in an illusion:

If you tell somebody else about this piece, then you are lying! Just forget anything you just heard!

4.7 Uncoupling the Body

A digital setting can – as described for example in Chapter 4.5. – be used to create a connection between an input and an output. This virtual link can be used for simulating purposes and can couple analogue and digital levels or components with each other. As an active artistic postdigital tool, this coupling can then be reflected or uncoupled, thus making the essence of this connection tangible. To what extent real and virtual aspects influence and are also necessary for each other, Wolfgang Welsch presents:

*But something similar also holds for virtual phenomena – where artificiality is the prominent trait. The perception of something virtual is not independent of our capacities to experience something real. It is not only by contrast that the horizon of the latter is co-present (with the traits of artificiality taking shape in contrast to comparatively more 'natural' characteristics.) But some of the features and schemes that comprise the real are also an active part of experiencing the virtual – think of such features as space, or time, or bodies.*²⁸⁴

The roles of body and space were also relevant in the analysis of the virtual tools and will now be brought into focus. Related to this is the question as to which real components we need to grasp something artificial and which degree of virtualization can help to make something real, tangible.

283 "Lyotard will das Erhabene nicht erbauulich verstanden wissen, sondern [...] experimentell. [...] Lyotard vertritt keine Metaphysik der Transzendenz, sondern eine Ontologie der unabsehbaren Möglichkeiten, und das Erhabene ist nicht vertikal, sondern horizontal zu deklinieren und gewinnt genau dadurch kritische Funktion. Denn in der Vielfalt der Realisationen gilt: Kein Kunstwerk ist das Kunstwerk, kein Stil der Stil, kein Ansatz der Ansatz. Alle Gestaltung bewegt sich vielmehr auf einem „Boden“ von Nihilismus und in einem Raum unabschließbarer Potentialität. [...] Dies und nichts anderes meint das Erhabene im postmodernen Sinn. Es ist nicht retrograd, sondern kritisch und experimentell." Welsch, Wolfgang: *Ästhetisches Denken [Aesthetic Thinking]*, Stuttgart: Reclam, 1991, p.91.

284 Welsch, Wolfgang: "Virtual to Begin With", in: *Subjektivität und Öffentlichkeit [Subjectivity and Publicity]*, Mike Sandbothe and Winfried Marotzki, Cologne: von Halem, 2000, p.20.

In this section, I would like to discuss techniques dealing with the virtualization of the body and propose this procedure as a post-digital tool for changing perspectives. In these approaches, people wearing video glasses are enabled to adopt the perspective (and with it the body) of another person. These tools of virtualization are then to be extended by an additional component: in this subsequent technique, the user switches between perspectives, the 1:1 circuit is abandoned and contrasting perspectives are embedded. From this stage onwards, the setting becomes a tool allowing the comparison of different digitally mediated perspectives. This coupling and subsequent deliberate uncoupling will be presented here in the context of the disclosure²⁸⁵ of digital techniques.

In the following interactive and participatory compositions and artistic approaches, “virtual reality” settings are established, in which visitors perceive their surroundings, their bodies and the bodies of interacting partners through video transmissions. Scenarios are created that have similarities to computer games, simulators and VR environments. Central to this is the virtual – and with it the question of distance, proximity, intimacy, control, interaction and responsibility. In setups that establish an uncoupling between the body and visual perception, a coupling of participants with each other takes place instead. A freely assignable circuit can be observed between the individual visitors inside these installations. This results in directly changing (medially mediated) patterns of vision and interaction. They discover a constructed reality to which they have to relate. The participants, therefore, compare real and virtual body sensations and modes of interaction with each other, this comparison being the postdigital moment of this compositional approach.

4.7.1 References

In recent years, numerous settings, experiments and artworks have been realized in research and art, which I would like to introduce briefly as a precursor and inspiration for my work in this context. Psychological experiments from the context of the “body transfer illusion” are considered important areas of research. The body transfer illusion is the illusion that one believes to own either part of, or a whole, foreign body which is not one's own, which is why research literature also refers to “body ownership”. This illusion can be induced experimentally by manipulating the visual perspective of the test person and also by providing visual and sensory signals that correlate with the test person's body. A well-known example is the rubber hand illusion. In this setting, a hand made of rubber is placed in such a way that, by positioning a mirror, one perceives it as one's own. Following mirror usage, the employment of virtual reality settings has become increasingly established. It is important in these settings that, in addition to the visual deception, tactile stimuli are presented which support or dispel the illusion. In the recent past, virtual settings have also been used for other psychological tasks, such as re-

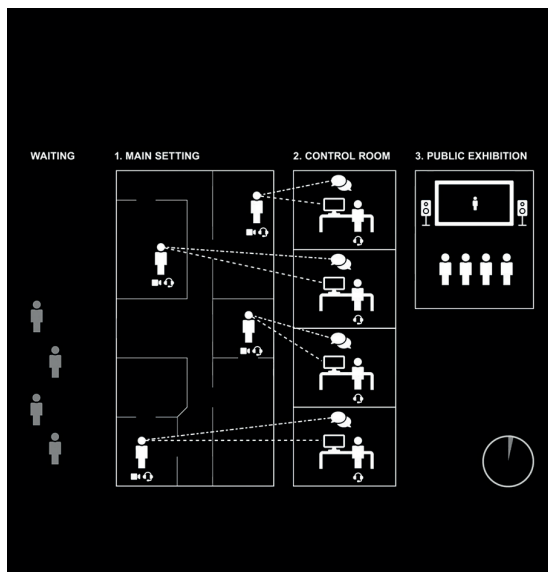
²⁸⁵ The German word “Sichtbarmachung” [making visible] has here, as in elsewhere, been interpreted to emphasize revelation.

enactments of traumatic experiences. Harun Farocki has artistically implemented the processing of war traumas through VR therapy in his documentary video work "Serious Games iii". Not only in the area of documentaries, but also in research, art is increasingly actively involved in the exploration of this context. In the 1990s Paul Sermon conceived "Telematic Dreaming", a piece about telepresence and sleep, in which human figures are spatially separated by video transmission. The artists' group CREW has experimented with perspective changes between different users in a series of works such as "HeadSwap" or "C.A.P.E." Here, one person's point of view was transferred to another. The artists' group The Constitute developed a helmet called "EYEsect", with two camera eyes, which were attached to two cables and could be moved freely, thus allowing unnatural perspectives. The artists' group BeAnotherLab used the "body swap" approaches from psychology in an artistic context, to explore artistic aspects of empathy. These concepts were also adopted in new music and were thematised for example by Stefan Prins in his composition "Mirror Box Extensions".

4.7.2 Virtual Control Mechanisms

In the participatory installation "Control", the audience, equipped with head-mounted cameras, moves through an immersive setting in an empty building. Using the cameras and an intercom circuit, their audio-visual perception is transmitted to a control room, where it can be received on a screen and a headset. From these control rooms, the participants in the empty building receive instructions via headphones. In the control rooms, the visitors' actions can be followed by a camera from the first-person perspective and the control instructions transmitted. There are also visitors in the control rooms who have already passed through the first phase of the installation. The audience meets twenty performers within the immersive installation who are distributed in various rooms. Each room enables certain interactions and thematises aspects of control in different forms. Within this setting, several factors deal with surveillance, virtuality, control, intimacy, insecurity and physicality. Many of these components are based on interactions between the participating guests (amongst themselves and with the performers).

Each visitor stays in the first immersive phase of the installation for thirty minutes, before moving on to a control room in the next step. From here, the person then guides a new visitor with



4 Schematic overview of the installation "Control"

instructions and advice. In the third phase of the piece, all participants gather in a large room. This phase allows a real-time view of all the video and audio circuits. All the perspectives flow together in this supervision room. Consequently, the piece is designed as a thirty-minute loop, which each visitor passes through in three different phases, one after the other. Metaphorically speaking, the audience works its way continuously up the hierarchy and gains an increasingly better overview of what is happening. Accordingly, a search for logic in this system can be observed. The setting is deliberately chosen in such a way that the audience participates without prior information and has to discover the set of rules and mechanisms for themselves. This means that they alone must also decide how they each behave in this setting, and what priorities they set.

The focus here is again on the change in perspective between real and virtual experiences. In the three phases of the installation, every visitor has the opportunity to experience the same setting from a different perspective. In the first step, he/she moves directly through the setting and receives instructions. During the second step, he/she sees only the video transmission of another participant and is himself/herself in the position to give instructions. In the third phase, the person can passively observe the setting from a bird's eye view. Consequently, a concrete comparison can be made here of how a situation is perceived in a real immersive manner – or, in contrast, virtually. Furthermore, this circuit offers a coupling between two people. To what extent the foreign body perception has been adopted and which modes of cooperation and hierarchy are established in each case: these belong to the piece's core questions.

On the one hand, the piece can be seen as a mirror for control modes. On the other, it functions – using a virtual standpoint – as the implementation of a computer game or VR concept with analogue video means. An experience space is depicted here, one which typically obeys the rules of an FPV computer game.²⁸⁶ In this setting, however, there is no concrete task, no backstory and there are no characters. It is a clean and sterile setting, but one in which interactions, decisions and moral positioning are necessary. However, these parameters are implemented in an artificial setting, so in the end, it is always about the decision, perception and evaluation of the participants. In this sense, it is more of an experimental setup to which the audience has to respond.

Basically, a lifeless and opaque world is established with an empty set of rules. The confrontation with this inherently virtual place leads again and again to a comparison of real, direct perception and virtual representation.

This is underscored by the very artificial and computer-like performance modes of the participating musicians. It is a continuous alternation between real intimacy and connectedness on the one hand and a confrontation with a real world's reduced image on the other. As a result, deeply digital representations, interactions and body

286 In the first-person-view in a computer game, you direct a character through a level from the first-person perspective. In the original versions this was often a labyrinth.

images were once again transferred into a real setting. The continuous comparison and change of perspective represent the potential experience value of the setting.



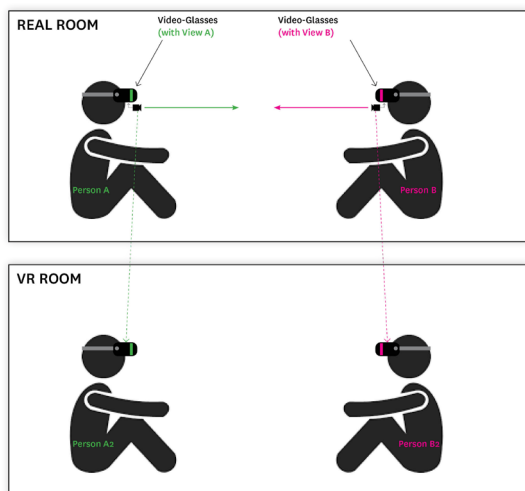
5 Overview of the different settings within the installation "Control"

4.7.3 Synchronized Community

As in "Control", a kind of experimental arrangement is established in the concert installation "A Perfect Circle" – but with a different intention. Here too, timing and synchronization play a central role. However, in this context, the aim is not distancing, opacity or hierarchy, but a rhythmically guided group exercise – and here too, perception is guided by action instructions.

"A Perfect Circle" is an installation that enables the change of perspective and body perceptions. This approach establishes a kind of virtual reality and focuses on body awareness, emotions and identity. Using guided, simple movement instructions, the participants perform exercises. The use of video glasses and cameras leads to a perspective change and enables the visitors to see themselves and each other in a new way.

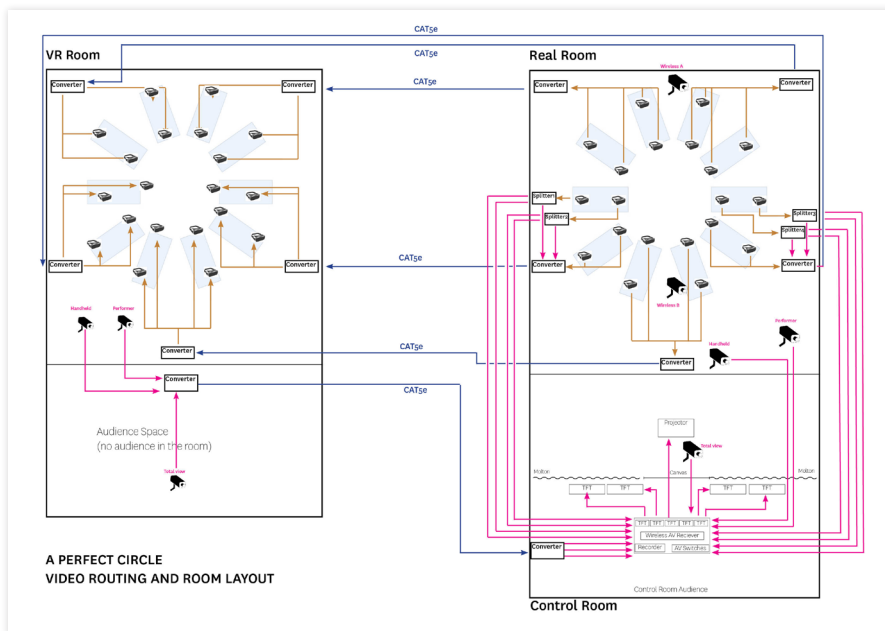
The immersive installation piece lasts just under an hour and is designed for forty participants per



6 Schematic representation of the video circuitry in "A Perfect Circle"

cycle. The audience is divided into two groups of twenty participants each. In each room, the audience is positioned in pairs. Each visitor wears video glasses so that each participant can experience the environment exclusively through a screen in front of his/her own eyes.

In the first room, the video glasses also have attached cameras. The image from the cameras is then transferred, unaltered, to the video glasses' screen so that an almost identical angle of vision is captured. But by transferring it to a screen, the environment is directly perceived as virtual, distant and alien. Furthermore, the resolution, angle and colour scheme differ from the eye's natural visual impression. In this room, the audience is thus seeing a video representation of the real space surrounding them. In the second room, however, all participants are receiving the video signals from the first room; consequently, there are 20 video lines between the two rooms. Therefore: the visitors in the second room see through the eyes of the person they are connected to.



7 Technical overview from "A Perfect Circle"

The session is moderated and directed by the performing ensemble. The performers give instructions regarding interaction with the respective partners. For example, the audience is asked to move their heads in different directions but in time, or to touch each other's hands in a steady rhythm. The temporal setting and timing here aim to synchronize the individual bodies with each other, especially between the two rooms: this allows the participants in the second (virtual) room to copy very precisely the movement and posture of their connected partners from within the first room. In this way, it is possible to assume the view of another person in a very concrete way and to interpret the other's body, perceived through the video glasses, as one's own. Furthermore, it allows a structured interaction between

the participants. The aim is to establish as coherent a synchronization as possible between one's own movement and the received video signal.



8 Ego-video-perspectives in "A Perfect Circle"

The session provides a framework that incorporates therapeutic elements and implements them on an artistic level. Being poetic in form, it offers the opportunity to approach and evaluate physical interactions and relationships from a different perspective. These exercises deal with embodiment, body perception, the connection between feeling and body,

change of perspective, acceptance, distance and virtuality. The experience is designed to be emotional and intense – first to facilitate a positive perspective change and create closeness between people who are directly or virtually present. It is therefore a tool for creating empathy. However, it also deals with alienation, control and self-abandonment. The basic message is perceived as positive and helpful, whereas the connotations are ambivalent.

In this case, rhythmic setting and synchronization are helpful tools in the implementation of the discussed strategies. The session is centrally guided, and, since emotional and interpersonal themes are also incorporated during the piece, the question of an imposed order arises here. Whether these instructions, intended as aids, are understood as a control instrument differs from participant to participant. Many of the participants perceived them as helpful or supportive. But the trade-off between commonality and conformity cannot be completely ignored.

Besides offering a change in perspective, the piece also creates a decidedly virtual setting. It additionally deals with the question of how interchangeable a body or an individual is. A setup is created here in which one sees with unknown eyes or touches another person's body while watching someone else in the video. This questions the role we ourselves play, how replaceable our body is – and to what extent the two are connected. While in „Control“ there was a clear division of tasks, here the focus is on the adoption of the body's feeling and synchronization. Additionally, the participants are compared to see in which form they can combine their emotional sensation, the haptic experience in space and a different video perspective into a coherent picture. The question is thus asked: to what extent do these aspects influence and presuppose each other?

The setting touches on the relationship between closeness and distance which runs through many of my works in technically mediated settings. On the one hand, the scenario described leads to an intimate situation and facilitates close interaction. On the other, spatial and visual separation is a process of alienation and distancing. It is not possible here to make a final judgement on the degree to which the technical setting is to be seen more critically or optimistically: it fulfils both

functions – and depending on the audience, the encounter is also experienced differently. Of importance is that, during the pieces, the perspective changes and the different modes of intimacy and communication are contrasted and made comparable.



9 Overview of all video-perspectives in "A Perfect Circle"

In the composition "Unity Switch", the setting of "A Perfect Circle" is expanded in that each participant is equipped with both video glasses and an attached camera. As a result, the fields of vision of the eight participants can be completely freely interconnected. Each participant can consequently look through the eyes of the other seven participants. Here also, the focus is on synchronizing the audience, seated opposite each other at tables in four rooms. In this setting, however, it becomes increasingly unclear who follows and/or leads whom. The boundaries between control and passivity blur, as does the threshold between one's own body and someone else's. A strong process of the aforementioned "body ownership" sets in. In the course of the piece and this setting, the perspectives can be changed at one-second intervals, counter-cut with pre-produced material or contrasted with a view of oneself as seen through the eyes of a person sitting opposite. This intensification of jumps in perspective change is intended to serve as a starting point for comprehensive approaches and compositional concepts.

4.7.4 Changing Perspectives

As already discussed, the juxtaposition of perspectives in a digital context is the essential element of my compositional practice. In each of the pieces described above, settings are developed which establish a virtual setting using digital technology. Not only is the construction of this setting relevant, but also the comparison of

the perception modes within this setting. The postdigital moment of this approach lies in the juxtaposition of these views and their implications.

Drawing on the question of how virtual or constructivist our sense of reality already is, it is worth examining in this context the degree to which these settings are initially perceived as “real” or “authentic”. The immersion is sometimes very intense, and a strong engagement develops in which the participants partially forget time, space and themselves. Even though the technique is anything but a perfect simulation of the natural world, it is very much accepted. It is particularly interesting that, compared with a setting not transmitted by video, the virtual setting is sometimes perceived as more intense and nearer. In "Control", for example, it is possible to lie next to a performer in a tent during the first phase – i.e. in an immersive setting. This situation, in itself very intimate, is surprisingly more intense and emotional for some participants when perceived from the perspective of the installation's second stage, i.e. via screen and headset. In "A Perfect Circle", interaction via video glasses sometimes allows for bolder and less inhibited interactions. In this instance, the interaction also takes place directly physically, with the person sitting opposite, but the relaying of the visuals through video transmission leads to a mixture of anonymity, security and self-distance. Here, the simulation is in part no longer a weak reflection of reality, but an alternative level, allowing for an interaction that is not experienced any less intensely nor real. It is partially difficult to say whether this process reinforces elements of reality, masks them or can even open a space that has no real equivalent in reality. The mixing of real bodily interaction and the adoption of other people's perspectives makes it almost impossible to make a conclusive statement on this. Again, it is more the spectrum of possibilities and the juxtaposition of these options that is achieved with these pieces.

At the end of the piece "A Perfect Circle", when the video glasses are removed and the participants look into each other's eyes for several minutes, without media mediation, and perform a final task together, the previous virtual situation is compared once again with the analogous physical situation. At this moment, it becomes clear that these settings may not only address the use of digital tools but, as Wolfgang Welsch also notes, can trigger a reflection of our analogue world:

Experiencing and discussing virtual electronic worlds has, in my view, a useful and even enlightening impact on our understanding of reality. Thanks to the influence of the electronic virtual, we are becoming increasingly aware of the constructivist character of all types of reality.²⁸⁷

287 Welsch continues: “Once we experience that the same objects are accessible through different modes of experience – say a standard everyday and an electronic-virtual one – then we become aware of the specificities as well as the limits of each of these modes. And if some things turn out to be accessible only through one mode or another – as one’s sleepiness in the morning can be recognized only through direct, personal experience; the existence of quarks, however, only through the theory and experiments of physics; and the angelic potential of the human mind only through electronic technology – then one may begin to comprehend that no kind of reality is ever an immediate given, but is bound to a specific framework of access, conceptual means, and pragmatic features. Reality of whatever kind arises only within a related set of conditions.”
In Welsch, Wolfgang: ‘Virtual to Begin With’, in: *Subjektivität und Öffentlichkeit [Subjectivity and Publicity]*, Mike Sandbothe and Winfried Marotzki, Cologne: von Halem, 2000, p.12

4.8 Post Internet

The influence of the internet on art production and compositional approaches will be briefly presented in this chapter to outline the basic characteristics of “post-internet art”. After an overview of existing approaches, I wish to explain this practice in the context of my work, again as a tool of disclosure.

Due to the broad integration of the internet, far-reaching aspects of cultural and social life have been so decisively impacted that the term “post-internet” was proposed, to describe an age in which the internet has become indispensable. This term thus describes a condition according to which the use of platforms, communication tools and media archives is so established that it fundamentally influences our lives in the online and offline world. By this, we mean a sensitization to modes changed by the internet, as discussed in Chapter 2.3. Assuming that this factor is an integral part of cultural life, it is also possible (or even necessary) to deal with this complex of issues in an artistic way. The art movement that has emerged from this situation bears the generic term “post-internet art” (Chapter 2.3.2). It differs from its predecessor net.art and telematic art in that, although it implements and critically reflects the implications of the internet, it does not necessarily have to be realized exclusively in this medium. The focus is rather upon an awareness of the consequences and changed modes that have been created by the internet. This sensitization can have explicit effects in offline space and, as Gene McHugh postulates, be reflected in art:

Acknowledge is key here. It's not that all contemporary artists must immediately start making hypertext poetry and cat memes, but somewhere in the basic conceptual framework of the work, an understanding of what the Internet is doing to their work—how it distributes the work, how it devalues the work and revalues it—must be acknowledged in a way that one, such as the market, would acknowledge. It is what Guthrie Lonergan called Internet Aware.²⁸⁸

In this chapter, I would like to give a short overview of possible approaches to art under the premise of “post-internet”. As previously explained, this refers to approaches which either critically reflect the internet and its structures or transfer online modes into the analogue world (and thus address the influence of the internet on the offline world). Essentially, I see three possible approaches for a “post-internet art”:

1. *Illustration of online functions in offline space*
2. *Critically reflected use of internet technology*
3. *Use of internet-specific aesthetics*

These three approaches are of course not exclusive and can overlap and also be combined with other styles and concepts. There is perhaps no art that can be described as pure “post-internet art”. In contemporary media-oriented art, however,

²⁸⁸ McHugh, Gene: ‘Post-Internet’, in: #mm Net Art—Internet Art in the Virtual and Physical Space of Its Presentation, Marie Meixnerová, Brescia: PAF + Link Editions, 2019, p.146.

it is becoming increasingly difficult to find works that completely exclude any awareness of the internet's implications.

