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SPIVAK

AN AESTHETIC EDUCATION IN  
THE ERA OF GLOBALIZATION

AN AESTHETIC EDUCATION IN  
THE ERA OF  
GLOBALIZATION

Brian Barry

WHY  
MUSIC?

SELECTED INTERVIEWS  
& OTHER WRITINGS  
1977-1977

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## Editorial

### Eighth issue of the European Journal of Philosophy in Arts Education

Ketil Thorgersen

Editor in Chief

**E**JPAE is proud to be able to present another issue with important thoughts in the intersection between the arts, education and philosophy. In this issue we have only been able to get two articles ready for publication. This is not because of lack of important and high quality articles submitted to EJPAE, but because of problems in the review and editorial processes. So while I am happy to present these two articles, I am also sad that I have not been able to get other articles ready for publication yet. To be an editor is a really interesting task where the meetings with interesting scholars and texts from different areas is the reward for the work you put in. In these trying times other work has had to be prioritised over the editorial work, and even if I have tried to get reviews to happen, several reviewers have obviously also had pressing times and I have experienced several reviewers withdrawing or even stop answering mail. This does not give me an excuse for all the articles waiting for a review, but at least it is one explanation – and for you I apologise and hope you will still be with us in the times to come.

That being said I present to you two interesting articles – both from Norway this time. The north part of Norway is perhaps more known for snow and ice than for

philosophy and art, but that is about to change with this issue of EJPAE. The first article is by **Ola Buan Øien** who has explored how concepts developed by Daniel Lanois can be useful in performances through arts based research. The concept investigated are *sonic ambience*, *master station*, *operating by limitation*, *locations*, *preparing* and *black dubs*. In this exploration he has turned inwards and analysed his own compositional process. Theoretically the study draws on the constructionist epistemological roots of Crotty combined with Gadamer's more hermeneutic theories. The article gives sonic and visual examples of the process and takes the reader on a journey to show how these concepts operate in an actual creative process, while we simultaneously take part in Øien's reflections on the process. The usefulness for educational practices in applying such approaches as demonstrated in the article, is discussed towards the end of the article, while at the same time discussing the academisation of artistic practices. The article is a thought provoking and useful read for teachers, teacher educators and artistic researchers from different disciplines even if the terminology is most recognisable for those involved with music.

The second article discusses the relationship between art and science and is written by **Thomas Dillern**. By using Leonardo da Vinci as an example, he shows that art and science as human endeavours share some common traits. Da Vinci is what we today call a renaissance-man – someone who were active and accomplished in what we today consider separate disciplines such as art, architecture, science, medicine etc. In the essay Dillern questions the ideals of objectivity and claims that human creativity is needed as much in scientific processes as in the arts. The scientific process is then compared to artistic processes in order to show the similarities between them and how both activities generate human understanding. In this Dillern builds on several philosophers such as Heidegger, Gadamer, Dewey, Polanyi and Beavington, but also the old cult author Robert Pirzig and his seminal novel *The Art of Motorcycle Maintenance*. Extrospection and instrospection are parts of the same process and needed in

making sense of the world, Dillern argues, and therefore artistic approaches to science and scientific approaches to artistic creation are needed in education.

I hope this issue will bring hours of interesting thinking and if you feel inspired to follow up on something written here, or if you are provoked to write a reply, EJPAE will be happy to be a platform for such professional discussions.

As I finish this text, spring is about to break free of the cold arms of winter and I wish all of you a warmer and closer time ahead than the last year of social distancing.

Ketil Thorgersen

Editor in Chief      Stockholm April 1<sup>th</sup> 2021

# Sonic Extractions:

On developing understandings through  
arts-based research in a performative  
context

Ola Buan Øien

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## Abstract

The aim of this study is to investigate how arts-based research can contribute to developing understandings of six concepts in a performative context: *sonic ambience*, *master station*, *operating by limitation*, *locations*, *preparing*, and *black dubs*. The research is methodologically informed by arts-based research, and the empirical material is based on the main findings from a previous study on record producer Daniel Lanois's practice. In the present study the empirical material is explored through my own practice, the performative process of which is informed by the six concepts noted. The study is guided by the following research question: "How can arts-based research contribute to developing understandings of six identified concepts in a performative context?" The primary findings are the analytical approaches *arts-based meaning interpretation* and *arts-based transformation*, as well as the *sonic extractions* summarized in the composition "Supro Nova". The findings establish a basis for further discussion through which to discover how the study may contribute to developing understandings relevant to other practices.

Keywords: arts-based research, philosophical hermeneutics, sonic extractions, music teacher education



# Sonic Extractions

On developing understandings through  
arts-based research in a performative  
context

Ola Buan Øien<sup>1</sup>

## Preface

**A**nova is a star that transforms from its normal state to illuminated and back to its normal state again, just as this composition's ABA form changes from minor to relative major and back to minor again. The nova star, often called a white dwarf, is a small star that can be "lit" because matter flows to it from a nearby red giant. Life's many meetings with power sources, such as other people and objects, can result in illuminated periods. A meeting with Daniel Lanois and a 50s Supro lap steel gave rise to creativity and provided me with an enlightened and productive period: therefore, I dubbed the resulting composition *Supro Nova*.