Diverse characteristics of a possible post-internet perspective were already presented in Chapter 2.3, some of which are derived directly from postdigital implications. Fundamental to post-internet art is a distancing from the medium itself. By this is meant that not the use of internet-specific services and platforms is central, but rather their function and impact that becomes decisive. Examples of this would be internet-specific effects:

- Continuous development and re-versioning of content. This can occur in the form of websites (e.g. wikis) or repositories set up specifically for this purpose (e.g. GitHub).
- A constant change and transformation of ideas and concepts (such as memes, TikTok videos). Approaches that spread and diversify rapidly become established here.
- The question of originality and authorship changes in a mesh of iterative development. Particularly with rapidly distributed and easily produced content, the author moves into the background (or is often not even mentioned).²⁸⁹
- Meta-views and commentary levels are widely used. For example, computer games are played and commented on by YouTube gamers. Some content is increasingly only received in this way and, in doubtful cases, commented upon in additional commentary levels. A gradual distancing from the original content takes place.
- Tutorials establish themselves as a widespread format, partly with a scholastic character, but also partly as a personal narrative form.
- Private individuals become celebrities on the internet ("influencers", "bloggers"). New forms of idols emerge and the authenticity of "sponsored content" is duly used capitalistically by large companies for product placement.
- User content increasingly replaces professionally generated content and, together with personal data, becomes an economically highly relevant currency.
- Knowledge and software access become easier. Nationwide access to relevant content (at least for that part of the population having access to the technical possibilities) is expanded.
- Monitoring, tracking and access to personal data through internet-based services becomes an increasingly serious social issue.
- "Open source", "creative commons", and "freeware" movements as anti-capitalist, cooperative counter-designs of net communities.

289 "These are conditions endemic to Post-Internet society, allowing for a ubiquitous authorship which challenges notions of the 'definitive history' or the 'original copy'. Just as Barthes' proclamation of the 'death of the author' is in fact a celebration of the 'birth of the reader' and the 'overthrow[ing of] the myth', culture Post- Internet is made up of reader-authors who by necessity must regard all cultural output as an idea or work in progress able to be taken up and continued by any of its viewers." in Vierkant, Artie: 'The Image Object Post-Internet' 2010. online: http://jstchillin.org/artie/pdf/The_Image_Object_Post-Internet_us.pdf. (Retrieved:12.12.2019)

- Artists' working modes are increasingly characterized by research on the net, compiling content and collaging found objects. Comprehensive access to data puts artists in a different position, where curating and selection become more important.
- Extensive sampling and citing of material from the internet become more widely accepted methods, both legally and artistically. The demand for a genuinely creative process is less present and gives way to openness to the assemblage of existing content.
- Online communities and sub-groups of social and political minorities become more differentiated on the internet. This process not only depicts pluralities in a positive sense but can also lead to radicalization.
- Media consumption becomes increasingly fragmented and parallel due to internet-based forms of reception. Contents are presented side by side. News, art, humour and other contents are presented and received side by side on internet pages – or in different windows.
- Internet users determine their time behaviour in media use. Users decide themselves on content choice, duration and combination.
- Internet self-promotion and marketing become progressively more relevant and, due to their easy availability, a more frequent practice.
- Previously idealistic and utopian approaches from the internet's founding period give way to an economically tapped network, one increasingly characterized by sell-out and capitalist orientation.

A whole range of interaction, creation and communication forms can therefore be observed, which have either been significantly influenced by the internet or have explicitly originated there. This is also where explicitly proprietary formats, bringing with them their aesthetics and codes, have emerged. These also rub off on offline life in their essential form, structure and language. The expression “internet aware” indicates that this art was created in this context, in the knowledge of these changes and innovations, or, as Jennifer Walshe puts it:

I would say that there's a texture to it [...] and I don't even necessarily mean the sounds. It could be the text that's used, the images that are used, the fact that, maybe, the body's involved. But there's something that makes me think, this wouldn't have been written until this point in history.²⁹⁰

4.8.1 Overview of Post-Internet Artworks

Similarly, individual styles have also evolved directly on the internet, such as the ASMR tutorials with a specific exception and listening mode or the already discussed vaporwave aesthetics. In the following, using selected examples, I intend to give a brief overview of the wide range of other artworks and compositions that can be classified as post-internet.

²⁹⁰ Barry, Robert: 'So What Is Post-Internet Music, Anyway?' 2015.

online: https://www.vice.com/en_us/article/qkqkzw/so-what-is-post-internet-music-anyway (Retrieved:12.12.2019).

More and more often, artists are additionally using forms of presentation and formats that are influenced by the internet. In "Magenta Boy", Walter Sallinen uses a video projection to stage (in a concert hall) the YouTube channel of a homosexual young man, making homophobia a central theme. This is an offline representation of an online format. In "Feminism is a Browser", Charlotte Eifler uses a desktop and browser display and collages elements on the theme of feminism in a contemporary way, thus underlining the network character of the activists involved. Ryan Trecartin's films – such as "I-Be-Area film" or "Center Jenny –" are characterized through and through by modes of communication and self-portrayal that have their origins on the internet. With "The Total Mountain", Jennifer Walshe depicts the internet's information overload. In the series "Public Privacy", Brigitta Muntendorf reflects the intimacy of amateur YouTube musicians. A whole range of artists such as Laurel Halo, Holly Herndon, Blank Banshee, or James Ferraro, for example, shape a style of presentation with an internet affinity and interweave vaporwave elements with internet interfaces and communication tools.

The forms of researching and compiling artworks have also become a formative influence on art. For "Party Pills", for example, Drew Daniel collects all content with the hashtag "Party" and combines it into a composition. In "Up Next", Dylan Richards uses the YouTube algorithm which suggests the next video. On this basis, he determines the sequence of the material of his video composition. Neo Hülcker uses ASMR techniques to approach new music under altered listening conditions.

Michael Mandiberg, for example, bridges the gap to the physical world with his project "Print Out Wikipedia", in which he has Wikipedia's entire inventory printed and exhibited as books. With "Dead Pixel", Helmut Smit creates an equivalent of a dead (black) pixel in Google Earth perspective by blackening a square on a lawn. In "Working on My Novel", Cory Arcangel collects numerous Twitter posts from users who are currently writing a novel. Their compilation in a physically tangible book makes the internet procrastination of budding authors ad absurdum.

Artists also deal with surveillance and tracking: In "I know where your cat lives", geodata is extracted from photos and publicly placed on a website map. Simon Weckert creates a fictitious traffic jam on the map service Google Maps with multiple mobile phones. Similarly, artists draw pictures utilizing their GPS tracking on online maps via their movement profile. Alternatively, the project "9-eyes.com" displays selected Google street view images. The photographs, at times bizarre, sad and beautiful, have their own pictorial language and a special flair, due to the absence of a photographer and the randomness of the moment. Jonas Lund has written a browser extension which makes the browsing history accessible to the public. Vladimir Abikh creates internet-related, digital relics from an excavation of the future in his fictional exhibition "An Exhibition for Future Generations". Through the eyes of a fictitious viewer from the future, current internet practices appear as a historical (and traditional) document.

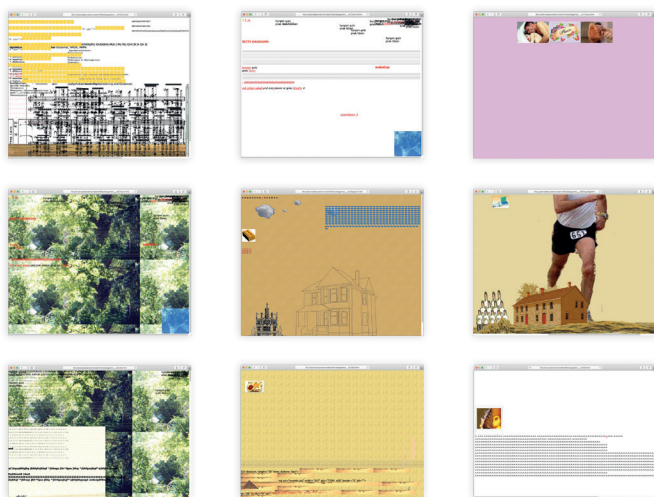
This approach, in seeing internet objects of the present time through the eyes of a future anthropologist, as offered by Vladimir Abikh, allows distancing from the complexity and topicality of the content. The temporal distance hence renders obvious or concise things, that we would otherwise take for granted, as self-evident. This work of art takes the objects' internet-related properties out of their self-evident

nature, thus enabling a change in perspective to a more critical view. I feel that this stage in reorientation towards digitally mediated content is the essential core feature of post-internet art, and now wish to present my work, within this context, under this premise.

4.8.2 Sensitization and Disclosure

The alternative wording “internet aware”, instead of “post-internet”, already directs the focus towards sensitization to certain internet characteristics. For me too, raising awareness and disclosure is an essential approach in this context.

The use of the internet for artistic purposes has long been rooted in my work. When I began learning to program around 1997, my first projects were interactive websites with HTML and Flash content. From 2000 onwards, these pages were available online under various names. On these pages, one could find online music programs, collaborative poetry pages and dada-like HTML link labyrinths; herein, the visitors could change contents and change the sounds themselves. In 2001, I initiated a project in which musicians worldwide could compose pieces based on approximately ten samples, which were then all made collectively accessible. From 2001, I hosted a radio show and published the recordings on the site. From 2004 on, I built a series of sub-websites, on which nine of my music videos were played randomly, in parallel, on a split-screen, so that ever-new overlays were created. All these works fall into the net.art category on the one hand, but on the other, they already touch on emerging “Web 2.0” content. I produced them non-commercially, outside an established art context. The majority of the sites are now no longer online: in the mid-2000s, I changed my focus and these projects became less relevant to me. Additionally, parts of these practices became mainstream, so that it was no longer necessary to personally develop solutions (Soundcloud, MySpace, Wiki pages,...).



10 Website screenshots Tangarten.de (2005)



11 Website screenshot Sinebag.de (2003)

In the further course of my work, the topic of the internet only reappeared in my compositions around 2013, under the changing omens of “post-internet”. The foundation stone for an intensified examination of this topic was the piece "HELLO", which I wrote during 2013 and which premiered in early 2014. In my work, I pursue two approaches to post-internet art: the use of internet-specific methods at the interface of online and offline space for one thing, and the representation of internet specifics and aesthetics in the composition process for another. The compositions "Hello", "Star Me Kitten", and "f1" are works that do not take place on the internet, nor involve the internet in performance. However, the visual language and the contents used are significantly influenced by the internet and reflect various aspects of it. Basically, these pieces are works that reflect and depict practices and modes of internet representation in aesthetic language, and the use of media and tools. This is obvious when using the programs and user interfaces (as already discussed in Chapter 4.3.2). Programs and services such as Skype, FaceTime, YouTube, Facebook or Google are used here. On the one hand, the production process is shown (compare with Chapter 3.2), and the constructivism of the composition process is explained (Chapter 4.5). On the other hand, online profiles and fake identities are equally included, thus also addressing self-representation, manipulation and authenticity (Chapter 4.6). Furthermore, the form of the material's presentation is certainly worth mentioning. The contents are combined and re-combined, in such a way that similarity to material collection in social networks is obvious. In addition, the research and search process are often included, clarifying from which sites and by which means the content was taken. Presentation speed and media usage are equally reflected in the tempo and structure of the pieces. Various passages are explicitly timed by mouse-click actions, thereby reflecting internet usage behaviour. Furthermore, the compositions are put directly into the context in which they will actually exist, via upload processes on YouTube, for example. The compositions are performed, recorded, then distributed on YouTube

and discussed on the net. "Hello", for example, embeds these elements directly into the process and the piece itself. However, this is an illustration, a description and an offline theming of this particular situation. Internet content presentation and reflection is the one approach I wanted to present. In contrast, another category of my pieces explicitly uses these internet processes and does not merely depict them.

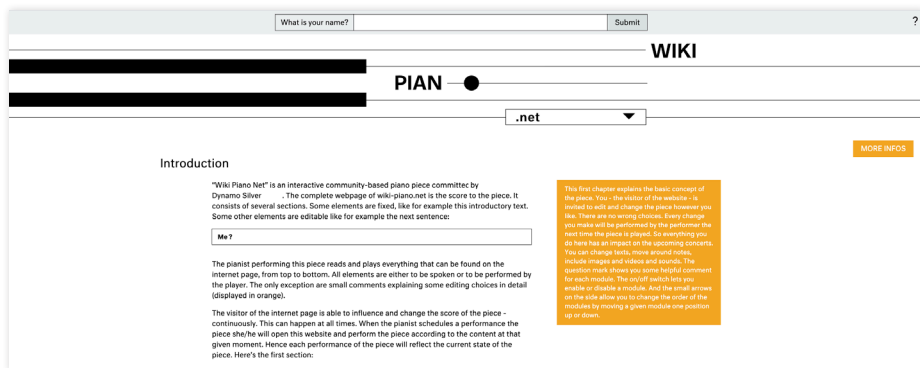
4.8.3 Wiki-Cooperation

My work series "Community Pieces" has the defined goal of focusing on the cooperation and interaction of a larger user community. It involves a growing number of pieces of different sizes. Each piece provides a web-based interface through which the respective composition can be created. The composition process in these works is largely limited to finding a collaborative approach, through which content can be organized and edited flexibly and collaboratively. In the second step, a suitable interface is created, enabling the most expedient interaction and cooperation. The central pieces in the series are (currently) "Wiki-Piano.Net" and "Silent Post". Under the generic term "public domain" there is another series of smaller pieces, each of which focuses on a specific social media platform.

"Wiki-Piano.Net" is a piano composition, the score of which can be accessed and edited at any time on the homonymous website. To perform the work, the website is opened and the current version played in concert. The website score can be changed at any time by any internet user and is therefore subject to continuous changes. Every visitor to the website can add, delete, change and move content. The structure of the piece is modular. The approximately thirty modules all have individual functions and contents: for example, they can display notations, images, video, text, sound clips or actions. There is, therefore, a repertoire of possible modules, but they can be edited completely at will. The sequence of the modules is also freely changeable – and modules can also be deactivated. Of course, there have also been freely designable compositions in the past. The unique feature, in this case, is that the arrangements of the piece can be decided by a very large group in a quasi-democratic way. The access hurdles were kept low on purpose (so that no registration with a real name or e-mail address is necessary).

Historically, the precursors of this work are fluxus, random, and collective compositions. With his "Piano Etudes", Jason Freeman had already created a piano work in 2009, that could be reworked online by the audience or pianist. Here, however, Freeman puts together several of his own pre-composed modules, which can then be rearranged. In this sense, this approach is a transfer to a website, but would, similar to fluxus approaches, otherwise be equally feasible on paper. The aspect of cooperation and further development is not applied in this approach. Meanwhile, there are various playful or professional websites with which to work on scores. Examples are "Opusmodus", "Celanajaya Gamelan", "Melodyjs SH Studio", "flat.io", and many more. The game-like websites mostly follow the tradition of net.art. The collaborative composition tools are more aimed at working in a closed team.

There was also an online project in which a book was jointly written.²⁹¹ I found the action „r/place“ on Reddit very inspiring, where each visitor to the site could draw a pixel onto a 1000 x 1000 pixel area. Subsequently, it was only possible to paint the next point after a lock-out period had expired. This process made it necessary to consult with other participants and form groups. Furthermore, each pixel could be overwritten at any time, so that the picture was subject to continuous change by many people. I wanted to implement this collaborative, non-structured and non-hierarchical cooperation in my work.



12 Start page of the composition project "Wiki-Piano.Net"

Obviously, "Wiki-Piano.Net" is based on the Wikipedia platform and the general wiki concept. In this approach, there is no quality control (except by the visitors themselves) and no content administration. The concept relies on the automatic self-administration of the participants and consequently strives for equal cooperation in the development of the piece. This gives every user and/or listener the chance to influence the composition. Normally, they are not involved in the classical work process, nor have any influence on the content performed in a concert hall. The aim is accordingly, for one thing, to democratize the composition, in which everyone can participate. Every user is granted the same rights, and no content is corrected or censored. This means that the piece is continuously developed and mutates from one version to the next. There is no endpoint and no target. There are as many valid pieces as there were adaptations. But the piece to be performed is always the current version. Thus, the piece is characterized by being both concretely anchored in the moment and defined by its version history. These versions can be traced at www.wiki-piano.net/archive. Consequently, it is the process that is in the foreground, the development, cooperation and transformation. The piece does not pursue the goal of creating the perfect piece after a work period: rather, it is intended to depict internet processes, meaning forms of further development, citing, editing, satirizing, as well as destructive patterns such as troll behaviour

291 'Zwei Mädchen im Krieg. Die zweite Woche.' [Two Girls in War.The second Week.] 4.4.2020.

online: https://www.hundertvierzehn.de/artikel/zwei-m%C3%A4dchen-im-krieg-die-zweite-woche_708.html

(Retrieved:4.4.2020)

or sabotage. In contrast to professional online software solutions, which enable collaborative work in teams on music projects, this piece is to be understood here as an example of more general internet patterns. It is intended to illustrate fluctuation and unpredictability in its positive and negative facets.

Furthermore, in this case, the concert performance once again represents an interface between the digital and real worlds. Here, the concert represents a part of the Internet and transfers it into a concert context. In addition to the concrete implementation, internet-specific handling of media and content is also transferred to the concert situation. In the piece, the content's combination and referencing directly develop an aesthetic, one inseparably linked to styles that have developed on the internet. For example, the inclusion of memes and the resulting way of thinking about visual material's contextualization in the concert setting is an aesthetic that can be described as post-internet art. In this way, we take yet another, different look at the arrangement of texts, images and notes, as collaged on the website. A particular presentation and composition of content, perhaps perceived as being natural on the internet, will have a different effect when presented by a person in concert. Here too, we take a step back and analyse the process and content with different framing.

The piece also operates exactly at the dividing line between the online and offline worlds in terms of technical implementation. The entire infrastructure of the work is implemented as a website. The score, projection and feed are therefore implemented directly as synchronised HTML pages. This ensures a low-threshold implementation, as any musician with a browser and internet access can perform it.

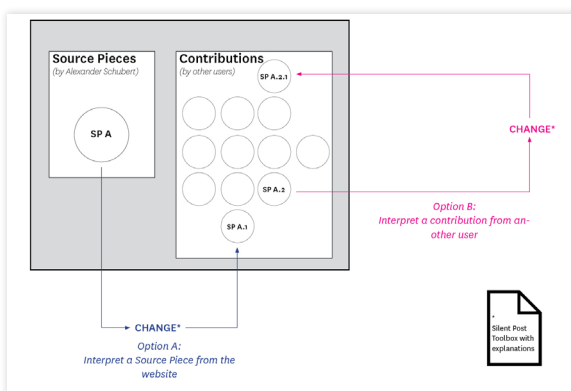
The image shows a screenshot of a digital music composition interface. At the top, there is a 'Tempo' dropdown menu set to 'Prestissimo' and a 'Play Notes' button. Below these are several icons: a bass clef, a sharp sign, a series of five musical notes in a sequence, and dynamic markings 'p', 'mp', 'mf', and 'f'. A trash can icon is also present. The main area displays three systems of musical notation, each with a treble and bass staff. The first system starts with a forte (*f*) dynamic. The second system also starts with *f*. The third system features a variety of dynamics: *f*, *mp*, *pp*, and *f*. The notation includes complex rhythmic patterns and dense chordal textures.

13 Example of a composition module in "Wiki-Piano.Net"

The piece also reflects internet trends in terms of authorship: all the alterations are made by the users under a Creative Commons licence. The work itself is not registered with GEMA. In terms of copyright and versioning, therefore, the piece also complies with internet typical standards typical, which are either explicitly found in the open-source community or implicitly asserted in the rapidly expanding distribution of DIY content. After more than a year of existence, over 800 users have made more than 25,000 changes to the piece. During this period, the piece has been performed 17 times.

4.8.4 Repository Composition

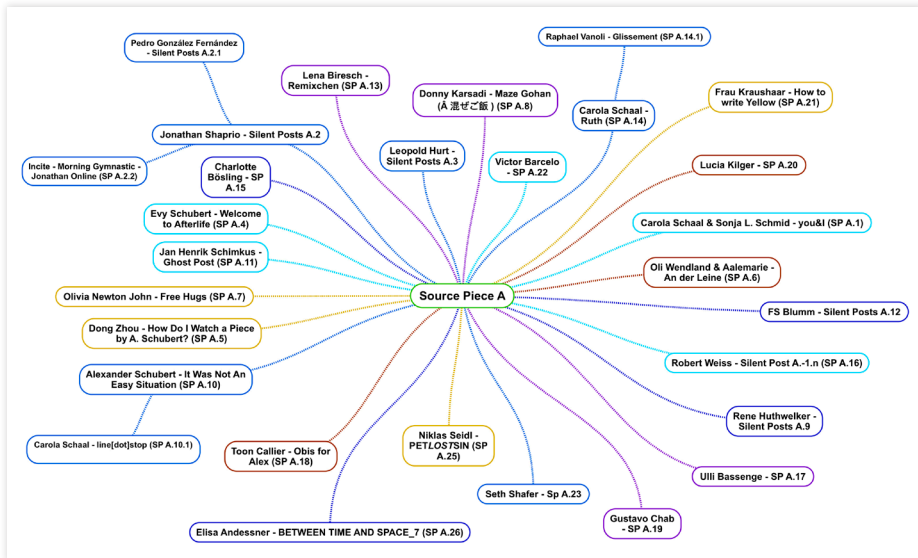
"Silent Post" is likewise a composition framework inspired by internet practices. It follows a similarly accessible and free concept as "Wiki-Piano.Net". Within its framework, output pieces (as working material) and editing tools are freely available. Interested artists can use the tools and content to participate and create their own contribution. The framework consists of several source pieces. These are structured sequentially in sound, text, video and image. The starting point is thus a clearly structured, stringing-together of existing materials and, in this sense, more of an artistic collection of material than a conventional composition. The starting pieces are structured accordingly, to give the participating artists the best possible access to arrangement and material. Artists can then take such a "source piece" and restructure, edit, expand, shorten, and vary it, using the tools contained in the framework. This results then in further development and modification of the existing piece. As an alternative to the source piece, a variation contributed by previous artists can equally be used as a starting point. This results in successively changing versions, that move further away from the original with each iteration. All source pieces and derived variations are documented online and can be accessed as source material. Each version is accessible online as a complete piece, but also a score and the included samples and media.



14 Schematic representation of the composition project "Silent Posts"

Here too, the structuring of the piece aims to enable the simplest and most direct interaction possible with the materials. The design of the piece thus pursues the intention of evoking social participation. In contrast to "Wiki-Piano.Net", the users'

individual versions continue to exist here and can be assigned to each of the artists. This makes it easy to observe and compare how different people produce different artistic results with the same material. The relationship between individual interpretations and the pool of the entire works represents this work's appeal.



15 Overview of the resulting versions in the composition project "Silent Posts"

The result is a development of versions resembling a family tree or a ramification. Since all content is available online, the project is accessible to all interested parties, at all times. This approach is inspired by repository programmes. A repository is an archive that stores and describes digital objects. The objects managed in the repository can be programs, publications, media, texts or even compositions. Often a repository also contains functions for version maintenance of the managed objects. In this case, the repository is resolved as a simple Google Drive folder with free access. Here, all the compositions, scores and media are made available. Moreover, some raw data, session files and intermediate steps are also provided. Re-versioning of the pieces is created since new versions can be generated from both the original pieces and the previously realized compositions. The pieces are thus continuously reworked. They then receive corresponding version numbers, so that it is clear upon which previous version they are based. Based on the principles of open source development and the GitHub platform, the compositions should be able to develop independently via different users' collaboration.

In summary, my compositional strategies in the post-internet context can be described as an investigation of the interplay between online and offline worlds. Aesthetic, compositional, communicative and collaborative techniques from the internet context are used and removed from the purely online setting. The compositions are to be understood as examples of more general processes, which they aim to depict or implement. In this sense, their goal is to isolate characteristic aspects by embedding them in a concertante context. Here, analogous to the

previous postdigital techniques, the digital and analogue world's interface is also central – albeit with a slightly different focus. In this sense, post-internet art can also be a tool for disclosure²⁹² – or even sensitizing – in times moulded by the internet.

4.9 Summary and Virtual Imperative

In this chapter, I have presented my compositional work as a tool for a postdigital change in perspective and have highlighted various facets of this approach. These approaches operate on the border between digital and analogue content and address their mutual influence. I have presented the disclosure of digital contents and techniques as essential techniques. Based on the thesis that digital content is becoming increasingly influential but also invisible, I interpret this approach as a critical tool. Analogous to the term “postdigital imperative” I also propose a “virtual imperative”. Based on the assumption that increasing virtualization – i.e. uncoupling – can be observed in digital contexts, this term should take omnipresence into account. The reflection of this circumstance will consequently become increasingly integral in medially orientated contemporary composition.

In summary, the core thesis can be summarized as being that our view of digital technologies and media in art and society has changed. This change in perspective can be represented by postdigital art, or by making hidden content visible through artistic means. In the concluding chapter, I would like to summarize once again the social and technical prerequisites, derive my artistic activity from them and present this in summary as an exploratory and critical artistic tool. Finally, the outlook section will discuss which future perspectives and changes thereof could be culturally significant and artistically necessary.

²⁹² Here, as elsewhere in this thesis, the German phrase “sichtbar machen” [to make visible] has been translated as disclosure, to emphasise that something is being revealed.

5. CONCLUSION AND PERSPECTIVES

The cultural world we live in has become increasingly digital, whether it be quite concretely, in its data storage and tools, or implicitly, in its postdigital shaping of our perception and interaction forms. The cultural world today is most likely to appear non-digital if digital media are faulty, or if people actively opt out of digitality. Today, digital refusal is only a reaction to digitalization and no longer an independent decision. In the technically developed world, people can decide to go offline or not to take their mobile phones with them. But the decision is made in this way – as a negation. Being online and digital devices have become increasingly invisible parts of everyday life. Even those areas of our life not explicitly pervaded by digital technology, increasingly follow, nevertheless, in our consciousness, logics and patterns which are shaped by digital technology and the internet. Our perception and interaction are, in many cases, directly or indirectly influenced by this. Even where no digital technology is used, it can be increasingly observed that interactions and representations take place in the awareness of digital technologies. The terms “post-digital” and “post-internet” attempt to take this fact into account and propose a new way of seeing, feeling and aesthetics. This is characterized by the fact that the analogue aspects and dimensions of our lives, such as perception, interaction and body images, are also influenced by digital practices.

The spectrum of postdigital implications is diverse and runs through a wide range of aspects. The origin of this change lies in the digital properties of computability, discretization and transcoding. This results in numerous consequences, which are reflected in the digital characteristics' visibility and disappearance. The digital is no longer experienced as disruptive.

The forms of representation are strongly influenced by these implications: the emphasis shifts from simple content representation to focussing on interaction with content. Thus, the interface and a digital affordance gain leading roles. As a result of the modularization and segmentation of content (images, texts, videos), excerpts, clips and samples are now more in the foreground. In this discontinuous presentation and reception, the content's editability also gains in importance. The concluded work or medium becomes the exception – its place is taken by content that can be shared, edited and transformed. Furthermore, this results in a changed media consumption behaviour (with parallel, segmented and randomly assembled content). Reception, composition and parallelism of media receive a new weighting (especially on the internet). The nullification of the existing media concept, in the form of a post-media turn, is also a consequence of the digital tools. Access to large amounts of data and collective work in global networks lead to a new way of dealing with information, user data and collaborations. As a result of such changed availability and working methods, the concept of authorship is also increasingly being questioned.

In addition to the shaping of the analogue by digital technology, the term “post-digital” is also understood to mean a digital-critical or digital-conscious practice or perspective. It is thus to be understood as a position which, once the digital has become established, focuses on the more critical, sobering aspects of digitalization, such as increasing surveillance, data manipulation or loss of data protection. Belonging to this awareness are also aspects of authenticity, their

construction through digital techniques and identity and/or body images in the digital context. In summary, a postdigital turn can be described as a steering away from a concentration on technology, towards a view that focuses on the consequences, implications and underlying characteristics of digitality.

Many of the aspects summarized here are initially digital techniques, content and implications. The postdigital influence is found at the moment when the experiences and perspectives gained in this field are transferred to and balanced against the analogue world – when we look at everything non-digital through a digital perspective. For contemporary multimedia composition, to depict and thematise this change of perspective can be an opportunity. One can think of an artwork here as a tool for sensitizing, disclosure or changing perspectives. Since the critical area of the post-digital runs exactly at the interface of the analogue and digital world, this art form can be a suitable tool, due to its proximity to both worlds.

If one ascribes a decisive influence to digital technologies, the theory could be honed to the extent that postdigital reflection is not only a potential but even a necessity. Today, according to the idea of a “postdigital imperative”, it is no longer possible (and/or desirable) not to use contemporary media music's representations and tools with regard to their postdigital implications. Electronic means should be used less for their own sake and more in the knowledge of their social, social and personal use. Here, contemporary music has the possibility to be compatible with relevant topics, without being degraded to accompanying music. Using the resources of multimedia composition, the implicit reflection of postdigital representations and modes is possible without having to resort primarily to programme texts and language use. Here, content can be implemented directly via the medium and made tangible to the senses.

In my compositional work, I have derived a mode of composition from the postdigital perspective, which deals with the perception and visibility of digital content. I have presented my artistic practice as a process of disclosure and as an experienceable option. The compositions consequently pursue the goal of focusing upon digital consequences, languages and codes. In the assumption that today, digital and analogue increasingly permeate, overlap and complement one another, I have presented practices that can bring about a separation of these levels, under the heading “Uncoupling”. Here, too, a comparison of perspectives is again central, because virtual, media-mediated and physical-immersive settings are being pitted against each other.

In my work, I primarily focus upon the postdigital representation of the human body, thematising interface junctions and types of digital communication forms. Here, the body is thematised in its digital extension via sensors, and equated with its digital image in the rasterized representations. However, the disclosure of gateways and program interfaces (by using errors) reflects instead the manipulability of digital content. In the participatory installations, the physical and interface-related aspects merge – and thereby focus on interpersonal interaction and communication in the postdigital age.

First, it concerns a presentation and use of digital forms of interaction, representation, and cooperation. As the concerts and installations are not purely digital settings, the focus is on the contrast between a digital and a postdigital, analogue world. It is this change in perspective, and the consequent comparison, that can be insightful. In the body-related pieces, the representation jumps from an abstractly gridded representation to a natural stage situation. In the lecture works and video pieces, the action/attention jumps again and again from the stage to behind the scenes: here, the surface is compared with the editing and manipulation tools behind it. In the VR-based installations, the viewer switches through different first-person perspectives and spaces; in these virtual scenes, one's own physicality and perception are contrasted with artificial, virtual perceptions and experiences.

Skipping between these contrasting worlds is the essential feature of my work. This switching – and thus comparison – takes place at various opposite poles: authenticity vs. deception, corporeality vs. immateriality, grid vs. continuity, proximity vs. distance, utopia vs. dystopia, machine vs. human or loneliness vs. group processes. Just as ambivalently as digital achievements for society can be seen, the pieces are not designed to make a clear, unambiguous statement. Rather, they are intended to demonstrate worlds – and make them emotionally and physically palpable. The ambivalence of the experience intends to enable an examination of the content. The audience is thus exposed to scenarios in which – mediated by technology – they are placed in strongly intimate situations. But, time and again, the digital presentation is equally distanced. Using these tools, the gain and loss of control is a continuously appearing symbol. Thus, the implications oscillate between communal democratic approaches and settings of self-abandonment, surrender, being overwhelmed, and trance.

I understand the design of these settings as an exploratory approach, as, in many cases, they are not merely pieces illustrating a theme, but offer an experience with an open outcome. Sometimes the process of developing a piece is designed as an experiment, or the piece is conceived in such a way that the actual performance has an open-ended result. Against the backdrop of illuminating a subject with multiple perspectives, it is obvious to explore the post-digital theme through artistic practice. Particularly because digital influences act upon our perception, communication and our body images, it is important to me to make these characteristics tangible and palpable, as these themes are not purely abstract gimmicks, but take place within us, despite their technical origin. It then concerns no longer the technology itself, but the experienced world in which we live, with all our needs and emotions.

When we look at the tools and forms of our postdigital era, we do not primarily see the technical implications, but rather the social ones. Behind any social movements lies the soul of the human being, which drives progress and, with it, both thrives and suffers. When we open up worlds, step out of them or dis-illusion²⁹³ them, we can then learn through these processes. We meet our tools and the world we construct with them – and ourselves.

293 The German word "Enttäuschung" has been translated here as elsewhere with "dis-illusion" to reflect that a "Täuschung" [Illusion] is being removed.

5.1 Outlook “With the Eyes of the Machine”

The postdigital attempts to describe the extent to which we see the world today with digital eyes. How much have our senses already been shaped by the digital, and how do we now look at our world? A subsequent question could then be: how does the digital see us? What constitutes the gaze of the digital in itself? Not the interfaces or graphic user screens, but a program's analysis, evaluation and assessment of us and the analogue world. Interfaces, for example, are initially designed by people for people, even if the digital structures are already clearly recognizable there and implicit. However, the previously described characteristics of calculability of the digital, the discreet, the post-medial detached, already lead to influences which were not – in all cases – directly conceived by man. Here, the “essence” of the digital begins to manifest itself: it simply lies in its nature. The postdigital wants to recognize and name this “essence”: in other words, to develop an eye for it, to see (and perceive) in such a way that we are sensitized to it.

The next step would now be to adopt the machine's view. How does an algorithm see the world, and how does a program recognize an image's properties? How does a technical system make a decision? These questions initially have a technical core, as they may initially be research and implementation questions; but subsequently, it is much more than that. If we analyse how a program sees the world – especially if we have not deterministically programmed every aspect of the program – then we not only learn about the properties of the computer but also question our perception and compare it with the machine. Where are parallels and which are the differences? Where do approaches converge and where are they disparate? And what role does man play in a world view, from the machine's perspective?

The spectrum of machine-specific perceptions ranges from simple programs to complex recognition algorithms and artificial intelligence. A simple sorting algorithm is not, in itself, a complex procedure, and is traceable at every step. However, if one applies this procedure to audio files, pixels in video frames, entire pictures or even people on a stage, one can already surmise the presence of a digitally inhumane procedure in these processes; we gain an inkling of processes that otherwise take place behind the user interface. Otherwise, this classification does not imply any mystification or elevation of the algorithm: it is no more than a series of structured commands. I find the spiritualization of technology to be a rather obstructive procedure; but to accept and perceive the differences between man and programme, in sight and action, is, again, instructive.

In the analogue world, these kinds of algorithms are already noticeable.²⁹⁴ They become particularly evident when there is a clearly visible gateway between the analogue and digital world. These gateways can be coordinated goods in a warehouse, guided streams of visitors in an airport, algorithmically coordinated people in the gig economy or digitally managed and rented flats. In these examples, we can perceive the analogue as an outgrowth of the digital. Increasingly, the digital is no longer an auxiliary tool that supports analogue processes. The analogue object

²⁹⁴ Especially when a complex system is created from a sum of rather simple parts (sorting, filing, administration, distance calculation, cost minimisation, ...)

or person can increasingly be perceived as a physical component of the program. In the interchangeability of people and objects with an algorithm, they are then, in their individuality, no longer the centre of attention. They are a necessary manifestation of the digital.²⁹⁵ Additionally, this condition once again places the central concept of the AD/DA converter centre stage. Technology will increasingly disappear further into the invisible, so the only relevant aspect, besides the programs themselves, will be the transducer from digital to analogue and vice versa. In purely physical terms, it will be equipment (in the form of cameras, sensors, scanners, etc.) that will remain. Metaphorically speaking, this is then also the elementary venue of the relationship between analogue and digital.

When the digital processes are less visible, then it may be less striking at first, but, if in doubt, even more worrying. This is, amongst other examples, the case when programs analyse data, images, people and coordinates. "Computer vision" – the extraction of an image's information and properties – is a tangible example. The algorithmic evaluation of big data and data mining can reveal correlations that people would otherwise perhaps not find (and perhaps would not search for). Here, bizarre combinations can be revealed: but digestible information may also be statistically extracted from a series of irrelevant data. There are indeed programs which, based on photos shared in social media, can make statements about whether a person has depressive tendencies. By combining search and purchase behaviour, other programmes can make statements about whether a person wants to change jobs or is pregnant. The combinability, scope and recording possibilities of digital data lay the foundation for a categorically new form of analysis and machine vision.

In this context, the use of artificial intelligence (AI) represents a significant extension of the previously outlined points. If the program is only given framework conditions, according to which it then adapts a concrete implementation itself, we then observe processing and classification patterns which can differ fundamentally from human patterns or which are surprisingly convergent.

If the algorithms are not designed in detail by humans and conceived in a concrete process, we no longer specify the concrete processing but create an environment which is adaptive according to certain learning functions. Here, perhaps an even more machine-based view emerges; a process that expresses the digital even more strongly. In the context of AI, an input and an output layer are normally defined, connected by a middle layer capable of learning. This calculation layer is iteratively adapted, based on an error minimization of the system. The error describes the quality of the algorithm and is quasi the evolutionary pressure of the system. The system's architecture, and often also the error function, are designed by humans and are, therefore, not a machine logic's expression.

From this point on, artificial intelligence develops its own connections and, depending on its complexity, also representations, logics, formalizations or ontologies. An opaque black box is created when the result of artificial intelligence

²⁹⁵ Of course, this system in this form was not created arbitrarily. It is, for example, in the form of the gig economy and other cases the culmination of (platform) capitalism. The turning away from individualization and at the same time the instrumentalization of people finds a sad climax here, which puts industrialization far in the shade.

is so complex, that we ourselves can no longer comprehend it and can only judge the result. It represents the opposite of visibility and removes a task's digital implementation from human regard. In this case, we either have to analyse the results or decode and interpret the system as a found object. Within the field of AI image recognition, however, we can sometimes also identify methods that are similar to processing steps in the human brain (edge detection, shape recognition, etc.). In this way, general functions can be recognized that are apparently so general that they can also develop in such settings. On the other hand, "deep learning" algorithms also create multidimensional representations, in which we cannot assign any human classification function to the individual description parameters. These are then highly complex systems, with criteria that are functional but not usable for us without further transformation. Since these parameter sets can also generate new content, these systems also provide us with the opportunity to create new editions based on the AI representation. These results often have a mixture of familiarity and surreal absurdity. These images (or music, etc.) give us an idea of what a machine classification can look like. We see in them the machine-like, equally associating the psychedelic, unconscious and surreal.

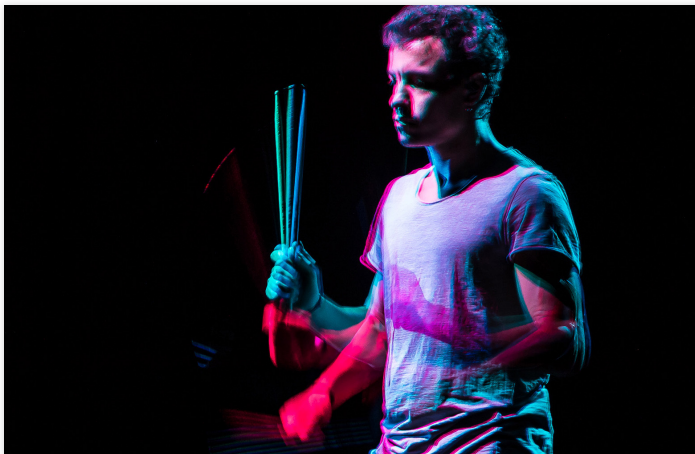
However, depending on the data from which the system learns, it can also reveal very human aspects. If a system learns to make judicial decisions and trains itself with the judicial archives of the past, artificial intelligence will reproduce and repeat discriminatory and erroneous decisions. In this sense, this artificial system is then a mirror of ourselves. Perhaps it is precisely in this comparison of perspectives and classifications that the appeal of artistic contemplation and debate lies. For us, the digital is also always a mirror. We see ourselves in and through the digital. The digital is shaped by us and subsequently, we are shaped by it. In this cycle of interactions, to look the digital in the eye and to reflect and calibrate one's own perception – this can represent an opportunity provided by contemporary media art: withstanding the gaze, without blinking.

6. PUBLISHED ARTICLES

6.1 The Aesthetics of Error

Fracture in Coding as an Opportunity to Understand a System

The aesthetic of the fault, failure, breaking off or breaking down is a manifold apparition, that traverses a multitude of aspects in our daily life as well as art in general and medial contemporary music especially.²⁹⁶ In addition to the disruptive, destructive element of the mistake, it offers the opportunity to look behind the façade and to understand the mechanisms of systems. When a function is impaired or conducting itself defectively, we learn something about the operating principle of the system – be it biology, psychology, informatics, or any other branch of science. This holds especially true for medially conveyed digital contents. This aspect gains a growing social and also artistic poignancy in a reality, that increasingly capitalizes on digitally transported contents.^{297 298}



16 Concert photo "Codec Error" with Ensemble Intercontemporain

This text discusses the conception and connotation of the error, specifically in the field of digital media. I will explore resulting implications for the arts and, using examples, the possibilities of harnessing their attributes. Finally, I wish to discuss my own pieces that deal with this topic and explain the motivation that led me to familiarize myself with the principle of error.

296 Cascone, Kim: "The Aesthetics of Failure: 'Post-Digital' Tendencies in Contemporary Computer Music", in: *Computer Music Journal* 24/4, 2000, pp.12–18.

297 Schönfelder, Christoph and Cohnen, Henrik: 'Über Fehler, Krisen und ästhetische Erfahrung', in: *Positionen. Beiträge zur neuen Musik [Of Mistakes, Crisis and aesthetic Experience]*, in: *Positionen. Articles concerning New Music* 79, 2009, pp.2–6.

298 Sanio, Sabine: 'Gedanken zu einer Ästhetik des Fehlers', in: *Positionen. Beiträge zur neuen Musik [Thoughts concerning an Aesthetic of Error]*, in: *Positionen. Articles concerning New Music* 79, 2009, p.43.

6.1.1 Kinds of Errors and Principles

An error, by definition, has a negative connotation. It represents the deviation from a rule, an expectation, or from a forecast. If something does not function the way we expect or wish it to, we initially experience it as disappointing. But in all disciplines, there is something to gain from mistakes, as, because of it, we can shed new light on a situation or a process and question it. A lot of experiences and findings build upon faults – whether they have been accepted (trial and error), calculated (experimental design), or happened as a surprising occurrence (failure).

When we perceive an error, it firstly shows us that we had an assumption or prior knowledge of an event or a function. Only then can we locate a mistake. This assumption can be made deliberately as well as unconsciously. Especially in the case of an unconscious expectation, the realization of an error results in a deeper understanding of the outset. Now, the recognition of the mistake spurs the reflection of unconscious knowledge.

But not only existing assumptions can be disappointed: unforeseeable behavioural patterns may also come to light. A new category might be revealed, or a building block recognized: something that previously was invisible, now becomes discernible. Errors always destroy the black box (whether, for example, in a computer program or a theatre performance, for example). In such a case we learn something about the underlying principle, respectively the attributes of a system. This is especially true when an error does not occur on a global scale but affects only the section of a system. In medicine, for example, the functions of different brain regions could be classified after accidents revealed their respective malfunctions.

6.1.2 Causes of Error

If a mistake occurs, we perceive something that we shouldn't actually experience. We look behind the façade (of functionality) intended for us and recognize a structure and a process principle.

The reasons for the occurrence of errors are manifold: they can be caused by the absence of a component, by a defective part, by the lack of a significant piece of information or by the fact that an external process has been interfered with and disturbed.

Partial errors, that do not lead to a complete failure, thus contain a special chance for gainful insights as they often point out the faulty components. This offers insights into ontological structures or technical construction methods. It is not for nothing that during debugging in programming, section by section (and module by module) is successively checked. Similarly, illnesses helped with understanding what brain regions are necessary for language genesis and comprehension.

Partial failure does not in all cases lead to a partial disruption – a broken wheel can bring the whole machinery to a halt. The result is a complete standstill. Here we might learn less about the operating principle, but more about the relevance of single components – their imperative nature. In case of doubt, a positive conclusion is possible, though: the recognition of a technical, sociological, aesthetical, or political function, subdivision, or group. Examples from the social domain could

be the financial crisis, burn-outs, and strikes of single occupational groups.

Besides the malfunction of a component, another cause of an error could be an impaired interaction. A rich spectrum of faulty communication channels and related problems can be found in technical and interpersonal mediation.

6.1.3 Analogue and Digital Media

When focusing on technical errors and medial dysfunction, one can roughly observe the complementary classes of “analogue” and “digital” – comparable to the partial and comprehensive error. An analogue system, and thus the fault occurring therein, is based on a continuous (and not discrete) representation. From this comes the realization that interruptions are experienced as distortions or modulations rather than a textual, gradually occurring crack. A saturated tape or a scratched vinyl record lead to a successive change in the sound – it is a continuous change of the mechanism. In the extreme, cracks and ruptures can appear in the analogue, but constant change that mostly lies in the congruent coding of contents is the norm. A disturbed analogue radio signal will rather distort or fade and only abort in the extreme. Within the digital world, however, it is often the opposite case: storage and representation are not analogue, therefore not translated 1:1. Hence, too-greatly disturbed coding may lead to complete failure more easily. The error corrections, e.g. in CD-players, bridge that gap and tolerate some faults until they suddenly jump to a strong impairment or abruptly stop working. Compression and a more compact coding of data is consequently the Achilles’ heel of the digital system.²⁹⁹

In music, the handling of purposefully induced errors in sound carriers and technical music equipment is well established³⁰⁰, forming genres such as glitch, noise, or digital noise. Meanwhile, this aesthetic has made it to mainstream music, film, and other sectors.³⁰¹



17 Oval - Ovalcommers (Album Cover)

299 Collins, Nicolas: 'Hacking the CD Player', 2009.

online: <https://www.nicolascollins.com/texts/cdhacking.pdf>. (Retrieved:12.12.2019)

300 Stuart, Caleb: 'Damaged Sound: Glitching and Skipping Compact Discs in the Audio of Yasunao Tone, Nicolas Collins and Oval', in: *Leonardo Music Journal* 13, 2003, pp.47–52.

301 Moradi, Iman: *Glitch Aesthetics*, Huddersfield: The University of Huddersfield, 2004.

Artists such as Oval and Yasunao Tone have extensively drawn from these techniques. Martin Arnold and Raphael Montañez Ortiz played with similar perceptions, based on manipulating video material. Bernhard Lang partially transferred this model to composed works.³⁰²

Firstly, new forms of sound were created using such methods. The hard and screeching sound of a digital error was a welcome enhancement of tonal possibilities. But the textual and narrative plane of such an edited source material would also be changed radically. The resulting jumping, chopping, and looping fundamentally changes the chronology, dramaturgy, and perception of the piece. The outcome can be amusing, threatening, unsettling, or beautiful. Yet, almost always, we look differently upon the source material and are forced to step back and view the content from a distance. Understandably, these tools have been established as popular remix instruments.^{303 304}

6.1.4 Coding

In addition to musical and conceptual changes, these works always allow a look behind the scenes of the playback, storage, display, or communication system. The most well-known is the aforementioned “jumping” CD and underlying block by block storing and scanning of music.³⁰⁵

CD-coding is probably followed by the MP3-format as the widest spread audio codec. This loss-laden form of storage includes an (accepted) error, which, depending on the grade of compression, is more present or almost inaudible. In his piece "Mehr als die Hälfte" (More than Half), Hans Seidl had an orchestra play the missing parts, those which had been excluded by the algorithm to optimize storage. Every model and every approximation (deliberately or unwittingly) accepts mistakes – and Seidl steers our attention to these lost parts. He interprets the absence of a hardly audible but quantitatively grave part of the complete sound as a political metaphor for a system in which the majority of the voices are being neglected. A deliberately accepted mistake is questioned.³⁰⁶

302 Even if this is a technical commentary: In my opinion, Lang's work is more about the convention of musical language and the performance apparatus, which is illuminated and sometimes taken ad absurdum.