## Introduction

### Background and previous research on arts-based research

This study investigates how arts-based research (ABR) can contribute to developing understandings of six specific concepts in my own performative practice. ABR is a

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growing research movement that may strongly support comprehension of various complexities within educational settings, such as in arts education (Almqvist & Vist, 2019, p. 3). Leavy (2018, p. 3) suggests that research that taps into the power of the arts should do so to create new ways to see, think, and communicate. McNiff (2018, p. 22) reflects on the paradigm of tensions within the academic community by suggesting that artistic ways of knowing are contrary to prevailing institutional mindsets and values. He defines research in the arts as a transdisciplinary way of knowing and as an egalitarian and universally accessible process (p. 24). Freeman (2018) enters this discourse via the field of psychology by claiming that, through a more artful approach to inquiry, psychology might become more, rather than less, scientific (p. 125). He emphasizes that no one has a lock on the form science must take (p. 134) and that perhaps scholars are obliged to contribute to the continuous development of research domains by challenging conforming traditions.

Gergen and Gergen (2018) illuminate the role of the performative movement in the social sciences by placing it within the family of ABR (p. 54). They highlight the need to maximize ways to view the world by considering scientific progress a matter of increasing the potential for action, not as a march toward truth (p. 57). These authors further suggest that the addition of artistic expression into the sphere of scholarly study is significant “because it moves beyond the traditional paradigms of representation” (p. 57), a view that is supported by others. “Enormous riches are therefore offered as social scientists explore the ways social life can be understood through the lens of dance, painting, music, and so on” (Gergen & Gergen, 2018, p. 57). According to Gergen and Gergen, the performative movement and development of the performance studies represent a cultural transformation towards pluralism and confluence of domains within research paradigms (2018, p. 58).

In this study I find myself in an arts-based paradigm, where consciousness is developed within a performative framework of understanding that extends beyond

traditional models of representation. In a special academic journal issue on community arts and arts education, Østern and Rønningen (2019) contribute to discussions on the merging of scientific and artistic works. They observe that the Nordic countries, through their United Nations Educational, Scientific and Cultural Organization (UNESCO) memberships, have committed to following recommendations presented in policy documents regarding arts education. They note that these recommendations establish art as a core area in education and society and arrange for learning to take place in art, about art, and through art (Østern & Rønningen, 2019, p. 18), which I consider to be the case in this research context.

Muijen and Brohm (2017) argue that art evokes different senses by simultaneously generating new perspectives from which to communicate and create: “In other words, art does not provide just illustrations and subtitles for communication processes, but it does communicate in its own ways. It creates” (Muijen & Brohm, 2017, p. 2). ABR includes research “where topic and results may go beyond the arts, but where arts-based research processes constitute a major contribution to the project” (Almqvist & Vist, 2019, p. 5). The aesthetic attitude and participation strategies may be transferred to research in several areas, and validity in ABR “should be considered a matter of meaningfulness rather than measurability” (Holgensen, 2019, p. 50). In the research context of this study, all the senses are recognized as part of a holistic hermeneutic apparatus, which I elaborate on in the theory and method sections of the text.

## **Aim and research question**

The overall aim of this study is to investigate how ABR can contribute to developing understandings of six specific concepts in a performative context. In other words, six terms, in this context referred to as concepts, are examined performatively to explore how ABR can help understand the concepts through my own performative practice.

From such a view, the study may develop insights with relevance in the fields of research, education, and performative practices.

Angelo et al. (2019) highlight changes in higher education regarding notions of mandate, knowledge, and research in a Norwegian context. Research on teacher education in Norway has placed increased focus on technology and pedagogies (*Acta Didactica Norge*, 2019; MusTed, 2019). Both researchers and politicians in the Nordic countries and internationally have devoted much attention to teacher education (Darling-Hammond et al., 2017). Although challenges in the field of teacher education differ across countries, a common significant issue is the gap between the education offered and the needs of the educational systems. From this perspective researchers argue for strengthening teacher education and teaching practices (Darling-Hammond et al., 2017; Forzani, 2014). An earlier study (Øien, 2020) that focused on foreground ensemble conducting through a single YouTube-based case study investigated what aspects of musical leadership relevant to conducting could be identified by applying the theory of practice architectures to an analysis of the practice of musician, songwriter, artist, and producer Daniel Lanois. A question that is not explored in that study is how such concepts can inform my own artistic practice. Therefore, to fully understand the potential of the concepts, I examine them in a performative perspective and context. The present study, thus, investigates six of the concepts examined in that research by foregrounding transformation through ABR (Leavy, 2018) in the form of arts-based transformation (ABT), using the performative approach as an analytical lens.