303 Navas, Eduardo; Gallagher, Owen and Burrough, xtine (Ed.): The Routledge companion to remix studies, New York: Routledge Taylor & Francis Group, 2015.

304 Amerika, Mark: Meta/data: A digital poetics, Cambridge, Mass: MIT Press, 2007.

305 Kelly, Caleb: Cracked media: The sound of malfunction, Cambridge, Mass: MIT Press, 2009.

306 Manon, Hugh S. und Temkin, Daniel: 'Notes on Glitch', in: world picture 6, 2011.
online: http://worldpicturejournal.com/WP_6/Manon.html (Retrieved:12.12.2019).



18 Nicolas Provost - Long Live the New Flesh (video-Still)

A prominent fault in digital videos is found concerning the keyframe, due to the relative storing of video images. For example, only every fifteenth image is saved completely, while the following fourteen images only save the change. Thus, the amount of data is massively reduced at a similar image ratio. If this reference frame is saved incorrectly or missing completely, the following images relate to the wrong image. This results in a faulty, amorphous, and surreal display, in which backgrounds, faces, and objects blur into each other. Nicolas Provost picked up this aesthetic in "Long Live The New Flesh" (2009) and subjected film sequences from Cronenberg's "Videodrome" (1983) to this error. The original film's theme of merging bodies and technologies is emphasized through these morphing mistakes.^{307 308}

In his classic "I am Sitting in a Room", Lucier primarily highlighted the characteristics of space, language, and audio technology. But he also incorporates the amplification of the error in recording and playback apparatus. Several works³⁰⁹ explore the principle of "generation loss": the loss of quality, when repeatedly copying from a source (e.g. VHS-tapes). The errors slip in successively, destabilize the image and distort the sound. In the digital equivalent "Video Room 1000", a YouTube-user uploads a video to the platform only to download it (after it has been embedded and recoded by YouTube) again. He repeats this a thousand times to – analogue to Lucier – make the coding errors audible and visible.

307 Winand, Annelie: 'The Body, the Film, the Archive and the Monster',

In: Conference: XIV MAGIS – Gorizia International Film Studies Spring School (2016).

308 Zvokine, Eugénie: 'Long live the new flesh de Nicolas Provost, une analyse du spectateur contemporain'

[Long live the new flesh by Nicolas Provost, an analysis of the contemporary spectator]

In: L'archive-forme, Giusy Pleano, Paris: L'Harmattan, 2014, pp.65–78.

309 "VHS generation loss - YouTube", 4.4.2020.

online: <https://www.youtube.com/watch?v=mES3CHEnVyl&feature=youtu.be> (Retrieved: 4.4.2019).



19 Video Room 1000 (screenshot)

In his lecture/performance "Cancellation Artefacts", Dan Tramte introduces a set of examples in which transformed and thus erroneous material is "retransformed".³¹⁰ The result is the original source material as well as the artefacts that have been created by editing. This means that there is a digital footprint of the manipulations (and error artefacts).

6.1.5 Behind the Scenes

As previously mentioned, several unique art forms have developed from the work with manipulated and destroyed digital media since the relating technologies came to exist. In an increasingly virtual, editable, and medial world, the glitch is not only a means of sound design but a tool to reveal and thematise the constructivist elements in our surroundings.

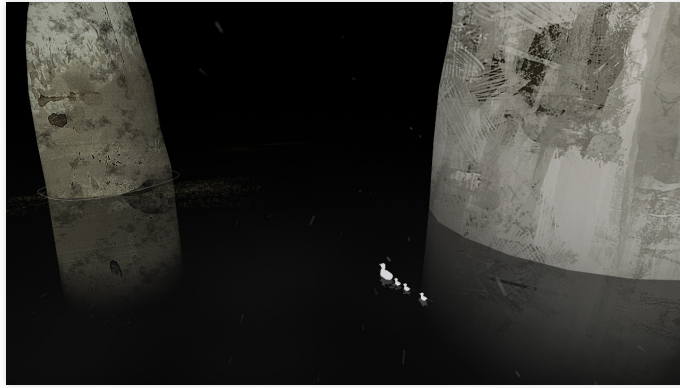
A retouching mishap, or the exaggerated adjustment of a model utilizing Photoshop, becomes a symbol of the omnipresent manipulation of body images. A crashed ATM with a Windows error report opens our eyes to the fault-prone and often hackable operating system that lies beneath the reputable, clinically untouchable surface of the financial world. The omnipotent economic façade symbolically shrinks down to a fragile personal computer.

David O'Reilly's video works are riddled with glitch and noise elements.³¹¹ In the beginning, the rather calm and poetic video loop „Black Lake“ (2010) features a rendered lake-land with birds. Gradually, display errors appear and instead of the scenery, we become aware of the motion vectors and the object grids. Virtuality is plainly shown to us, and in this case, develops a kind of loneliness and emptiness that fits the aesthetic of the previous section.³¹²

310 Cancellation Artifacts lecture performance - YouTube, 4.4.2020.
online: <https://www.youtube.com/watch?v=gXVYAa4T5K8> (Retrieved:4.4.2020).

311 Cancellation Artifacts lecture performance - YouTube, 4.4.2020.
online: <https://www.youtube.com/watch?v=gXVYAa4T5K8> (Retrieved:4.4.2020).

312 Wanner, Andres: "Machinic Trajectories": Appropriated Drawing Machines as Post-Digital Devices",
In: Journal of Science and Technology of the Arts 6/1, 2014,p.75.



20 David O'Reilly - "Black Lake" (screenshot)

6.1.6 Post-Internet

Following the advent of the internet and digital means of communication, post-internet concepts have arrived in the art world, established as a component of the younger composition and art scene. Time and again, the error appears as a driving force in this context as well. It invites us to question the interlocking of the virtual world and reality.



21 Regula Bochsler - "The Rendering Eye"

It is not uncommon for faulty software to coincidentally lead to artistically exciting results – and this recognition can be extended to almost all the aforementioned examples. A much-discussed item was the (especially in the beginning) artefact-heavy Apple application "Maps". Here, texture data and altitude information were often collected inaccurately. The corollary was the creation of geometrically impossible, pseudo-real displays of the earth's surface. Non-matching data sets are – also in general – a typical source of error.³¹³

However, Helmut Smits turned the tables in his work "Dead Pixel in Google Earth" (2008). He coloured a square of 82 cm edge-length black, by burning a patch of grass on a real lawn. Viewed from a height of one kilometre in Google Maps, this made up exactly one pixel. This work in the area of landscape art simulated a virtual

313 Rendering Eye 4.4.2020.

online: http://www.renderingeye.net/projects_content.php?project_id=1032&typ=gallery (Retrieved:4.4.2020).

error, in reality – and when recaptured through satellite photography it can't be distinguished from an actual pixel error.³¹⁴



22 Helmut Smith - "Dead Pixel"

Conversely, errors in Google's navigation system in turn cause, for example, numerous cars to be guided incorrectly into a cul-de-sac in a remote forest area when a traffic jam is diverted. Like lemmings, disorientated car drivers are stranded in front of a pedestrian bridge in the forest, due to an error in the navigation program. This way they involuntarily became the plaything of an (in this case) inconsequential and absurd error.

6.1.7 Virtual Systems and Expectations

The issue of the error plays a continuous role in my compositions. As my pieces mainly deal with digital media and medial representation, the form of fault always comes from computer-based coding.

The starting point of one of my works is mostly the creation of a setting or scenery. This starting point can be scenic, gestural, musical, visual, or textual. But in all cases, this setting is realized and conveyed with the help of technology, programming, and digitally controlled visual contents. Something generally artificial and constructed lies within the process. This creation process and the connection of different contents (via technology) is, for starters, not obligatory, but arbitrary. My idea is to fabricate a system with a virtual character and from there, to provoke expectations. That could be, e.g. , the technical coupling of gestures with sound events, the setting of a lecture, or the application of video playbacks.

In my sensor-based pieces³¹⁵, gestures are translated into sounds (and light). For one, this setup created an expressive, improvisatory controllable hybrid-instrument, while the technology was to function as prolongation and expansion

³¹⁴ Brucker-Cohen, Jonah: 'Dead Pixel In Google Earth, hacking satellite maps one pixel at a time', 2009. online: <http://neural.it/2009/04/dead-pixel-in-google-earth-hacking-satellite-maps-one-pixel-at-a-time/> (Retrieved:4.4.2020).

³¹⁵ Weapon of Choice and Laplace Tiger

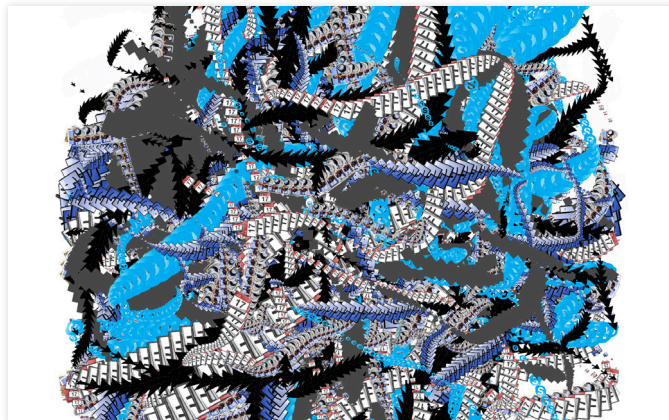
of the interpreter. "Point Ones"³¹⁶, and even more so "Serious Smile", play with the interaction between a sensor-supported conductor and an ensemble. The arbitrariness of whether the ensemble or the electronics are playing and in which form the setting of the electronics is freely assignable is shown at the end of the piece, when the conductor's gestures are only generating error messages and are implemented increasingly asynchronously. The levels of interplay are getting out of hand, technically as well as regarding the interaction. In this case, the utilization of the fault underlines the constructivism of the setup.³¹⁷



23 Enno Poppe conducts "Point Ones" (with Ensemble Mosalk)

6.1.8 Narrative Crash

The pieces mentioned previously concentrate mainly on gestural interaction, technical control, and non-verbal conveyance of contents. They play with consequential expectations.



24 Screenshot from "Star Me Kitten"

316 Enno Poppe - "Point Ones" Conductor Solo [Alexander Schubert] - YouTube, 4.4.2020.
online: <https://www.youtube.com/watch?v=3JB8qcTwDJw> (Retrieved:4.4.2020).

317 Nonnenmann, Rainer: 'Der Mensch denkt, die Maschine lenkt' [The Man thinks, the Machine Steers]
In: MusikTexte 153, 2017, pp.33-42.



25 Concert photo "Hello" with Decoder Ensemble

A textural cut is not necessarily bound to a technical mistake but can be triggered by one. In my lecture/performance "Star Me Kitten", a computer error is used for this. At the beginning of the piece, a more or less believable setting is established: a musicological lecture in which the ensemble illustrates content from the speech.³¹⁸ A theory and numerous symbols are described and interpreted musically. In this way, a somewhat cohesive setting is created. This is followed by a crash of the PowerPoint presentation after a third of the piece. From now on, the point of view is changed, into the "interior" of the computer, as for the rest of the piece, the musical and visual material consists majorly of warning messages and error signals. Furthermore, the audience can repeatedly see behind the scene of the presentation: the slides being worked on, the editing in Photoshop, mountains of notations that burst out of the notation program – and, over and over, the error reports of the beamer and the programs in use. But the cut and related change of perspective primarily happen in parallel and on the narrative level. The previously introduced symbols and significant units are, from this point on, put into another context and reassembled into a construction that no longer corresponds to a factual lecture. A stream-of-consciousness is opened up with the crash of the program and one sees through the façade of the lecturers, into an emotional, parallel world, existing behind the scenes. In addition to its function as a switcher and aggregator of material, the error also functions as a post-modern tool for quick, contrasting cutting techniques. Just as a mistake can involuntarily reveal differing attributes in everyday life, so too does it enable the opportunity to quickly jump to an opposite subject. The behaviour of the dysfunctional computer is always erratic and surprising. In this case, in addition to the technical component, it reveals the subject behind the abstract and the emotion behind the surface.

I use a similar approach in "f1". In the beginning, a musician, running late, hurries onto the stage, stumbles and falls flat on his face. From then on, he lies there inanimately. The mistake happens right at the beginning of the piece. It breaks with the expectations of a classical music concert and establishes a unique setting

318 Compare: Matthew Shlomowitz – "Lecture about Bad Music", Trond Reinholdtsen – "Unsichtbare Musik" and Francois Sarhan – "Who was Mario Bossi"

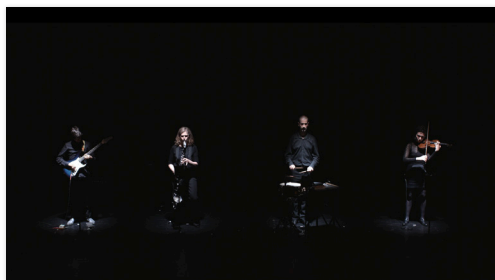
from the start. In this case, as well, the error is followed by a dark journey through a morbid realm of thought: one of death, deceit, and loss.



26 Scene from "f1"

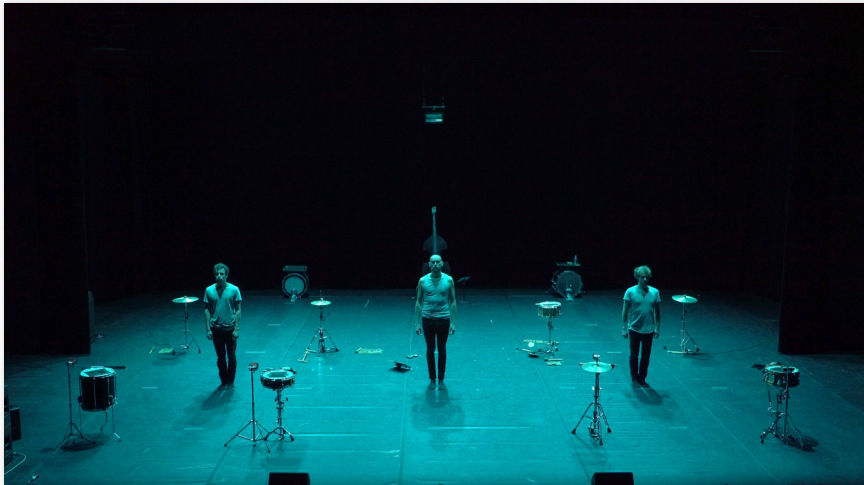
6.1.9 Artificial Bodies and Performance Machinations

After the sensor-based works, I continued addressing the body on stage and the gestures of performers. I developed the approach of a synchronized choreography, paired with light programming in "Sensate Focus" and "Scanners". In these works, the musicians are placed on a completely dark stage and execute artificial motions in addition to playing movements. The performer is spotlit for the duration of every action. In this way, I created short cut-outs or samples, that express part of the performance's continuity and corporeal presence in a video-clip or GIF-aesthetic. The person on stage is thus perceived as a visual sample and discretized as an impersonal decal. In "Sensate Focus", the increasingly mechanical movements lead to a vehement acceleration, ending in a passage that humans can simply not play. Tempo-wise, the instrumentalists are taken here to their limit, so that performance errors become increasingly visible and there is a repetitive saturation of the gestures, resembling the overheating of a gearbox.



27 Sensate Focus (concert photo) with Ensemble Plusminus

This approach of synchronized choreography and lighting is continued and temporarily brought to a conclusion in "Codec Error". The basic setting is the same. The difference is that the stage can be used in all its depth, and all the headlamps are mobile so that any desired area on the stage can be highlighted. The two drummers and the bass player can consequently be spotlighted by any light, on any position. This provides them with the freedom to move to different instruments spread out on stage. Here, the idea of displaying the live situation as if it were a video is intensified. All the performers' movements on stage are directed by the stop-motion principle. The musicians move forward in the strobe light and thus evoke the impression of an inanimate object being moved in the dark. They seem dehumanized and resemble holograms. This sensation is supported by position changes during darkness, which simultaneously increases the impression of discontinuity. Complying with the piece's title, I attempt to code – explicitly, to video-code – the musicians on stage.³¹⁹



28 "Codec Error" (concert photo) with Ensemble Intercontemporain

The first error happens after the first third of the piece: the playing motions now resemble a jumping CD – or rather, a DVD. Divided into micro-loops, they equal a broken playback device hanging in a loop. More explicitly, the image of an incorrectly read video file is to be evoked. A playback-error in the clip-like portrayal of the performers leads to a dysfunctional representation of the people on the stage. This effect is amplified by the use of light in this passage. The lights change in patterns between the basic colours red, blue, and green. Every flash of light leads to an instant snapshot – and, following the video-analogy, to the generation of a frame. The changing of the RGB-mixed colours emulates a

319 Baille, Joanna: 'Late to the party: concerning contemporary music's current (and long overdue) broadening of practice', in: *Clash! Generationen – Kulturen – Identitäten in der Gegenwartsmusik*. [Clash! Generations–Cultures–Identities in Current Music] Nr. 58, 2018, p.119.

classic video error (and also video effect) – the colour channel offset principle. Furthermore, at least three different headlamps are pointed at every musician from (preferably) orthogonal angles at all times. When the lamps illuminate the musicians in a specific order, the serial snapshots light the player from different angles. In total, we see for example the performer's back in red, then the left side in blue and finally a blue flash of light from the opposite angle. This is an attempt to emulate a coding error in a video file and, with analogue means, and without the application of projection, the aesthetic of a defective video file is generated. The appearance of jumping frames and faulty body images is accrued in an ideally abstract display.³²⁰

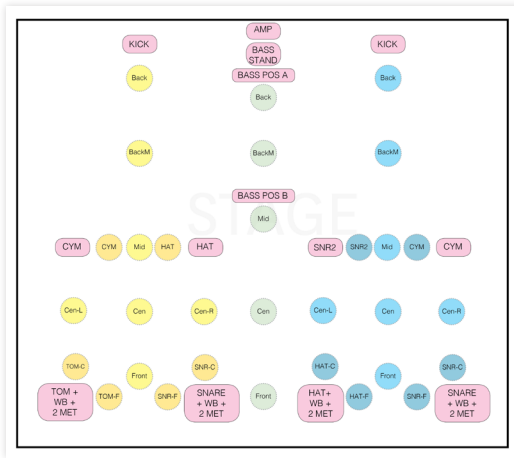


29 "Codec Error" (video-still)with Ensemble Intercontemporain

Right in the middle of the piece, the malfunction leads to a kind of system failure and the form of presentation is inverted: from now on, all actions take place as a matter of principle on a flatly lighted stage, and this section begins with one and a half minutes of silence. The piece begins anew (not identical, though similar). The bassist moves towards the audience in slow motion once more – but now, we see everything clearly lit. Basically, this crash results in a change of perspective. The observers can see the events and the setting from a different angle and can now reassess it. The performance apparatus is openly exposed and, by this process, demystified. Markers on the stage floor, microphones on wrists, iPads on the floor, and hidden lamps: everything becomes visible. The “hologram black box” and the connected sensory overload have collapsed upon themselves. Towards the end of the piece, this situation peaks, when, after another crash, the click-track becomes audible on the venues' speakers. The audio track also contains the instructions

320 Schröter, Jens: 'Four Models of Intermediality', in: *Travels in Intermedia[li]ty: ReBlurring the Boundaries*, Bernd Herzogenrath, Lebanon: University Press of New England, 2012, p.77.

for the musicians – those heard on their headphones to find their cues in the dark. The last piece of the virtual setting's secret is revealed.



30 "Codex Error"
Positioning of spotlights and musicians

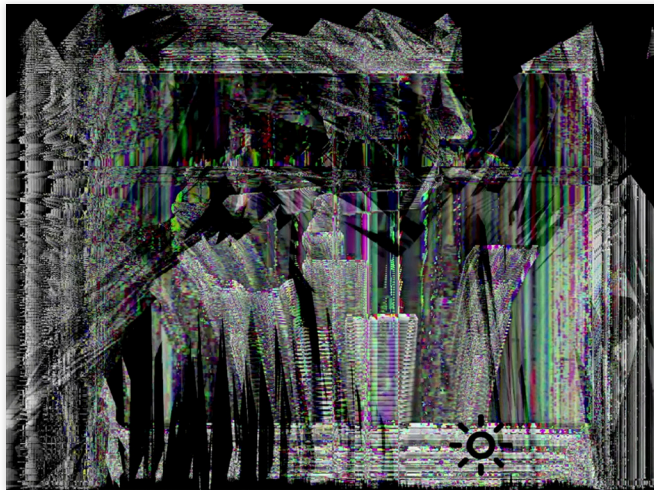
Now, not only does the view of the whole setting change but particularly the perception of the musicians. They might not be identified as being human in the ultra-abstract display in the first part of the piece—more as some kind of projection of a human being. In the second part of the piece, the audience has a lot of time to look at their physical bodies, opening up a more personal, emphatic perspective. The focus jumps from the digital representation back to the actual human. Complementary to the first act's setup, the onstage work lighting is only sometimes turned off, spotlighting the musicians merely in flashes. Originating from a natural observation of the musicians onstage, the perspective/representation of the interpreter changes abruptly, similar to an error, and reveals their digital image. The revelation of the click-track and the mechanisms of deception – normally always a mistake – lets the audience see the control apparatus of the work. From this, a more general metaphor can then be identified regarding control of people through technology or hierarchical systems.

6.1.10 Forecast

Our surrounding world is increasingly becoming more virtual, more artificial, and superficially more perfect. Media contents are more present than ever. For art, this can provide the opportunity to contribute to the reflection of this system. Never before has the use of multimedia means in contemporary art been simpler and more obvious than today. This holds the danger of affirmation and unthinking assumption. But at this point in time, spectacular sound effects and compute-intensive video editing have become a mass product, as established as Helmut Lachenmann's playing techniques. When the novelty of technology is used up, how the means are used becomes the actual topic. Here, the cutlery of media art in the context of contemporary music has finally become applicable as content instead of

decoration. Its creative and reflective potential is not to be underestimated in this context. Our habitat is of constructivist design. Methods and agreements can be questioned and penetrated via interface failure, amongst other ways. Perfection, or better: flawlessness is omnipresent, but should not be the (singular) goal of art music.

This is where the concept of error can take hold. It can break with conventions and communications. The error as a material is exhausted – the glitch as a visual or tonal element is somewhat exploited. But as a tool, it is more justified than ever. How can art call attention to the deception, perfection, paternalism, suggestion, surveillance, and body images? How can it reveal and criticize them? ³²¹



31 Video-Still "Unit Cycle"

In collapse, we see what surrounds us, what we demand from ourselves, and how we let ourselves be deceived. Virtually and medially transmitted realities are becoming more established and proclaimed on all technical levels. Authenticity is being traded as (often manipulated) currency. On an emotional level, the appearing of an error is immediately followed by disappointment. On the medial level, we experience equally, analogue to the literal sense, a revocation of deception.

Thus, we can look behind the façade, to see the abysmal, the broken. Behind the abstract lies the emotional, behind the powerful lies the fragile, behind perfection lies the original. It is not uncommon for a faulty system to break down by itself at some point. In other cases, artists, hackers, and activists can lend a helping hand.

321 Harenberg, Michael: *Topologies of an Aesthetics of the Virtual in Music*, pp.68–98..

6.2 Virtuality and Deception

“When I Told You These Things, I Was Lying”

The subject area “virtuality” is no longer a science-fiction vision, but has become a significant variable in our everyday lives. In addition to the obvious fields of work, virtual and augmented reality, its effects are also to be found in a more subtle form in all media content. Social life, communication, self-portrayal, political mediation, body images and much more have become editable and thus manipulatable variables in the digital age. We have been establishing realities not only since the advances in media technology but now in an increasingly realistic way. Wherever realities are created, deception happens. The questions of trustworthiness, verifiability and authenticity are becoming more elevated in their importance, to central questions of our social life.^{322 323}

One of the strengths of art is this very establishment of realities. Every work of art proclaims its own world and, moreover, relates to our real environment. A work of art never stands alone but is always a model. Additionally, the setting of the artwork offers the chance to play with the codes used, to reflect, break and question them.³²⁴

Then I speak of the real world or our environment in this text, I mean an analogous world, neither medial nor otherwise technically mediated, but directly perceived by the perceptive apparatus of the recipient world. Of course, we have constructively generated this perception as well and, therefore, it is not absolute. For the sake of simplicity, I use this concept as the opposite of virtual, artificial worlds. By this, I mean – in this context – realities which are recognizably and knowingly created by people (with technical resources) and which pursue the goal of generating an alternative or complementary truth, experience, perception or environment.³²⁵



32 Installation photo "Control"

322 Farocki, Harun: 'Serious Games' in: *Artlink* 35/1, 2015, pp. 62–65.

323 Seemann, Michael: *Das neue Spiel: Strategien für die Welt nach dem digitalen Kontrollverlust* [The New Game: Strategies for the World after the Digital Loss of Control], Freiburg: Orange Press, 2014.

324 Grossmann, Rolf: 'Konstruktiv(istisch)e Gedanken zur 'Medienmusik', in: *Medien, Musik, Mensch* [Constructiv(ist) Thoughts on 'Media Music', in: *Media, Music, Man*], Thomas Hemker and Daniel Müllensiefen, Hamburg: von Bockel, 1997, pp.61–78.

325 Seemann, Michael: *Das neue Spiel: Strategien für die Welt nach dem digitalen Kontrollverlust* [The New Game: Strategies for the World after the Digital Loss of Control], Freiburg: Orange Press, 2014.

In particular, working with new media such as electronics, video, installation and performance offers a wide range of potential for this, especially the possibility of applying contemporary music techniques to a socially relevant field.³²⁶ Live electronics and a video feed cannot be used simply as an effect, decoration or for superficially aesthetic purposes, but are to be understood as the most appropriate tools for the implementation of virtual concepts. Every use of electronics holds the potential for deception. With digital tools, the relationship between cause and effect is disengaged and can be freely designed. To concentrate on this aspect and make it the subject of the work is an artistically exciting task.

In the following, I will discuss various technical and related social factors that result explicitly or implicitly from (mostly media mediated) virtual representations. Physical bodies and identities are at the centre of my observations. The manipulation of the qualitative and quantitative aspects in depicting people and their actions will be investigated in different contexts.

At the same time, I will give examples from various art fields. The selection of works is intended to illustrate the extent to which artistic debate can reveal and problem-solve grievances. Finally, I will formulate the thesis that media production always contains elements of deception, so as to finally present my own work's intentions and experiences in this thematic field.

6.2.1 Uncoupling

We can experience the virtuality principle in classical concerts when an artificial space is created, the underlying functional mechanisms of which are hidden or, at least, hidden from us. Sensory impressions or experiences are created which do not exist in this form (classical concert-spatial) or whose form has been transferred to another representation.³²⁷

In acousmatic music, the source of the sound remains hidden from us. The art of pure listening – which originated in philosophical lecture – has increasingly found its way into art music through tape music. The “pythagorean curtain” uncouples our perception from the sound generator and thus creates an artificial space that can either exist purely acoustically or is internally completed by us.

Alvin Lucier's classic "Music for Solo Performer" provides a bridge between performative and acousmatic music. Although the percussion instruments are set in vibration by the performer's cerebral activity, the actual action inside the head eludes us. In the analogue circuitry for sound reinforcement, there is nevertheless an arbitrariness and, therefore, an assertion.

Theatrical and gestural elements have a long tradition in contemporary music. The staging of physical bodies and their relationship to the content conveyed was established in the instrumental music of Kagel, Schnebel and Christou, for

326 Santini, Giovanni: 'LINEAR (Live-generated Interface and Notation Environment in Augmented Reality)', In Conference Proceedings TENOR 18, Montréal: Concordia University, 2018, p.33.

327 Nonnenmann, Rainer: 'Das Konzert ist tot – Es lebe das Konzert! Öffnungen und Perspektiven der Musik im »Iconic turn« des Digitalzeitalters', in: Musik & Ästhetik [‘The Concert is dead – Long Live the Concert! Openings and Perspectives of Music in the « Iconic Turn» of the Digital Age’, in: Music and Aesthetics]14/56, 2010, pp.26–43.

example. As early as in Christou's "Anaparastasis III" , de Mey's "Silence must be", or Schnebel's "Nostalgia", we find a decided uncoupling of movement and (sound) result. Here, contents are evoked that don't actually take place on stage but are completed in our minds. This also occurs with Xavier le Roy's separated playing movement and actual playing in his production of Lachenmann's "Salute to Caudwell". The audience hears the guitar duo playing behind the curtain, and sees a second duo playing the piece empty-handed. In this case, the uncoupling is limited to the separation but does not affect the semantic content.^{328 329}



33 Michael Bell - "Exit to Enter" (concert photo) with Nadar Ensemble

Such approaches can be implemented particularly efficiently in the media context. The use of live electronics and video extends the range of possibilities. Michael Beil uses the principle of separating soundless, performative pseudo-game movements, which are supplemented with a sound layer by the offstage ensemble, for example, in "Exit to Enter". He takes this idea further still by doubling the performers via live video sampling. The musicians increasingly escape the tangible. First, they are robbed of their instruments, then of their bodies. In this way, actions can be underlaid with new content and movements can be reinterpreted. Events are manipulated and virtualized.

328 'Movements für Lachenmann [Movements for Lachenmann] - Workshop with Xavier Leroy', 2013.

online: <https://vimeo.com/73630751> (Retrieved: 4.4.2020).

329 Le Roy, Xavier: *Movements für Lachenmann* [Movements for Lachenmann] 4.4.2020.

online: <http://www.xavierleroy.com/page.php?sp=e347f884fa37480bd0bd5dff79104483a8e284b5&lg=en> (Retrieved: 4.4.2020).

6.2.2 Hologram

The dissolution of the body, of human presence and immediacy, has become commonplace in our society. How we present ourselves and view other people has progressively become indirect and virtual. A photographer took a picture of Hillary Clinton at an airport during an election campaign appearance with her waiting supporters. But all of them stand with their backs to the politician, so that they can take a selfie with her. In the same way, at concerts, which are continuously filmed by mobile phones and tablet computers, one observes that some spectators look at another visitor's tablet, rather than directly at the stage. The "real" event is only one component of the primary digital world.^{330 331}



34 Hillary Clinton in Orlando Airport during the electoral campaign

Stefan Prins takes up this phenomenon of indirect viewing via audience participants' tablet use in his piece "Mirror Box Extensions". Primarily, a hologram-like effect is achieved on stage, using projections onto a semi-transparent gauze wall, within which the musicians play, together with their projected alter egos. The hologram principle was used in Madrid in an artistically convincing way when a ban on demonstrations in front of government buildings was imposed. In accordance with the decree, but taking into account the voices of unwanted demonstrators, a virtual protest march was staged in which the banned citizens were made visible as holograms.^{332 333 334}

330 Wesemann, Nina and Hengst, Daniel: My Lonesome Hologram 4.4.2020.

online: <http://mylonesomehologram.de/> (Retrieved: 04.04.2020).

331 Schmitt, Philipp: Camera Restricta 4.4.2020.

online: <https://philippschmitt.com/work/camera-restricta> (Retrieved: 4.4.2020).

332 Hanusa, Sebastian: 'Körper in der Spiegelkiste: Stefan Prins «Mirror Box Extensions»', in: *Neue Zeitschrift für Musik* ['Body in the Mirror Box: Stefan Prins' « Mirror Box Extensions», in: *New Newspaper for Music*], 2016, p.46.

333 Blitzler, Jonathan: 'Protest by Hologram', in: *The New Yorker*, 20.4.2015.

334 Pierre Jodlowski - *Outerspace* (2017)

A fascinating phenomenon is the virtual fictional character Hatsune Miku, created as the mascot for the software of the same name, that can generate synthetic singing voices. The combination of figure and voice synthesis has become so popular that more than a hundred thousand pieces of music have been released on this basis by a broad user and producer collective. The shared access to this abstract person is as impressive as the audience's identification with this figure. In the context of art music, Keiichiro Shibuya, for example, used this setting in his hologram opera "The End" to address the death of the figure, or rather, the halting of its development. This situation had a real weight in the real fanbase. The fans' acceptance of and identification with the character are particularly intriguing in this phenomenon and, in this case, much more relevant than any transference into the art context with multimedia opera. The unique aspect is the willingness of an audience to applaud just as enthusiastically at the hologram's pop concerts, at an essentially empty stage, and to visit a concert hall in their thousands, where the artist(s) is (are) not, and cannot be present. This provides an overview of virtual content's acceptance in real life.^{335 336}



35 Miku Hatsune's Vocaloid Opera "THE END"

6.2.3 Computer and Games

Over the last few years, the computer gaming scene has developed more and more from pure entertainment industry to an artistically relevant sector. Computer games offer non-linear, narrative and structural potential. Platforms such as "Minecraft", for example, provide tools with which a large community can create crazy game ideas, art objects or Turing machines. A self-reflexive, non-linear example of a small production is the meta-computer game "The Stanley Parable".

335 Forester, Gordon: 'The End (Keiichiro Shibuya & Hatsune Miku, OzAsia)', 2017.

online: <https://www.limelightmagazine.com.au/reviews/review-the-end-keiichiro-shibuya-hatsune-miku-ozasia/>
(Retrieved: 4.4.2020).

336 Jenkins, Mark: 'This singer is part hologram, part avatar, and might be the pop star of the future',
in: The Washington Post, 5.7.2018.

Here, a game's virtual and artificial aspects are explicitly addressed, together with their implicit expectations and rules, and, finally, run ad absurdum.

Popular augmented-reality games, such as "Ingress" and "Pokémon Go", have made the mixing of reality with media content in public realms mainstream. This technique is also already being used in the art context, for example in the work "Alter Bahnhof VideoWalk" by Janet Cardiff and George Bures Miller. In the augmentation of the world, our view of reality can be changed and expanded.^{337 338 339}

However, the reverse, namely the limitation/simplification of reality, also offers a great opportunity. The typical reduction of the world into one version in a game has a certain model character. Reality's simplification always leads to increased knowledge, because (only) in this way can we see the underlying causal relationships or perceive their respective significance by eliminating elements.^{340 341}



36 Ciciliani and B. Lüneburg playing the work "Kilgore"

In the music context, the idea of a computer game directly touches upon algorithmic composition themes, which are also increasingly used in the mainstream. For example, a piece of music can be published as a program or an app. Björk's "Biophilia" or the program "Small Fish" are well-known examples of this.

In his most recent works, Marko Ciciliani integrates computer game concepts into the concert situation, for example in "Kilgore", "Atomic Etudes", and "Audiodromo", as well as with the research project "GAPPP". This research object uncovers many potentials. Immanent to this method is, among others, the question

337 Farocki, Harun: *Serious Games III: Immersion*, 4.4.2020. online:

<https://www.harunfarocki.de/Installations/2000s/2009/serious-games-iii-immersion.html> (Retrieved: 4.4.2020).

338 *Alter Bahnhof Video Walk: Documenta Außenkunstwerke [Old Railway Station Video Walk: Documenta Outdoor Artworks]*, 4.4.2020.

online: <https://documenta-historie.de/de/kunstwerke/alter-bahnhof-video-walk> (Retrieved: 4.4.2020).

339 Marko Ciciliani and Barbara Lüneburg: 'Gamified Audiovisual Works – Composition, Perception, Performance', in: *Emille, the Journal of the Korean Electro-Acoustic Music Society*.

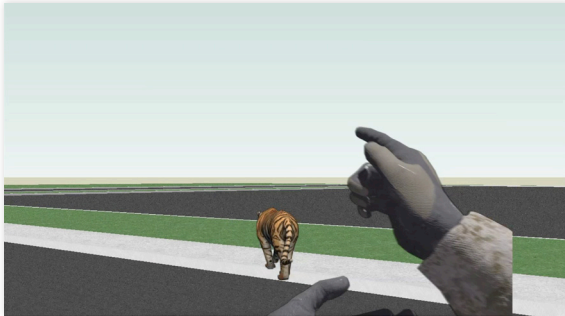
340 'The Artist Is Present', 29.5.2016.

online: <http://www.pippinbarr.com/games/theartistspresent/TheArtistsPresent.html> (Retrieved: 4.4.2020).

341 Evans, Jill Blackmore: 'Pippin Barr Makes Computer Games About Boredom, Time, and Marina Abramovic', in: *Format Magazine*, 2017.

online: <https://www.format.com/magazine/features/art/pippin-barr-art-computer-games> (Retrieved: 4.4.2020).

of how game participation and watching function as stand-alone forms. In the online gaming world, another trend has manifested itself with “Let's Play” or “Walkthrough” videos. Interested people watch other players play, or visit YouTube channels where walkthrough channels are commented on. This double meta-access to games is not unusual among young people and shows how present the virtual world has become in everyday life.^{342 343}



37 Video-still from Jonathan Vinel's "Notre amour est assez puissant"

In his post-internet short film "Notre amour est assez puissant", Jonathan Vinel uses the first-person perspective of an Ego-Shooter, to trace the sad story of a young man in love. We look over the protagonist's shoulder during a violent foray through school, church and nature. The cold detail of the scenery underlines the first-person narrator's grief and brutalization. The world within the game serves in many ways as a mirror and metaphor for the character's world of feelings and experiences. The film is a successful example of content-motivated medium use and its connotations: it is not only a tool for telling a story but, in its virtuality and the isolation it entails, already the subject of the work.

Virtuality today has numerous manifestations in all branches of art. The boundaries between the different fields are becoming increasingly blurred. The influence of extra-musical art and research genres upon academic music is already clearly noticeable. Media use and the basic ideas associated with it can be seen as helpful impulses for (media) contemporary music.

326 Kllore (Trailer) for two performers and a game system by Marko Cicilliani (2017/18), 4.4.2020, online: <https://vimeo.com/250603699> (Retrieved: 4.4.2020).

327 Michel, Cindy: 'Warum Videospiele das perfekte Medium für Philosophie sind', [Why Video Games are the perfect Medium for Philosophy] 27.2.2017. online: <https://www.wired.de/collection/life/warum-videospiele-das-perfekte-medium-fuer-philosophie-sind> (Retrieved: 27.2.2017).

6.2.4 Bodies and Identities

With every technical advancement and associated media achievements, new art forms have emerged that made use of the new tools and, simultaneously, questioned them in a reflective manner. Nam June Paik transferred the physical body into the world of screens, Stellarc modified his own body directly with prostheses and Marco Donnarumma uses his muscle energy as a source of control voltage for machines.

Body images and identities in particular, as core elements of human communication, have become more manipulatable in the digital age. On the one hand, we observe the alienation (starting from the “real”) and retouching of images, on the other hand, the entire generation of virtual characters.^{334 335}

The processing of image, video and sound is increasingly becoming an affordable mainstream. Thus, a specific manipulation, previously reserved for experts and secret services, now becomes a ubiquitous possibility. The “liquid filter” functions of Adobe Photoshop allow the layman to vary a person's face using a slide control. The face is broken down into key features. These features can then be adjusted via a menu, for example, the degree of smile. The basis for this is feature discretization through intelligent algorithms, which enables a new quality in editability.

The “face swapping” technique is also remarkable. Snapchat, for example, allows the exchange of two faces, as a humorous app feature. In more elaborate programs, facial expressions and voice movements can also be transferred from one face to another.

An application example in the arts field is the augmentation of oil paintings, which, when viewed through a mobile phone app, appear in an edited way. But above all, the implications and conceivable consequences on a political and social level are thought-provoking. Examples already show how prominent politicians can use digital intervention to make declarations they have never uttered. A well-known example of the creditability dissolution of image/sound documents in the digital age is the political satire “#Varoufake” by Jan Böhmermann. In the heated mood during the Euro crisis, Böhmermann claimed that a video of the Greek Finance Minister Varoufakis was a fake, produced by his team. The resulting uncertainty in the media and the public about the authenticity of the video is the action's real master-stroke. In fact, it later turned out that the making-of video, which showed the alleged manipulation of the Finance Minister's action, was, itself, a fake. The public was manipulated far enough into believing their deception. The far-reaching journalistic and social consequences of this (artistic-political) work resulted from the reflection of media use and the debate on news' authenticity value. In the course of the previously described development, the question of authenticity has become an essential artistic and social topos. In particular, the current debate about the sovereignty of interpretation in times of “fake news” shows this subject's brisance.

334 Donnarumma, Marco: ‘Human Bodies, Algorithms and Intuition: A Commentary’, in: *A NIME Reader*, Alexander Refsum Jensenius and Michael J. Lyons, Basel: Springer International Publishing, 2017, p. 90.

335 Donnarumma, Marco: ‘Embodiment, Incorporation and Affect: Reflecting on the Interface’, in: *Allegorithms*, Vit Bohal and Dustin Breitling, Prague: Centre for Critical and Cultural Theory, 2017, p. 17.

6.2.5 Avatars and Synthetic People

The manipulation of existing body images has become part of everyday life. Alongside explicit manipulation, the broad concept of digital self-representation can hardly be ignored. People stage themselves in social networks: through systematic selection or omission, through filtering and manipulation. A series of audiovisual pieces in the context of new music, for example by Oscar Escuardo and Laura Bowler, explicitly picks up on this trend, reproduces the interfaces of internet platforms in video projection and comments on the problems. In private life, the target group is the social environment. This deals with self-expression and potentially narcissistic motives. In "iScreen, YouScream!" Brigitta Muntendorf presents a collection of exaggerated internet and YouTube characters. Grotesque self-dramatization has a humorous side here. The aspect of isolation is also addressed by the performers being streamed, via video from black boxes, in which they are individually placed, onto the projection screen in the concert hall. But she additionally creates an explicitly virtual setting, in which we first have to believe that the projected content is actually live.^{346 347}



38 Concert photo of Brigitta Muntendorf's "iScreen, YouScream" with Ensemble Garage

But digital people are also formed by economic interests. With the increasing commercial use of blogs and social channels, advertising becomes more personal and direct, and identification figures more individual and private. Authenticity is a monetary quantity because it promises an individual value. Consequently, numerous originally private YouTubers, for example, have been successively converted into advertising puppets. Jurisprudence partially regulates this with the necessity of making them recognizable. Nevertheless – see the phenomenon of “influencers” – an increased blurring of the dividing line between official, recognizable advertising and personal statements by internet users is observable. Mainstream channels

346 iScreen, YouScream! von Brigitta Muntendorf - Social Media Opera 4.4.2020.

online: <http://www.brigitta-muntendorf.de/iScreen-youscream/> (Retrieved: 4.4.2020).

347 Fabian Czolbe and Ulrich A Krepplein: 'Gesamt: Kunst?Werk! Gesamtkunstwerk als Genre-eine systemtheoretische Annäherung', in: MusikTexte [Total:Art?Work! Total Artwork as Genre- a Systems Theory Approach', in: Music Texts]154, 2017, p.51-56.

and formats are becoming less important and distributed, allegedly more personal opinion placement is gaining in importance. According to “scripted reality” broadcasting formats, authenticity can be made even more real and the content even more credible. The grey area of deception, artificial figures and veiled interests has become part of everyday social life. All common internet platforms are used for these purposes. The boundaries between self-representation and artistic/social potential are fluid.

But even with a more explicit reference to the art sector, this trend is becoming increasingly present. In her work "Excellences & Perfections", for example, the artist Amalia Ulman created a fictional figure over four months, who ascends in three stages from “cute girl” to “life goddess”. The artist created the purportedly real photographic material for her Instagram account by sneaking into hotels and other prestigious locations. The publication of the deception processes, which show the medium (in this case Instagram) itself as an exhibition space, provides an excellent legitimization for media use.



39 Amalia Ulman in her work "Excellences & Perfections-"

Jagoda Szmytka created fake Facebook accounts, parallel to her work, for example, in the music theatre "LOST"³⁴⁸. These were clearly recognizable as artistic objects and were of a comparatively satirical or comic-like nature. This allowed them to add an intriguing component to the project. Jennifer Walshe has pushed the game with fictional artist characters far, in her works "Grúpat"³⁴⁹ and "Aisteach", creating a group of artistic alter egos. Here too, the fictional is not hidden. It is still recognizable that these are Walshe's ideas and pictures. But the thought experiment works even without complete deception: what if the artists shown here really existed in Ireland? In the subtext, we think about which

348 e.g. Szmytka, Jagoda: *Millennia Transit - Facebook*, 2015.

online: <https://www.facebook.com/profile.php?id=100009738467532> (Retrieved: 4.4.2020).

349 'An Introduction to Grúpat – MILKER CORPORATION XX.' online: <http://milker.org/anintroductiontogroupat/> (Retrieved: 4.4.2020).

real people are actually in our consciousness and how many perhaps equally talented musicians did not find their way there, because of origin, gender or other factors. Similar to François Sarhan's "Who was Mario Bossi"³⁵⁰, fictional people are used to question our cultural canon and our dominant hierarchies. An alternative virtual world is suggested to allow us to look at the real environment in a new way. We see here, which different motivations can lead to the use of these tools and how strongly our evaluation depends on the identification with the intention.

6.2.6 Quantitative and Qualitative People

Working with false identities has become not only an economic factor in the digital age but increasingly a political instrument. Fictitious persons should no longer merely function as the projection surface or desired site for advertising content and corporal images, but instead as convincingly created real persons. Internet social platforms make this operation mode easier than ever. They are the ideal tool for the halfway-convincing and relatively low-cost faking of real people.

In a less dramatic form, this process can be observed on platforms such as SoundCloud, Twitter or YouTube, where, for example, artists “buy clicks” to increase their market value and consequently obtain better engagements. For a certain amount of money, providers procure any number of “likes” on profiles or within media content for the interested party. These individual “likes” are usually linked to profiles without content. It is also possible to buy comments, to convey a more realistic-seeming impression of great interest in one's content. However, a sudden increase in followers and likes, as well as the nature of the associated profiles, often allow certain inferences to be made: yet this is no actual hurdle, but merely a question of effort.

In analogous form, a similar process was experienceable at the Donaueschinger Musiktage 2017 in the performance/action "L'école de la claque" by composer Bill Dietz ³⁵¹. Following prior consultation, a group of performers staged particular clapping patterns and audience reactions. These were not only quantitative influences but also, depending on the form of the action, content-related statements. Alongside the direct reference to claqueur history in the art world, the relationship to opinion manipulation by politics and state mechanisms is obvious. The tools of opinion-forming have a long history, as shown by propaganda in general, and particularly the influencing of revolutions as well as the use of agents provocateur and v-persons.

In the past, this approach required greater effort; now, it can be done more easily on the computer. An actor is not limited to creating a real fictional character, for example as a v-person, but can manage any number of digital profiles. This number becomes almost unlimited, as soon as the accounts are no longer maintained

350 Sarhan, François: 'MARIO BOSSI online, at last', 22.3.2020.

online: <http://francoissarhan.blogspot.com/2017/07/mario-bossi-online-at-last.html> (Retrieved: 4.4.2020).

351 O'Reilly, Rachel: 'Negativity Protocols: Bill Dietz's L'école de la claque', Zürich: Oncrating, 2017.

manually, but by automated computer bots or, on a large scale, via server farms. The manipulation form isn't new, but the tools and associated quantities are. This is only possible because we are increasingly relying on media-mediated and thus virtual content, in all areas of life, as part of our decision-making process. The generation of potentially authentic entities becomes an algorithmic problem, leading to an uncoupling between the protagonists involved and the resulting, suggested persons. In online-shops, for example, this procedure is used to increase value in the form of positive comments; and in the political context, this practice reaches its anti-democratic peak. We observe an approach that could not be further removed from the basic understanding of a democratic representation of a society's moods and opinions. That the AfD, as a party represented in parliament, has not, out of decency, at least in public distanced itself from this practice, shows to what extent these tools have been accepted by society.

For the most part, these accounts are empty, re-posting existing contributions from linked or friendly accounts. Sometimes they are also enriched with pseudo content, which normally doesn't stand up to serious examination. Besides the faceless army of fake accounts, there are also individual and prominent personas. In the US election campaign 2016, the Twitter profile called "Jenna Abrams" attracted a lot of attention. As a generator and multiplier of right-wing-conservative content, many observers ascribe to her an influential effect. The creation of a character who first collected followers with non-political content and then became increasingly political is also notable.³⁵²

This small digression into the manipulation of majorities and authenticity gives an idea of their potential in practice. It is obvious how not only artists but also companies and political parties, use these techniques for their own purposes and will use them more rigorously in the future. The underlying intentions can be multifarious. What they all have in common is the intention, using the principle of virtuality and deception, to establish a new perspective. For an artwork, this rethinking holds a great opportunity; in the deception of public discourse, there is, at the same time, an equally great danger.

6.2.7 Virtual Imperative

Having presented thematically relevant aspects of contemporary media art, I would now like to stress the necessity of this discussion. Given the social and technical backgrounds described earlier, a content-motivated approach and view of the media tools in artistic creation is obvious and desirable. However, the question of virtuality and deception is, in fact, such an integral part of electronic working methods that it can never be eliminated. The sole question arising concerns the form in which this fact is addressed and made part of the piece's content.^{353 354}

352 Hurtz, Simon: 'Jenna Abrams: Russische Trolle erschaffen Twitter-Promi', in: *Süddeutsche Zeitung*, ['Jenna Abrahms: Russian Trolls Create Twitter Celeb', in: *South German Newspaper*], 3.11.2017.

353 Harenberg, Michael: 'Die Rationalisierung des Virtuellen in der Musik', in: *Konfigurationen zwischen Kunst und Medien* ['The Rationalization of Virtuality in Music', in: *Configurations between Art and Media*], Sigrid Schade and Georg Christoph Tholen, Munich: Fink, 1999, pp.160–175.

354 Grossmann, Rolf: 'Abbild, Simulation und Aktion. Paradigmen der Medienmusik', in: *Die Welt im Bild: Wirklichkeit im Zeitalter der Virtualität* ['Image, Simulation and Action. Paradigms of Media Music', in: *The World in Image: Reality in the Age of Virtuality*], Bernd Flessner, Freiburg: Rombach, 1997, pp. 239–257.

Let us consider the simple processing of a sound: for example, an instrument, or a human voice. In such cases, the change is perceived more from a positive point of view, i.e. as constructive, expanding or sensory. But of course, alienation and manipulation are also involved here. We don't always ask explicitly about a production's manipulative components. In general, however, questions about the media tools and effects used are common, important and commonplace in discourse. It should naturally also play a role in instrumental composition, for which content-related/aesthetic objective a process is used. When choosing the media tools, these questions are not necessarily more relevant, but often more obvious.

This factor becomes more pronounced in the development and use of Digital Music Interfaces (DMI). In the schematic observation of an electronic musical instrument, we notice the separation of the controller from the sound generator. The connection of both levels is – unlike acoustic instruments – not given by physical parameters. The connection – i.e. the mapping – is a technical and creative achievement with a decisive influence on a piece of music, realized using this instrument.^{355 356}

Virtuality refers to the situation when a thing does not exist in one form but is identical in effect and appearance to the form of the thing being simulated. The French word origin *virtuel* describes the ability to effect or be possible.

This very process can be found in the mappings of electronic musical instruments. The reproduction of existing acoustic instruments simply models the action mechanism of a keyboard instrument, for example, where the hammer released by the key falls onto a string. This connection is so accepted that we hardly ever question it. In more unconventional instruments, which are not pure replicas, the pragmatic (and important) questions of the instrument's operability, playability and expressiveness are often paramount. But besides the technical and craft components, each design and mapping proclaims its own reality, causality and logic. A black box set of rules is established, to which the viewer must relate, regardless of how easy or difficult its components are to understand.³⁵⁷

I would like to illustrate the virtual perspectives within a work with examples from my own creative practical experience. In the following sections, I will list those aspects from my pieces that deal with virtuality and manipulation. Starting with technical implementations and highlighting the software tools used, the main focus will be upon the use of illusion in narrative styles and production approaches.

355 Donnarumma, Marco: 'Embodiment, Incorporation and Affect: Reflecting on the Interface', in: *Algorithms*, Vit Bohal and Dustin Breitling, Prague: Centre for Critical and Cultural Theory, 2017.

356 Miranda, Eduardo Reck and Wanderley, Marcelo M.: *New Digital Musical Instruments: Control and Interactions Beyond the Keyboard*, Middleton: A-R Editions Inc, 2006.

357 Schraffenberger, Hanna and Helde, Edwin: 'The Real In Augmented Reality', in: *Proceedings of the Second Conference on Computation, Communication, Aesthetics and X*, 2014, pp.64–74.

6.2.8 Empty Interconnections and Lifeless Worlds

I wrote my first sensor-based pieces "Weapon of Choice" (2009), "Bureau Del Sol" (2010), and "Laplace Tiger" (2009), with the concrete goal of building expressive instruments that allow the musician to physically and directly control electronic content. I wanted to transfer spontaneous and energetic activities from their improvisational background into contemporary music. An essential factor was also maximum comprehensibility for the viewer. Consequently, I wrote the programs in such a way as to trigger a certain type of interaction by performers, one which is particularly striking and differentiable. Moreover, this approach could easily be combined with the pieces' martial and excessive connotations. In these instances, there was no objective to focus attention onto this connection level and its associated virtuality. Nevertheless, the programming was done in such a way that it coherently established a virtual law – that of physical investment. The mapping process was used to generate a movement space, in which certain speeds and movement intensities led to comprehensible and repeatable results.

Since "Your Fox's, A Dirty Gold" (2011), the thematization of mapping and performance virtuality has increasingly come to the fore. The starting points continue to be musical gestures; in this case, performative behavioural patterns from the pop music context. The setup pursues the wish of empowering the player. Beyond that, however, characteristic movements are transferred into an artificial context and are thus also shown in their artificiality. Exemplifying this is a passage in which the singer holds the electric guitar above her head and modulates a feedback sound by slight turning movements. It is not clearly recognizable to the audience that this sound result is suggested by a music programme, controlled by the singer controls via sensors on her arms. This iconographic gesture of rebellion is associated with clear images from rock, punk and hardcore. However, the rebellion process here is packaged in a clinical setting where no feedback can spiral out of control, no loudspeaker damaged. This process is a mere simulation and the sequence of movements to control it is arbitrarily assigned (by the composer). The singer could equally well control the process with a mouse on a laptop. In another passage, the performer plays a solo on the electric guitar: yet it is one which is never heard directly, in the entire piece, because it functions exclusively as an interface, triggering processes or samples in the computer via amplitude detection. So, too, is this relic of rebellion freed from its actual function and reduced to its mere outward appearance. In the solo sequence, it is clearly evident that the left-hand position doesn't correlate with the sounding pitches. When the notes go beyond the instrument's ambitus, or the hand, in turning, modulates the tone reverberation, it becomes clear that this is an artificial setting.

In "Serious Smile" (2014), a conductor and three musicians are likewise equipped with motion sensors, to trigger clearly recognizable sounds (such as bells, glass and a door via movement. A direct connection between cause and effect is suggested. The artificial playing gestures on the acoustic instruments appear similar, some of which reproduce recognizable digital versions of the original instrumental sound.

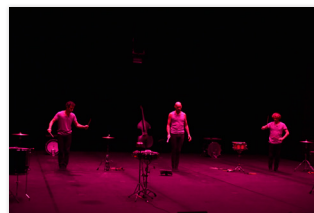
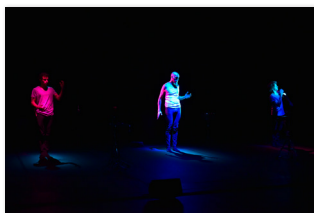
Both pieces establish a virtual activity space, which is partly misleading, partly unclear in its transparency, so that it plays with the perception and authenticity

of what is being performed, partially questioning the performance codes and established actions. In addition, it lets an empty, digital counter-world glimmer forth. At the points where artificiality becomes obvious, a connecting portal opens into a poorly detailed, reduced world. The audience is confronted with a contrast of raw energy with digital emptiness. Excessive physicality meets artificial action spaces. The ambivalence of authenticity represents a key moment in these pieces. The artificiality of these constructions is often inherently recognizable, but mistakes and breaks further emphasize it. In "Point Ones", the conductor's movements are captured and assigned to sounds. But as the piece progresses, this correlation becomes error-prone, making the process obvious.

6.2.9 The Dis-Illusioning³⁵⁸ of the Production Resources

The use of error runs through several of my works, mainly intending to draw attention to the artificiality and virtuality of systems. In various pieces, a content-related, technical or logical reality is claimed, which is progressively deconstructed, relativized or counteracted.³⁵⁹

A current example is "Codec Error" (2017). Three performers move through a space staged with lighting. In a holographic effect, the piece begins with a black box setting in which an exuberant performance machine confronts the audience with powerful stimuli. The production's mechanisms are concealed as much as possible. Molton hides the spotlights, flashing lights desensitize the eyes, making orientation more difficult, and the musicians' movements are rid of anything human. In the piece's staged collapse, all the hidden elements are then revealed. After a beginning in darkness, in which one could only guess at how the system works, towards the middle light is cast onto the scenery, so that everything becomes visible and recognizable: cables, click-receivers, spotlights, iPads. The disillusionment and disenchantment with the resources lead to the apparatus becoming recognizable for what it is. Despite this revelation, the question as to the reason behind the peoples' marionette-like manipulation becomes all the more urgent, because the musicians' role becomes even more absurd and empty. They are a controlled element in a machine, appearing as a virtual image of themselves. The playback of the instructions, according to which the performers act, additionally emphasizes the question of control and hierarchy in this system.



40 41 "Codec Error" (concert photos) with Ensemble Intercontemporain

358 In the original text the term "Enttäuschung" is used: not only to mean "disappointment" but also "the removal of an illusion."

359 Bernstein, Cherry: 'The Fake as More' in: *Neue Zeitschrift für Musik* [New Newspaper for Music]5, 2014, p.34.

The principle of linguistic instruction and explanation is also found in "The Password Disco" (2016), which was produced in a studio. Following an empty and digitally pure sound impression, the composer verbally intervenes at the end of the piece, to comment on the work's last passages. The listener is thus torn out of the clinical studio aesthetics and involved in the working process of the piece.

6.2.10 Tutorial World

The disclosure of the tools used culminates in the genre of tutorial videos. These videos, which are widely distributed on the internet, are tasked with explaining work stages of all kinds, including media editing, retouching and arrangements, step by step. Their purpose is democratic sharing and offering of knowledge. Knowledge about a process can lead to a better understanding and recognition of the practices used by the viewer, even with other content. Furthermore, tutorial videos – when for example retouching or rendering processes are explained – can develop their own quality. They allow us to participate in processes of creation. Even if the result loses some of its mysticism, the process still has an inherent beauty. We watch how a virtual, artificial world is created.

Such a world is omnipresent in artworks. In acoustic illusions and deceptions, it is clearly named as such, for example, in Diana Deutsch as well as in the Shepard tone, Risset rhythms and the McGurk effect. But every other work of art does the same. "HELLO" (2014) begins with a clearly defined setting, in which the ensemble translates the composer's movements – pre-recorded on video – into sounds. After playing for a while with this logic, the piece departs from its actual content level and illuminates the working process on the piece itself. In the video, one can now see the workflow at the editing suite, the editing of the notes and finally the uploading of the piece to YouTube and the explanation of the final sequence. The piece's rules are played with self-referentially, to illuminate the practice of working stages and self-presentation in a composer-performer work, including its digital environment. The jumps between the fictitious piece world and real production conditions are presented playfully and immediately.³⁶⁰

In my music-theatrical work "f1", the action alternates continuously between the stage and a pre-produced video projection. The performer in the rabbit costume appears both on stage and in the video. Telephone sequences and other synchronizations aim to interlock both levels. Nightmarish sequences and digital "making-of" passages establish two interconnected yet fundamentally different virtual worlds. Parallel to the video recordings, a small video window in the corner of the screen continuously shows the work on the corresponding sequence in fast-forward. One sees the recordings in front of the green screen, the programming of the Max patches and utilization of Photoshop and Premiere. The viewers are thus constantly reminded that the visual material was constructed and edited.

³⁶⁰ Kampe, Gordon: 'YouTube komponieren: Dafür, damit, dagegen' [YouTube Composing: For, With, Against], in *NZfM* 6/14 (2014), pp.36-39.

In this case, the focus is less upon documenting the process than on the deception itself. The different narrative levels raise questions about logic and coherence. The viewer attempts to decipher the symbolically charged images' meaning. The core statements of the piece are "It's amazing what devices you can synthesize" and "When I told you these things, I was lying". The work tries to use the mechanisms of deception and suggestion of meaning. The disclosure of the work stages tends to underline the uncertainty about which of the statements' components can still be believed.

The narrative oscillates between waking states, dream worlds and the subject of sleep. Fiction can be found here firstly, in the subjectively unconscious dream level, and secondly, on the digital construction level. Neither level allows for a feverish search for an answer, but both suggest that manipulation is taking place behind the scenes and that the process should be deciphered.



42 Book cover and secondary literature to "f1"

This situation is exacerbated by the secondary literature, which is thematised within the piece and advertised as an explanation for any unresolved questions. However, the book, which is available for purchase, provides only crude documentation of the work stages, on approximately sixty pages. It remains part of the narrative of the piece.

6.2.11 Interfaces and Overlaps

In the lecture/performance "Star Me Kitten" (2015), the video projection of a PowerPoint presentation serves as an interface between different perspectives and worlds. A singer explains an initially scientific-looking text, in spoken language, with the help of text slides. The lecture presents a concept that combines extra-musical content with musical elements illustrated by the ensemble. A relationship is established between the symbols in the lecture and the musical events, suggesting an expectation for the possible development of the material. Explicitly: techniques are presented, overviews given and a reading model is offered.

In the course of the piece, however, all these statements turn out to be incorrect. The lecture and the presentation's façade are only a false framework, which is deconstructed piece by piece. Behind the surface, a stream-of-consciousness appears in unconscious, nightmarish content forms.

The discrepancy between lecture and narrative content is underlined by the disintegration of the PowerPoint presentation. Behind the scenes, the piece's editing process becomes visible: image processing and notation programs provide insights into the event's artificiality. And in the video feed, I emerge in a cameo appearance as a tennis coach; a fictional person, moving through the story in the background and reappearing repeatedly with my own Facebook profile.

The interconnection between the real world and the piece's fictional, narrative level is repeatedly established by various elements. On the one hand, videos of the singer – for example during a rehearsal of the piece – are fed in, questioning the narrative strand but also boosting the performance situation in terms of content. This effect is intensified when previously recorded video footage of the empty and dark concert hall is played at the end.

Two passages in the piece make concrete reference to the outside world because short advertisements can be placed into them by outsiders. In each performance venue, local companies are offered an advert, placed into this sequence. In turn, construction and rehearsal are simultaneously revealed. Here, too, manipulation is carried out behind the façade, in this case, out of commercial interests.

6.2.12 Between the Worlds

Many of my pieces jump continually between different worlds. I have addressed some of these aspects in an article about ambivalence in my work. On narrative, physical and media levels, the change between perspectives is a central theme. My working method is derived from studio production; the performative pieces also have their origin in a mindset conceived at the computer. In my work, one finds not only the virtual but regularly also this working approach's constructivist aspect in the media context. The focus is often on the physicality of the performers and associated questions about their authenticity and virtuality. In most cases, the scope of action and representation is extended or altered by technology. The musicians' appearance moves between the opposing poles of expressive authenticity and obviously manipulated representation. Inherent in them are both dehumanization and optimization.

The pieces' staging often makes use of intense stimulus satiation and aims to overwhelm the audience. A world is violently established and proclaimed here. Yet this often turns out to be the blank covering layer of an opposing reality, concealing contents that require hiding. The second world behind this veil, created by various means (narration, projection, animation), is then often the (at times personal) core of the piece. In this case, the techniques used also imply the approach of breaking up the illusion they created. Apart from the tutorial component, the use of error is a recurring working tool for deriving perspective change. The setting up and breaking of supposed logic/semantics follows a comparable approach. Analogous to the media illusions, the rave pieces, such as "Solid State" and "Supramodal Parser",

use illusion and glare by simulating drug-induced hallucinations. Here, too, a world is sketched with a surface – in these cases euphoric – behind which a contrasting reality hides.

Common to these pieces is the use of technical tools and representations in establishing virtual settings. Based upon these proclamations, their artificiality is shown by thematising the illusion mechanism's production resources. This can evoke moments of uncertainty, amusement or strain. They share different and thus differently charged forms of deception.

6.2.13 Conclusion and Prospects

Virtuality and deception are fundamental, initially non-judgmental aspects that always occur when realities, and with them truths, experiential states and perceptions are generated. In the process, both new content can be created and existing content manipulated. These interventions can be both qualitative and quantitative. And, due to social developments, the practice with the current state-of-the-art technology has – so my argumentation in this contribution – special explosiveness and thus artistic relevance.³⁶¹

The creation of realities goes hand in hand with a creative will and traditionally exerts a lasting fascination in art. The work's model-like nature and associated relationship with the viewer open up a multitude of communication channels which can be an essential component of a work. The reception of the work's context – specifically, the perception of how it was created and how it works – allows an additional relationship to a piece. Parallel to this, there is an increased motivation for and legitimation of media usage. In the art music context, apps, computer games, websites and social network accounts, for example, are increasingly being used alongside video and feeds. Since these media have specific usage and communication functions – and thus also social connotations – they are particularly well suited for these purposes.

The human body with its coupled language is the central information carrier and mediator. Consequently, it is also the main point of attack for manipulations of any kind. Facial expressions, statements, appearances and physical actions can be edited or completely redeveloped as profile, avatar or artificial person. The background interests are manifold and cover the complete moral and immoral spectrum. And there is no doubt that these (technical) developments present the public with political and social challenges. Authenticity becomes the central currency.

New music, in its mundane, conceptual and non-cochlear sonic art varieties, increasingly takes into account the existing context around a work as well as the performative and human components of a performance, such as in Jennifer Walshe's "The New Discipline". For this very reason, this thematic field offers the genre a serious opportunity. The techniques used in (media) art carry the connotation of virtuality and deception in various forms, thanks to their very nature. For this reason,

³⁶¹ Johnson, Jason: 'We should be talking about torture in VR' 2016.

online: <https://killscreen.com/versions/we-should-be-talking-about-torture-in-vr/> (Retrieved: 4.4.2020).

I propose the wording “virtual imperative”. The classical production methods in the music field are so well established that their use no longer represents added value or a gain in knowledge. However, if we look at the implications and consider the work of art in the context of its production environment, then new music has the prospect of additional social relevance.

6.3 Binary Composition

In this article, I wish to attempt to outline and elucidate my work’s methods, motifs, and backgrounds. In trying to present these in a pointed way, I often experience that I am rarely able to limit my compositional approach to core theses and describe them concisely. My approach and methodology are often composed of opposing poles. Since I have identified multipolarity as a decisive criterion for my work, this text will deal with precisely this dichotomy of methods and motivations as an overarching theme. This characteristic also constitutes me as a person, which is why I often perceive my pieces as very personal. I don’t (at least not primarily) mean this emotionally or subjectively, but in how one approaches tasks, situations, musical pieces, or life.

Subsequently, I will examine several contrasting pairs and explain why they matter to me and my work, and in this, deal with the following stress ratios: Seriousness vs. Humour/Irony, Body vs. Virtuality, Pop Music vs. New Music, Conception vs. Intuition, Expressivism vs. Introversion, and Technology vs. Romance. No human being or work is, of course, mono-thematic; nonetheless, these items are quintessential to my work.



43 Concert photo "Your Fox's, A Dirty Gold" with Frauke Aulbert

6.3.1 Pop Aesthetic

The most obvious opposite is probably the combination and confrontation of pop elements with contemporary music. The connection of new music with other genres, that are – in a broad sense – related to experimental pop and electronic music, is explicitly apparent in all my pieces. There are numerous approaches used here to merge contents and languages. Production technology, immediacy, performative codes, and sound language are for me the relevant elements from popular music. Although I started playing musical instruments when I was relatively young, the computer is and always has been my true instrument. I began creating sound collages and writing pieces with MIDI sequencers and tracker software when I was a teenager: so, my working method and composition style, as well as production processes, have always had a constructed, artificial aspect. Since all my pieces are completely amplified and work with electronics and feeds, it was always a declared goal for me to transfer this production approach to the live situation. This, of course, means dealing with how to expediently combine the electronics with live instruments: the advantages or possibilities of this aesthetic do contain some risks for differentiated chamber musicality, dynamic range, the complexity of sound languages and staging. Naturally, no approach can achieve everything, and so one makes room for such possibilities by a reduction elsewhere. A major challenge is to open the door for an aesthetic with an added value, not already covered by pop music. It would be impractical to recreate something that other genres do better. A new music concert does not have to fulfil the expectations inherent in a pop show, a rave or a punk concert – but elements can be isolated and harnessed for an art music context. Sonically, this could e.g. be the reduction of material or the specific production technology. Additionally, one could look for something more analytical, more abstract and search for a kind of generalizability.

My piece "The Password Disco" was released last year on the Nadar Ensemble's recording. In its timbre, it is inspired by electronic dance music, with its production being exclusively pop – completely clean, digital, and artificial. It uses genre-specific elements such as a chorus, build-ups, and a groove which even allows for foot-tapping. The rhythms of the piece, however, have been formed algorithmically with the help of a polyrhythm-generator. Despite having the feeling throughout that the sound comes in at the right moment, one can rarely predict the timing. The surface level is very approachable, but the generators and the polyrhythms beneath are complex. One of the work's themes is artificiality: I aimed at constructing a seemingly empty soundscape from individual samples – combined with completely inhuman MIDI-choirs and canned electric guitars. The clinical world of studio aesthetics appealed to me. They are tangibly picked up at the end of the piece, when the producer/composer pipes up and explains the order of events. This is a purely electronic piece that is not performed by musicians on stage.

As soon as musicians appear on the stage, there are additional aspects of staging and presentation. In "Your Fox's, A Dirty Gold", for instance, I use the musical language of a pop song and the gestural repertoire of a rock concert. Apart from the technical components of the piece – a singer using sensors to control the electronics – the aim here too was to address this musical language in its artificiality in the course of the piece. Commencing with a violent and massive sonic

experience, the song develops into an increasingly unreal scenery in which the performer bows mechanically, in slow motion, like a robot or puppet, while playing an electric guitar solo, consisting only of triggered samples and having nothing to do with the actual sound generation of the instrument. Elsewhere, the performer steers the supposed guitar feedback: but actually, in this rebellious posture, a computer patch is controlled and modulated with feedback generators. So in this piece, as well as in others, I use existing pop elements to reflect upon them, to exaggerate them and to put them in a new context.



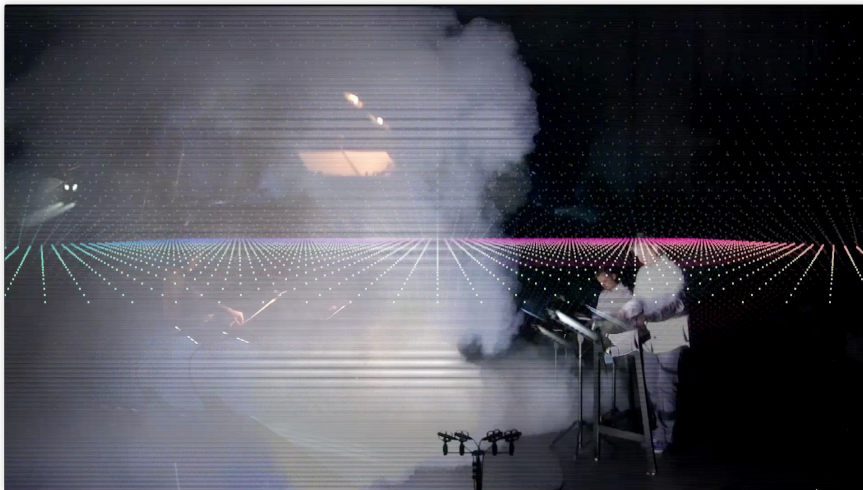
44 "Your Fox's, A Dirty Gold" (concert photo) with Frauke Aulbert

But this is where the aforementioned ambivalence takes hold: these pieces are not pure commentary or theoretical discourse. They do not only use such elements to showcase or dissect them. They are intrinsically motivated. I don't want to look down on these genres from a serious music-perspective, but apply their attributes without completely falling for and imitating them. It is my conviction that something new is musically possible here.

6.3.2 Overwhelming

With similar intentions, I use not only genre-specific elements and production techniques, but also non-classical concerts' presentation form. This means, for example, an often very direct, loud and immediate confrontation situation; in a negative interpretation, one could probably speak of an overwhelming aesthetic. Indeed, the physical, immersive moment of such a concert experience is important to me. Against the background of the aforementioned (not entirely unjustified) reservation concerning this insistent immersion, such an approach naturally requires special reflection. Appealing to me in such special sensual/sensory immediacy is the chance to overcome an inner boundary in the observer – I am looking for a kind of leap. Even inner walls sometimes require heavy equipment to expose what lies behind them and to reach a point sheltered by protective mechanisms. I, myself, also oscillate between a rational, analytical side and an excessive, unrestrained opposite one. For me, this brash act has always been and

still is a means of arriving at something honest. I am not interested in the show or the pompous – but in experiencing and perceiving something direct and intense. It's subsequently not the aggression that appeals to me, but the emotional aspect that is addressed (although aggression can also play a role here). It is not confrontation that interests me, but penetration. This can and is, of course, sometimes perceived differently by visitors and is viewed as exuberant, simplistic or militant. I am aware of this possible reading. But I think that it can be used artistically and that this intensity can be used profitably.



45 Konzertfoto "Lucky Dip" mit dem Decoder Ensemble

In addition to the aforementioned advancement, it also functions in a machine-like sense as alienation, as in "Sensate Focus" or "Scanners". In both pieces, the performers are given almost mechanical traits – they execute strictly synchronized movements – thus becoming part of the apparatus. "Scanners" deals particularly with the string quartet performance machine. But even the explicit use of overstraining/overpowering, as in "Lucky Dip" and "Supramodal Parser", seems legitimate at least, in my view even almost necessary, if this is the thematic state, which is to be depicted by the piece. This concerns gliding away, a rush, exuberance. Significantly, both pieces are followed by a calm, hypnotically tumbling, unrestrainedly introverted part – all the more reason to problematize and illustrate this effect in contrast: it is the ambivalence between the intensity and its opposite – emptiness. Diverse interpretations, from joyous energy to escapism or powerlessness, to me, bear out the potential of this approach. I am fascinated with the different readings of this exuberant state – and I think that in this "multi-layeredness" it also deserves a place in art music.

6.3.3 Intuition

In my listing above, I have rather boldly forced the contrasting pair of romanticism vs. technology. In this case, it can be very well shown in a simplified way that, despite the intensity of the means, I am actually concerned with something very delicate. The technical realization and approach form a certain contrast here to the content motivations. This contrast can certainly be understood a little further, because the use of technical means, which runs through all my pieces, is always in relation to something quite intuitive, human and emotional. Therefore, I understand many of my pieces as being essentially romantic at their core. Obviously, technical aspects play a prominent role in my work – but actually, I never test them so as to make them the main criterion of a work. Despite all enthusiasm, technology is always a means to an end for me. Ideally, after developing a software setup, for example, I can simply use it as a tool without worrying about how it actually works.

Apart from the choice of resources, the development process is always subject to very different poles. On the one hand, I work extremely intuitively; on the other, I do so based on content and technical conditions.

The work usually starts with a setup or a scenario that I establish for myself. This setting can be of a technical nature (as in the sensor-based pieces "Point Ones", or "Laplace Tiger"), motivated by the content (as in the lecture "Star Me Kitten"), or originate from a spatial starting point (as in the concert installation "Black Mirror"). Often it is also an interplay between these factors. This "environment" always has visual, scenic aspects and an interactive dimension. Just as one chooses the instruments at the beginning of a purely acoustic instrumental piece, it makes sense to define the (extended) set of instruments at the beginning of multimedia work. This can be hardware, software, lighting, video, stage design and much more.

In the next step, I try to tap the possibilities of this scenario and create a concrete repertoire of elements that I want to use in the composition. In addition to the preliminary musical considerations, these can be software snippets, forms of interaction, a content-related idea/metaphor/question, a spatial concept or performative concepts. Initially, a large pool of ideas and different strategies for approaching the theme of the piece is created. In the following phase, my working method is very pragmatic and practice-oriented, trying out, testing and documenting the approaches as best I can, in order to determine which theoretical ideas will stand up in practice. In this way, I then create a collection of concrete implementations of the ideas and use them as material for the composition. It seems conceptually productive to me to develop a clear idea of what the result (in excerpts) might look like from the very beginning. This means, for example, that I record small scenes for sensor-based interactions on video, test lighting setups in a room and then evaluate them, or always work with test videos for video works.

Next, a process frequently sets in, almost like "automatic writing" – in which I simply let myself drift and work very intuitively. I then use the existing material – and also develop new material to go with it – but from that moment on, I work very quickly, almost improvising. Since the setting is in place and there is a range of content to be used, I then rely on a very immediate writing procedure. This is probably one of the reasons for the (at least intended) intoxicating effect of some of the pieces – they emerge from a very fluid process. Another characteristic feature

that I continuously work on in parallel is certainly the various media aspects of a piece. It is always important to me to work on the content at the same time, to avoid that one medium only underpins or accompanies the other.

6.3.4 Humour

The opposing pair of seriousness and humour can perhaps also be seen as related to the contrast between intuition and strict planning. Humour and irony may at first glance appear as something trivial or irrelevant in art music – certainly regarding the corny pun. I have observed that some forms of good music can make me laugh – even without extra-musical elements. The trigger is perhaps the surprising handling of the material, the break with a pre-established system or the stringent exaggeration of an idea. Moments of surprise or radicalism can have something humorous about them. But there is often a quality in this characteristic which surpasses “funny”. This can either take a manically excessive form or be stoic and irritating. What these points have in common is their reference to an existing set of rules and associated expectations. The appeal lies in breaking these rules and can harbour a potential which exceeds amusement, one I try to use in some pieces. These elements are most present in "HELLO", "f1", and "Star Me Kitten". In each of the three pieces, a setting with an associated expectation is established and then ruptured – decisively, by the piece's production process being revealed or becoming the content of the piece itself. In my opinion, the dichotomy continues here – because I am perfectly serious about the themes underlying the pieces.



46 Video-Still "HELLO"

In "f1" and "Star Me Kitten", the setting's rupture then also leads to an opening up of the presentation into a narration, to a slide into a narrative strand lying behind the façade. A clear, conceptual approach (relationship of gesture/symbol/content to music) is juxtaposed here with a disturbing psychological subtext. There is always something else behind the façade.

The rupture within these pieces is always accompanied by the error principle: the programme's error, the crash of the presentation and the erroneous behaviour. Within this context, I often use the glitch aesthetic. For me, this approach holds the opportunity to implement precisely these jumps in coherence and is, therefore, a helpful tool as a content resource – and not only in sound design. Within the error's characteristic always lies additionally the functionality of the system behind it.

6.3.5 Bodies

The appearance of an error, a loop getting stuck, the freezing of a sound or image, the simulated programme crash and the bit-crushing instrument are some of the audiovisual elements running through my pieces. It is the contrast to the acoustic instrument, the rupture in the video presentation and the crack in the piece's logic. This approach goes beyond musical content and includes the perception of the onstage musician.

In addition to the general parameters of the performances, the relationship between performer and media content is often explicitly in focus. Many of my pieces have gestural and performative elements with which the musician, together with his/her physique, enters into a direct relationship with the music, electronics, computer or video.

In the sensor-assisted works, the performers directly control the processing and electronics by their movements – via motion sensors attached to their arms. In the first works ("Weapon of Choice", "Laplace Tiger"), expanding the possibilities of control and expressiveness was at the forefront. The aim was to create a setup enabling the musicians to control the electronics' parameters intuitively, individually and performance-like: in other words, to expand the acoustic instrument. Following "Point Ones", in which the conductor is equipped with sensors, the machine-like and virtual aspects of the body's image slowly came into focus. This was no longer exclusively about the virtuoso control of electronics, but also about illuminating interaction and communication using gestures and movement. In sections of "Point Ones", the conductor's control of the electronics no longer functions as one would expect. The communication between conductor and ensemble jams and the conductor transforms from the virtuoso player into a lapsing, human digital metronome. Here the duality of dealing with the body becomes apparent; this is further deepened in following pieces. There is the expressive, supporting and enriching component, which is fed by my own experience as a musician in a more improvisational context. There, the technical setup being an extension of the player is not questioned but accepted and integrated. From the moment the system is interrupted, the body's functionality takes centre stage. From there on, the virtual of sound control is no longer a tool but the core issue. In "Scanners" and „Sensate Focus“, the performer's appearance onstage is integrated even more intensively, and the musician's mechanical and virtual aspects brought to the fore. In both works, the performers are only illuminated by the spotlight for short moments, as they execute a gesture or playing movement. In a completely dark room, the musicians can consequently only be seen in flashes, for a few moments at a time. The players' angular movements are thereby further intensified and subsequently

lead to a machine-like appearance. Especially in "Scanners", the performers look like robots on the stage. But above all, they are perceived as short video clips, which are collaged and played side by side. The onstage person is transformed in real-time into many small, virtual, digital clips. The continuous presence of an expressive performance gives way to a series of isolated, mechanical image sequences.



47 Concert photo "Scanners" with Ensemble Resonanz

In this image, some of the aforementioned ambivalences accumulate: on the one hand, the interplay between a direct and immediate performance and physical violence, on the other, the machine image of the human being, transported into the virtual by production technology. This procedure is to be understood as aesthetically motivated, and I am indeed attracted to the hyperactive cut-and-paste style. But I also appreciate that it can be understood as a confrontation with the image of man's self-transformation. For our identity is increasingly being reduced to clips, avatars and digital representations.

6.3.6 Private

In a similarly ambivalent role, I sometimes appear in my own works ("f1", "Hello", "Star Me Kitten"). In each case, this happens in a somewhat abstract form – mostly conveyed through new media such as Skype, mobile phone, green screen or a costume. It is a meta-form, commenting on the event or running parallel to it. In such cases I treat myself as material, composing and dealing with it in the same way as with the other components. I am less concerned with this being who I am – in other words, illustrating myself with these pictures – but rather, with using myself as material – not least for pragmatic reasons.

A dichotomy of intention and presentation runs through these pieces – and generally, through most of my pieces. As already described, a number of opposing pairs form an essential part of my work. It may be a banality: but I approach composition with exactly the same resources with which I approach my everyday routine, my environment and my life. I have not made this my motto, I have only observed that it is so.



48 Concert Photo "f1" with Decoder Ensemble

6.4 Focussing the Gaze

On the Use of Light

In my work over the last ten years, visual components have taken on an increasingly important role. Commencing with a focus on the performative and expressive use of the physical body in musical performances, my attention has slowly shifted towards more complete visual scenarios. In these pieces, the physical body remained important but played only one of the roles in a more experiential approach. This led to installation works in which there were no performers at all, but which continued to revolve around a physical experience and perceptual exposure. In this transition process, the specific use of light became an increasingly important tool. At the beginning only a means with which to emphasize performative aspects, light gradually emancipated itself in my work and is today often actually the starting point for the compositional process.

In this article, I will first describe some key elements of my compositional process and the works resulting from them. In this way, I wish to highlight several focal points and recurring motifs in the seemingly eclectic diversity of my approaches. Based on an overview of my main themes, I will then describe how light usage has become increasingly prominent in my work and what roles it plays. I will also focus on my installation work and my approach to prototyping. In a more theoretical section, I will deal with the relationship between sound and light and any inherent possible pitfalls in my work. Finally, I will give an overview of future projects.

6.4.1 Central Themes in my Work

There are a few more or less obvious characteristics in my work: above all, the combination of classical music with other popular genres, such as experimental electronics, techno and hardcore, for example. The reference to free jazz is an obvious part of every production. This approach is quite personal: I do not comment on or arbitrarily quote different styles, but only use those with which I have a personal connection; one caused by having been, in one way or another, part of the respective scene. This use of different styles is not the point here, but merely a language, a tool for me. So I do not make a musical comment by using different genres: I use them because I feel that they are part of my vocabulary. However, the thematic core of the pieces lies elsewhere.

My compositional technique combines several writing approaches. In the beginning, there is always a setup consisting of musical, visual and staging parameters. My work begins with this scenario. This is often followed by a phase of "automatic writing" – I try at least to let myself be carried by the creative flow, to allow the material to develop independently. After that, the work is an alternation between technique and self-analysis. I believe these poles to be experienceable in the pieces, just as they are analogous to how I navigate through life.

Another important factor is my work with the human body and with gestural content. Physical experience within a piece has always played a dominant role for me: whether in a context in which sensor-equipped performers manipulate the music or in an immersive setting where the presence, perception and position of the listeners or spectators are of great importance.

This is directly related to the fundamental goal of creating music and artworks that are holistic experiences, not just auditory works that are merely listened to. The overall sensory experience is of enormous importance to me, including (but not limited to) visual aspects such as lighting design, video and performance. It has always been my desire to write something that has an attraction, something that takes the listener away and creates an artificial world. This has already been true for my purely musical pieces but is becoming increasingly important. The use of visual components leads to increasingly immersive settings.

This brings me to the last point of this section: implementing technical and media resources and concepts as theoretical and conceptual indicators, while simultaneously using them as tools. The main focus of my pieces, however, remains the creation of a personal, subjective and, if one will, romantic work of art. This may seem surprising, as many of my pieces use very loud, harsh sounds and intense visual stimuli. I do not consider this kind of expression – in my case – as a form of aggression, rebellion or criticism, but as a crowbar or a jackhammer that opens the door to a fragile and personal place. I am interested in the harmonic, peaceful and beautiful elements sometimes hidden in these sounds – or in their opposites.

Another path I occasionally (additionally) follow is the use of humour and irony. Both can be found in many of my pieces – as a way of looking at the subject from a different angle. Sometimes humour and irony are obvious and direct, sometimes a formal element. I do not try to make pieces or passages funny, but I like to play with the expectations of the audience and the rules of the present setup. Both the

use of extremely contrasting material and humour reflect my personal approach to life in general and thus reveal a great deal about myself. Friends who know me well see much of my personality in the pieces.

6.4.2 The Slow Penetration of Light

The inclusion of light in my works was a slow process. I began in an abstract way to work with video technology to emphasize movement in performance pieces. This use of video material was the first step for me in exploring what can be achieved with light. One of the biggest problems I had when working with video was the limitation to one screen on stage (alternatively one can use the whole room or a special mapping, which only partially solves the problem). I found this separation between the video level and the rest of the setting complicated, at least for the pieces I wanted to do at that time. There are of course pieces where the use of a clearly visible video screen makes sense. This is especially true if the content of the video requires a concrete form of representation. An example of this is „Star Me Kitten“ (2015). For this, the piece being designed as a PowerPoint presentation, I returned to the use of video technology. This stands in contrast to setups in which video is merely an additional element. We accept this as part of a multimedia concert, but I consider it on its own to be a weak justification for video use. Moreover, video is usually a two-dimensional projection in a three-dimensional space: so it disregards a large part of the space, the stage and the venue, hence creating a difficult separation between players and projection.

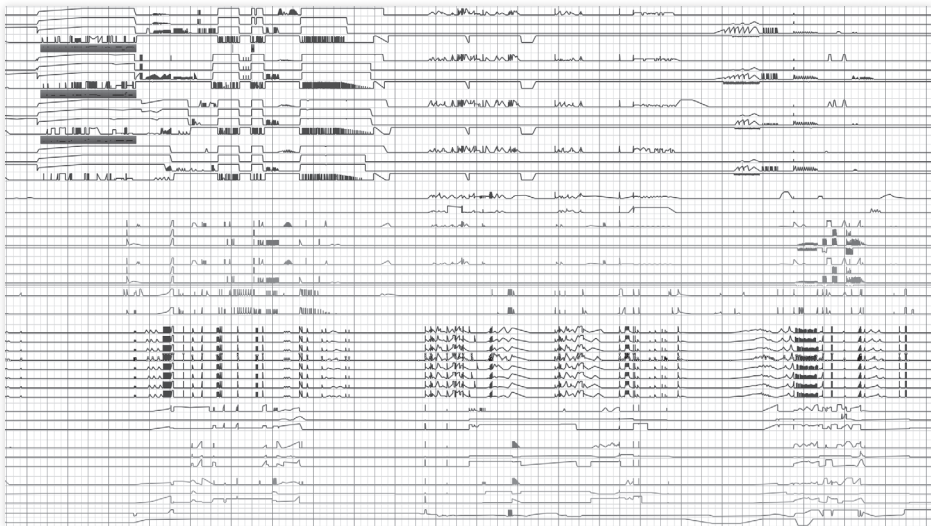


49 Video-Still "Lucky Dip" with Decoder Ensemble

I can therefore say that working with light became relevant for me when I began to recognize the inadequacies of video technology in the performance context. Moreover, the pieces I wrote began to evolve from a more or less classical set-up with onstage musicians, into more theatrical pieces and immersive concert installations. The nature of this new type of piece called for a different approach, and lighting was the right way to go about it.

6.4.3 Prototyping

When working with a lighting setup, all spatial aspects and the final form of presentation are relevant. During the composition process, a sheet of paper, software and a few loudspeakers are often all that is needed to create a piece. Even scaling up to a larger concert hall rarely brings a new level of difficulty. Lighting design is an absolute exception to this though, and a particular challenge for me. I am a pragmatic person, who tries out as much as possible for myself during the writing process. In other words, to a certain extent, I perform all my pieces myself to see what works – I even film myself doing it, to evaluate the result. I do the same, to the best of my ability, with the visual parameters – light is always the most difficult factor to determine in the test.



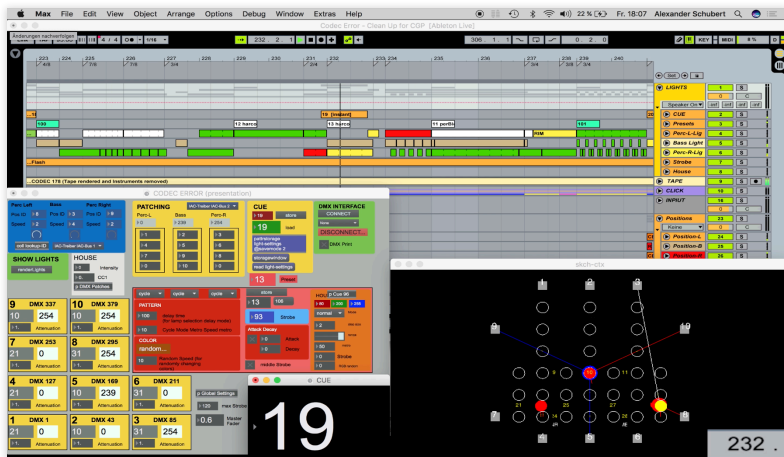
50 Screenshot of the lighting automation in "Supramodal Parser"

If it is pure theatre light, I can imagine it, simply animate it or automate it with envelopes parallel to the composition process. For more complex pieces I have programmed simulation patches in Max/MSP, allowing me to visualize the light programming in real-time. To this end, I model each light source in a sub-patch, position it at the right place on the screen and in so doing, create clear visual feedback. This is especially helpful when multiple light sources are used. In "Supramodal Parser", for example, more than 50 were involved (see image 51). This allows me to adapt the visualization to my requirements and even incorporate special features into the lighting programming. Sometimes, for example, I add sub-patches to trigger random behaviour or follow semi-automatic patterns. One of the central questions for me is: which detail do I program by hand, and what should be generated automatically during the performance? If one works with ten independently moving heads, there are quickly more than 300 parameters to control...this involves a lot of work. Nevertheless, manual control allows the greatest possible freedom to work with lights in detail. But sometimes one achieves better

results if, for example, five parameters are automated in detail and the rest are allowed to behave within a predefined set of rules.

Testing with the software is consequently an important part of the creative process, allowing me to get a feel for the final result. In the next step, I often rent special lighting equipment (if particular models are involved) to use in the performance or to try out personally, to make sure that the technology works as I envision it.³⁶²

The more specialized the lighting programming is, the more important this phase becomes. When I was working on "Supramodal Parser", I began to succumb to my fascination with the possibilities of detailed programming of the Atomic 3000 stroboscope. So I decided to buy two units and develop the "Solid State" installation. In this work, both the programming and the resulting perception are so precisely tuned that I generally had to rehearse everything in real-time; therefore, I bought the two lamps and began working with them. I tried to recreate a smaller version of the installation within my flat, even flooding it completely with my fog machine, causing the neighbours to call the fire brigade. In any case, this experience gave me a good feeling for the ultimate result's impressions: I experienced what one really sees when one's eyes begin to flicker, as opposed to the abstraction on the screen.



51 Screenshot of the Max patch for "Codec Error" and the Ableton Live project

As I mentioned earlier, one of the biggest advantages of lighting technology, in my opinion, is the possibility to work anywhere, to adapt to it and to transform it. Light is obviously a tool for working in a three-dimensional space. While this is a tremendous gift, it is also challenging to evaluate the visuals, as this depends on the space. Every individual room has unique potential and reacts differently to light. For the very time-consuming piece "Black Mirror", which took place in a forest and an abandoned hotel in Luxembourg, Daniel Dominguez (who, among other things,

362 Dekker, Annet: 'Synaesthetic Performance in the Club Scene',

In: 3rd Conference on Computational Semiotics for Games and New Media (2003), p.34.

worked with me on the lighting) and I spent a week on location, months before the performance, testing various lighting situations. Some planned things simply didn't work there, others could only be developed on site, as the location gave us feedback and allowed unforeseen concepts. Unfortunately, this is a luxury we rarely have, so even the best possible advance testing of the technology is always a compromise.

6.4.4 The Relationship between Sound and Light

I would divide my work with light into two main categories (which can overlap). One concerns lighting the performers and the other uses light throughout the venue or installation space to create a more ambient, immersive setting.

In "Sensate Focus" (image 53) the lights are used to emphasize the performers' bodies and movements. Each of the four musicians stands under a spotlight that is switched on or off in synchronization with the music and movements. This serves a theatrical purpose, by accentuating the gestures of the performers and showing the audience only what they are supposed to see; while in other passages the performers are in complete darkness. Generally speaking, the piece shifts the focus of physical sensation from auditory to visual, hence the title of the piece (in addition to a play on words, relating to sexual therapy). The lighting is a very functional aspect of the piece, as we see all the involuntary movements and pauses of the musicians who, at a specific point, do not move. It also introduces a theatrical mood into the piece, unachievable by any other means.³⁶³



52 Concert photo "Sensate Focus" with Decoder Ensemble

363 Ciciliani, Marko: 'Dirty Light: the application of musical principles to the organisation of light as an extension of musical expression into the non-figurative visual realm', 2010.
online: <http://markociciliani.de/media/texts/Dirty%20Light.pdf> (Retrieved: 04.04.2020).

The way the light is switched on and off creates an effect similar to video sampling (sampling is the process of separating and exposing certain excerpts of a continuous stream of data). Only specific passages are selected, sampled and shown to the audience. This then resembles a video clip collage of four performers standing facing each other, played back side by side, facing each other. In any case, the positions of the onstage performers reflect the aesthetics of video clips or digital representations. In this sense, lighting technology makes the generation possible of a sensation that could otherwise only be created with other media. I see it as a means of commenting on physical body representation in our world today, where we constantly see humans in the stylized and digital forms of videos, GIFs, avatars, etc. The use of lighting technology – together with the choreography, an important part of the piece – allows me to transform the live musicians into quasi-digital versions, and consequently to perhaps show how we see and perceive people today.

A similar technique is used in "Scanners" (2013) for string quintet, light and choreography. The difference is that here, the human performers are treated almost like mechanized units. The piece reflects body representations and human-machine dualism. Additionally, the string quintet is seen as a highly specialized performance machine. In this case, the aforementioned also applies, whereby the light here also serves to emphasize the robot-like movements.³⁶⁴

The second "category" of light use in my work involves the creation of immersive settings, in which the audience is part of the action and is bathed in light. This is mainly the case in audio-visual installations, but, to a certain extent, also in pieces where the location space of the audience is included in the staging. The big difference is that the audience is now the focus of the visual impulses. It becomes the main theme of the piece, together with the perceptive reception of the venue. Due to the visual stimuli's strong intensity, the piece can only partially be absorbed by the audience's senses.

The audiovisual installation "Solid State" grew from the idea of creating a piece based exclusively on stroboscopic light. This walk-in, audiovisual installation deals with the sensory experience of rave culture, by simulating the drug-induced transcendence of conventional sensory experience. The installation is realized in two adjacent rooms, connected by an open door. This is the only recognizable element of the installation that is quasi overemphasized. On the one hand, the image of the door refers to the tripartite transition into another world and plays symbolically with the crossing of a border. On the other, the threshold reminds us of the ever-unknown transition into the afterlife, which, from our present perspective, is just as unrecognizable as the boundaries of the installation space. In each of the two rooms two loudspeakers, a stroboscope and two red spotlights are directed at the door. The rooms are completely filled with fog and, except for the door, almost nothing can be seen.

³⁶⁴ Smith, Marquard; Gibson, William; Clarke, Julie Joy; Druckrey, Timothy; Goodall, Jane; Jones, Amella; Kroker, Arthur; Kroker, Marilouise and Massumi, Brian (Hg.): *Stelarc: The monograph*, Cambridge, Massachusetts, London, England: The MIT Press, 2007.

With pulsating and stroboscopic light, dense fog and surround sound dominated by bass (the central components of rave), connected and synchronized by a computer program, the room is transformed into a hallucinatory environment that provokes an ecstatic state of mind in the visitors. The multi-sensory effect functions as a neural multiplier: the brain reacts much more intensively to several impulses that are seen, heard and felt simultaneously than to individual impulses. The synchronous and changing visual and auditory patterns ensure that the spaces' geometry is indiscernible to the visitors. Due to limited visibility caused by the fog and the eyes' inability to adapt quickly enough to the constantly changing light, visitors are unable to grasp the dimensions of the room. This results in disorientation and the desire to give up conscious control; putting the visitors into a state in which they feel as if they are falling into endless space. In addition, the after-image effect creates an optical illusion: the intense stroboscopic light creates hallucinations, structures and ornamental patterns, imprinted on the retina, and so credibly evoke certain forms of intoxication.



53 "Supramodal Parser" (concert photo) with Mona Steinwider and Ensemble Nikel

"Supramodal Parser" is a piece that lies between these two poles. It combines an immersive setting with a performance that is underscored by onstage lighting. Like the installation „Solid State“, this piece deals with concepts from rave culture and the club context, such as disorientation or a change of consciousness. Here, the light helps to trigger an immersive sensation within the audience space. On the stage, the performers also appear only in short flashes or in fog, making them resemble hallucinatory apparitions. The overarching intensity and density of the audiovisual stimuli lead to a state of mental overload, which is part of the concept.

The title of the piece refers to an area of the brain in which sensory inputs from different stimuli are analysed and processed, regardless of the type of stimulus.

The idea of treating auditory and visual components equally, thus creating an interwoven perception, is one of the main motives of the piece.

6.4.5 Pitfalls

Working with light is often associated with showy characteristics, the idea being that an existing piece, provided with an extra, should become a spectacular experience. In the pieces where lighting technology is used, I consider the visual aspect (and all other sensory impressions as well) to be as important as the music itself. None of these pieces could be played without these components, and all of these pieces have been composed with this specific context in mind. The use of light is determined at the beginning of the writing process, just as is the instrumentation, the staging, etcetera. My aim is always that light does not merely complement the music, but that the piece is perceived as a whole, where light has the same weight and rights as all other components. For some pieces, such as "Sensate Focus", light is the fundamental idea or the starting point of the composition.



54 Concert photo "Supramodal Parser"

The pieces I write often incorporate strong stimuli and high intensities. They often refer to pop-cultural content, such as techno. Of course, the danger of this approach lies in using the elements just for the sake of it being spectacular. But I am interested in the exploration and transmission of something completely different. I try to use lighting technology not merely as an effective, showy element.

I think it is justified to use these techniques to achieve specific aesthetic goals; for example, to create a perceptual or sensory state that produces stimulus saturation, perceptual errors, narrative and emotional situations or corporeal focus. I see them as tools to achieve a specific state of perception, but not only a state of stupefaction.

6.4.6 Installations

In recent years, the installation aspect of my work has become increasingly important. Lighting technology has certainly played a special role in this reorientation. No later than in 2009, when I began to deal with gestures ("Weapon of Choice"), the corporeal experience, in general, became more and more important for me. Following several pieces which dealt exclusively with the physical image of the performer, my focus shifted gradually to the audience. Alongside surround sound, fog and light opened up possibilities to bring the audience into the piece. One could say that the light I used on the stage slowly spread to the whole venue. I see these pieces as a progression in which each subsequent work is a further step in this direction. After each piece, I felt that I could incorporate the visual component even more strongly and in a more condensed way, which led to me continuing my path in this direction. Furthermore, musically and theoretically, I focused more and more on techno music and related topics, laying the foundation for a deeper engagement in this field.

The installation pieces attach great importance to the audience's participatory experience. All my pieces move in this direction, even those that have performers or a "regular" stage situation.

The idea of integrating the audience in one way or another became more and more important to me as time passed. I wanted to create something that could be appreciated in its entirety, as an experience. I have tried (so far) to move away from the classical concert situation where musicians play a piece on a stage and are content in so doing. This can be wonderful in many cases but is simply not what I am interested in at the moment. I do not feel I can contribute anything. So even in works like "Star Me Kitten", which have a more or less normal stage setup, I try to suppress the gap between stage and audience. The setting of this piece is a PowerPoint presentation in which the singer speaks directly to the audience, but it turns into something completely different. Here, I see each individual member of the audience as an active part of the presentation context and not as a typical concert visitor. So: I hope to create pieces of music or art that create a vortex, pulling the audience into the respective scenery, atmosphere and, ideally, into a new, strange world.

Therefore, I would not make too precise a distinction between the more installation-oriented and the more stage-oriented pieces. The creation of a complete sensory experience remains the general goal. With pieces like "Solid State", "Lucky Dip", and "Supramodal Parser", there are several new tools to achieve this, or at least some attempts to take it to the next level. This allows me to generate situations that I couldn't produce in a conventional concert hall.

6.4.7 Future Projects

My latest piece "Black Mirror" was completed at the Rainy Days Festival in December 2016 and premiered by the Lucilin Ensemble in a one-hour concert installation.³⁶⁵ It takes place in and around an abandoned hotel on the outskirts of Luxembourg. The audience comes by bus and is equipped with wireless headphones, a cape and a cat mask: it is now no longer possible to distinguish between performers and participants. The audience is guided through the premises via headphones, but the participants are allowed to interact with each other and with the performers. A variety of audiovisual settings are created throughout the hotel: the result is a dream-like sequence of surround sound, automated moving lights, performance and video projections. The aim is to create an immersive setting in which the individual participants are reflected against themselves as well as upon anonymous group identity. The group experience and the special location of the abandoned hotel are the basis for the piece's emotional, subjective plot. It is conceived as a return to a forgotten place that stands for suppressed, painful and dark memories – like returning to a gravestone and being confronted with your own past and vulnerability. This setting allows for a whole range of frightening images and eerie sceneries – but is only a metaphor for honest, emotional confrontation with the past, transience and grief. The resulting piece is even more immersive, and the audience becomes an even more central part, while the participants themselves explore the environment, interact with it and decide how they fit into the setting.



55 Black Mirror (concert photo, Luxembourg)

At this point, I am starting to move away from the subject of rave culture because I feel that I have said enough in this area. I try not to repeat myself, if possible. At the moment, I am mainly interested in darker psychological themes, and specifically the theme of interaction (in the broadest sense): not so much the interactive way I have

348 Schubert, Alexander: "Black Mirror" 2016. online: http://www.alexanderschubert.net/works/Black_Mirror.php (Retrieved: 4.4.2020).

designed my pieces so far (musicians interact with technology through sensors or video technology), but more in terms of involving the audience in the piece, or of a setting placing musicians in a non-musical environment, with which they have to interact. That aside, the narrative aspect is becoming increasingly important to me, and I believe that this development will continue, but not that my pieces will tend towards classical music theatre. For these approaches, lighting remains a central component.

6.5 Uncertain Conditions

Thoughts on immersive strategies

With the years, my work's focus has shifted from composition for the concert stage to a more comprehensive spatial composition. This is a continuous process of changing the presentation form, but the focus is always on physicality and the experience state. An overall impression of audiovisual nature and the relationship between movement, gesture and the body runs through all my works. Despite these constants, the form and conception of the pieces have changed, and I would like in this text to shed light on the motivations behind this, the opportunities thereby offered and their particularities. In doing so, I will particularly focus on three current installation works that have been created since 2015.

6.5.1 Sensor/Performance

Physicality has always played an important role in my compositions. This theme has its origins in the sensor-based performances ("Point Ones", "Your Fox's, A Dirty Gold"), in which the musicians control the electronics and light via their movements. This approach was continued in subsequent works, which synchronize choreography with light ("Scanners", "Sensate Focus"). In both cases, the classical concert situation is expanded by visual stimuli and shaped into a more holistic experience. The separation between stage and audience is still maintained – but reduced by the use of light. The performative element also leads to a direct relationship between the audience and the musician, as, ideally, identification can occur.

So then; in "Star Me Kitten", the singer explicitly addresses the audience in a lecture and thus involves them directly. The theatrical "f1" uses the concert hall and its surroundings per video and drama, whereby here too, the audience is included in the setting. Video recordings behind the stage and in the concert building are woven into the performance. However, the visitors still have a primarily observational role. The physicality of the performers and their expressive handling of the setting are in the foreground.

6.5.2 Hybrid

"Lucky Dip" was the first piece to take on a hybrid function, in which concentration shifts from the stage to the auditorium. This work is explicitly orientated on rave culture and musically reproduces a 24-hour time span in twelve minutes. All the stages of excess, euphoria, trance and isolation are condensed here into an exuberant musical narration – supported by the massive use of fog and strong light effects.

The lighting concept is untypical of a concert because, as in a club, it is directed at the audience and only sometimes at the musicians. The recipient's self-perception is at the centre of attention and no longer exclusively follows the onstage musicians; just as in a techno club, the individual and group experiences – and not the idolization of the DJ – can lead to a significant moment. In this intoxication, many different emotional states can be traversed. The depiction of this experience horizon beyond any party character was the aim of this piece.



56 Concert photo "Supramodal Parser"

Further elaborated upon and extended to a concert-length work, a similar approach can be found in the composition "Supramodal Parser"³⁶⁶, which was premiered by Ensemble Nickel and singer Mona Steinwider in 2015. The title of the piece refers to a brain region that does not distinguish between modalities whilst processing. Consequently, auditory and visual stimuli are processed jointly and equally. Analogously, in this work, the parameters of light, staging and music are also used as compositional material. More explicit work with the contrast between stage and audience space happens here. The focus continuously alternates between the performers illuminated on stage and the audience standing in the empty hall. The singer occupies a prominent role and is uniquely set in scene by light and fog. The musicians, in turn, only light up at certain moments; but these are, in contrast to "Sensate Focus", rather hallucinatory impressions, intended to simulate the feeling of sensory delusion. Thus, it becomes no longer primarily about the staging of the musicians, but about the way the audience perceives them. Taking

349 Schubert, Alexander: "Supramodal Parser" 2015.

online: http://www.alexanderschubert.net/works/Supramodal_Parser/Index.php (Retrieved: 4.4.2020).

centre stage is a change in sensation and reception – the emphasis being upon the viewer. Overall, the piece is about conveying a perceptive situation, an experience. The intent is to make states of overload, excess, noise, loneliness, and confusion palpable. The rave context is a role model here: both material and setting refer directly to it. However, the piece should not reconstruct techno-culture, but make parts of it, in their abstract translation, noticeable and use them as a metaphor. Emotional states and mental extremes should be evoked.



57 Installationsfoto "Solid State"

6.5.3 Immersion

The confrontation with club culture finds its interim conclusion in the audiovisual installation "Solid State".³⁶⁷ In this work, two rooms connected by a passageway are filled with fog, light and surround sound. The audience enters two rooms completely engulfed in fog, which are timed with bright stroboscopic flashes, sometimes in sync, sometimes contrarily. Ideally, the dimensions of the rooms can't be made out and the passage between the two rooms is the only perceptible element. This results in an iconic over-accentuation of the transition with near-religious imagery. The spatial concept is based upon the model of the brain's two halves, which are connected by the neural connections of the forebrain. The complete synchronization of both the brain's hemispheres under stroboscopic light leads to an overload and, in extreme cases, to an epileptic seizure.³⁶⁸

In this intensely stimulating situation, the audience perceives retinal patterns similar to fractals. Therefore, it questions the visitor's individualized experience in addition to spacial perception. In this way, an explicit reference to hallucinatory states is made. The theme is still disorientation, intoxication, transcendence and falling. The audience is therefore located in an actually empty space and, consequently, itself becomes an object of the work. It is exclusively about their experience in this setting and their intrinsic perception. The installation has a

367 Schubert, Alexander: "Solid State", 2016,

online: http://www.alexanderschubert.net/works/Solid_State.php (Retrieved: 4.4.2020).

368 Schubert, Alexander: "Solid State", 2016,

online: <https://www.youtube.com/watch?v=EBTM6lao604> (Retrieved: 4.4.2020).

dramaturgical progression with intensification and contrasting phases and should be perceived as a complete cycle, but in principle, the audience can interact with the work at their own discretion. They each explore the space on their own and determine the degree to which they expose themselves to the intensity of the stimuli.

6.5.4 Narration

The room installation "Solid State" could be freely shaped in time and space by each visitor. In contrast, the participatory concert installation "Black Mirror" focuses on a concrete sequence of events and a guided narration. In this work, too, the audience is immersed in a state and a setting. But here they are guided, and extra-musical content is integrated using speech.

"Black Mirror" was first performed in 2016 in Luxembourg by Ensemble Lucilin, in collaboration with Daniel Dominguez Teruel, and takes place within a vacant hotel and its surroundings. The audience is taken by bus to the outskirts of the city at night and equipped with radio headphones, black capes and cat masks. From this point on, the audience is indistinguishable from the performers and security personnel: they all look identical.



58 Konzertfoto "Black Mirror"

In the dark, the group walks together to the end of the street and encounters the empty building. Even without visual stimuli and music, this shared experience of anonymity proves effective and serves as an introduction to the piece. In front of the hotel, a narrative voice suddenly sets in over the radio headphones and, from this point on, provides the audience with instructions as to how they are to move around the area. These announcements are combined with narrative elements. The audience is divided into two groups, utilizing separate headphone tracks, henceforth exploring the area separately, in succession. This area is equipped with loudspeakers, moving spotlights and fog machines, creating a dreamlike, immersive state. Within this setting, the musicians, also masked, appear both with

their instruments and in acting roles. The audience groups are brought together and thereby into interaction. Anonymity and group behaviour consequently become a central element of the piece. An ambivalent atmosphere is established, which a) evokes a sect-like feeling of belonging and b) has something hypnotically isolating about it due to the instructions over the headphones. The setting in an abandoned place, originally filled with positive memories, serves as a basic metaphor for the work. It stands symbolically for a place of repressed or painful memories that now is being revisited.

The experience state is, here too, at the work's centre – but in this case, it is a narrative-psychological one. Feverish, hypnotic undertow continues to be the theme. While "Supramodal Parser" was about substance-induced states of experience that have their origin in the club context, "Black Mirror" functions similar to a nightmare or memory fragment. It conjures up an encounter with grief, loss, transience and death.

6.5.5 Thoughts/Projections

Working with settings far-removed from that of the chamber music concert provides many opportunities and raises interesting questions.

How much freedom should be given to the audience, and to what extent are rigorous rules of conduct for the audience acceptable? The scene in which the public finds itself is always accompanied by numerous connotations. These represent an essential point in a work's creation process. In "Black Mirror", a scenario is created that seeks to draw the visitor into a world. How much freedom the audience has – or how strictly the rules of a setting are prescribed – determines the visitors' key moments of experience and is an essential part of the conception and success of a piece. But it also raises the question of how much paternalism is acceptable in a given context. If this control is a content-related part of the work, it can of course be justified.

The site-specificity is a challenge and a gift: in this regard, the setting immediately writes the piece – one cannot escape this, one can only adopt a position to it. On the one hand, to use the place; on the other hand, to tame it: herein lies a multi-layered task.

A further challenge is the meaningful interplay of music, staging and extra-musical events. Finding a balance between the components involved in such a setting, so that none of the content has an exclusively accompanying function, is not trivial. The question also arises as to what music can achieve in such a context, without being degraded to mere accompaniment. In my opinion, however, where pure, spoken theatre and related installations end and text fades into the background, music can be productive in its immediacy without degenerating into a soundtrack.

In addition to the musical result, the question arises as to how the musicians' physical presence is dealt with – because particularly the Wandelkonzert (promenade concert), featuring musicians positioned at different stages, can act (in many cases) counter-productively to the desired setting.

The complexity – and sometimes contradictions – of these requirements represent the opportunities, risks and attractions of this way of working. They offer the chance to bring together physicality, technology and concepts and to occupy an area that lies between theatre installation, concert hall and sound art. In this way, themes can be explored that remain excluded from the purely musical piece.

7. WORK LIST

- 2020 **GENESIS**
VR Computer Game
Crawlers
Social Bot Artificial Intelligence
Instrumental Convergence
For Artificial Intelligence and String Ensemble
- 2019 **A Perfect Circle**
Therapy Session
Unity Switch
VR participatory Installation
Av3ry
Social Bot Artificial Intelligence
- 2018 **Wiki-Piano.Net**
for piano and internet
Control
1,5h participatory concert installation
Acceptance
Performance and Documentation
- 2017 **Codec Error**
for double bass, 2 percussionists and light
Black Out BRD
For any combination of instruments
Public Domain
For one or more performers (+electronics/video)
- 2016 **f1**
for ensemble
Silent Posts
for everybody
Black Mirror
for ensemble
Solid State
Audio- and Light-Installation
- 2015 **Supramodal Parser**
for singer, electric guitar, saxophone, percussion, piano,
electronics (& haze and light)
Mimicry
Multichannel tape piece

- 2015 **Star Me Kitten**
For singer, flexible ensemble, video and electronics
Grinder
For saxophone, percussion, keyboard, e-guitar, electronics
- 2014 **Sensate Focus**
For Ensemble Plus Minus
Serious Smile
For sensor-equipped quartet: conductor, piano, percussion and cello
HELLO
For {any number of} instruments, live-electronics and video
- 2013 **Lucky Dip**
For midi-drumkit, keyboard, electric guitar
Unit Cycle
Audio-visual installation
Sweet Anticipation
For percussion, sensor, live-electronics and live-video
SCANNERS
For string ensemble, choreography and electronics
- 2012 **Bifurcation Fury**
For electric bass guitar, live-electronics (and live-lights)
Point Ones
For small ensemble and augmented conductor
Bird Snapper
For singer, saxophone, e-bass, e-guitar, percussion. and keyboard
- 2011 **Sugar, Maths and Whips**
For violin, double bass, piano, drum kit and electronics
Your Fox's A Dirty Gold
For solo performer with voice, motion sensors, electric guitar and live-electronics
The Grand Dissection
For large ensemble, conductor with arm-sensors and live-electronics
- 2010 **Bureau Del Sol**
For drumkit, {saxophone/piano/e-guitar or clarinet} and timecode-vinyl
Laplace Tiger
For drum kit, arm-sensor, live-electronics and live-video
Infinite Jest
For e-guitar, drum kit, saxophone and live-electronics

- 2010 **Semaphores**
For guitar, percussion, saxophone and electronics
- 2009 **Superimpose I**
For jazz quartet and electronics
Weapon of Choice
For violin, sensor, live-electronics and live-video
Night of the Living Dead
For jazz quartet and electronics
Some Forgotten Patterns
Audiovisual Installation
- 2008 **Nachtschatten**
Multichannel tape piece
A Set of Dots
Interactive Audiovisual Installation

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