This study explores possibilities for transforming the concepts from terms to sound by investigating my own performative practice. As a researcher, music teacher educator, and musician, I seek to contribute to the field by bringing the performative and qualitative paradigms into dialogue. This is attempted by recognizing ABR as a possible methodological and analytical context and perspective for interpretation

based on an understanding of philosophical hermeneutics in a broad sense. From such a perspective, it is important to emphasize that I recognize embodied interpretation through music as a possible approach to developing an increased understanding. As such, I argue that the study offers understandings that may be relevant to other practices, such as within research, teaching, learning, and performative contexts.

The six concepts I investigate, on which I later elaborate, are *sonic ambience*, *master station*, *operating by limitation*, *locations*, *preparing*, and *black dubs*. A theoretical analysis (Øien, 2020) offers, as I experience it, only certain aspects of the perspectives needed to develop understandings in the context of Lanois's practice. I, therefore, explore the six concepts noted through an embodied approach to gaining nuanced insights into the converging of research paradigms. The knowledge contribution such a triangulation can help develop on a methodological level may also be relevant to others who seek to operate at the intersection of the performative and qualitative paradigms. This potential is investigated further in the discussion section, which is intended to encourage further discourse. This study is guided by the following research question: "How can arts-based research contribute to developing understandings of six identified concepts in a performative context?"

## Theory

Epistemologically and ontologically, this study is informed by Crotty's (1998) concept of constructionism; consequently, this article is written from a constructionist perspective, wherein the researchers take as their point of departure the philosophy that meaning is a socially formed phenomenon; that is, meaning is not something we discover, but rather something we construct in meeting with other human beings, objects, and the world around us. The same applies to the concept of understanding, which implies that meaning and understanding are neither purely objective nor purely subjective (Crotty, 1998, p. 43) but are created at the intersection of the

two perspectives. One way to understand constructionism is that the terms epistemology (what it means to know) and ontology (what is) are nearly synonymous:

Ontological issues and epistemological issues tend to emerge together. As our terminology has already indicated, to talk of the construction of meaning is to talk of the construction of meaningful reality. Because of this confluence, writers in the research literature have trouble keeping ontology and epistemology apart conceptually (Crotty, 1998, p. 10).

In this manner, constructionism invites a pluralistic perspective considering all stages of a research design. Rethinking how music is constructed and articulated with reflections about epistemological and ontological juxtapositions rooted in the recognition of pluralism can suggest that music may be something other than an *object* about which one thinks or can think. Bearing this in mind, this pluralistic position and understanding offers a suitable supplement for a framework through which to understand the music in this study as a *subject*, in that it contributes to placing me, as a researcher, at play with the material being analyzed.

Because I recognize the inherent power of art both inside and outside a research context, the philosophical hermeneutics serves the study well as a philosophy of science framework. This choice is further informed by Gadamer's (2008) philosophical development in his contribution to aesthetics and art:

But I hope to have placed it on a new and much broader footing linguistically, ontologically, and aesthetically; for the experience of art can answer the prevailing presumption of historical alienation in the humanistic disciplines, I believe, with its own overriding and victorious claim to contemporaneousness, a claim that lies in its very essence. (Gadamer, 2008, p. 18)

Positioning an ABR study in philosophical hermeneutics is not a matter of course, and some researchers find other frameworks more appropriate, such as, for example,

Rosiek (2018) endorsing a post-human perspective by referring to Barad's (2007) agential realism. Other researchers challenge this view, arguing that such a claim is irrelevant (Almqvist & Vist, 2019, p. 10). The understanding framework of this study is based on what philosophical hermeneutics may offer in light of Gadamer's thoughts on its potential in the face of art:

As universal as the hermeneutical idea is that corresponds to Goethe's words, in an eminent sense it is fulfilled only by the experience of art. For the distinctive mark of the language of art is that the individual art work gathers into itself and expresses the symbolic character that, hermeneutically regarded, belongs to all beings. (Gadamer, 2008, pp. 103-104)

The idea that the experience of art can answer the prevailing presumption of historical alienation in the humanistic disciplines is largely based on the recognition of art's demands for contemporaneity, about which: "contemporaneity and this linguistically point to a truth that goes questioningly behind all knowledge and anticipatingly before it" (Gadamer, 2008, p. 19). This view of interpretation, as it is built of art and philosophical hermeneutics constitutes a framework that unhinges the hermeneutical tradition through emancipatory reflection, as it takes as its task the opening up of the expository dimension in its full scope (Gadamer, 2008, p. 18).

Daniel Lanois is a musician and producer with a professional resume that includes producing records for artists such as U2, Bob Dylan, and Peter Gabriel, among others (Massey, 2009, p. 14). By using the theory of practice architectures (Kemmis et al., 2014, p. 31) to analyze Lanois's practice through a single YouTube-based case study, nine concepts of musical leadership potentially relevant to conducting were revealed (Øien, 2020). The present study investigates six of those concepts and aims for the findings to feed a discussion on how ABR can contribute to developing insights relevant to other practices.

As noted, six concepts (Øien, 2020) are explored through this study. *Sonic ambience* (Los Angeles College of Music, 2016) is a concept that encompasses atmospheric sounds and various kinds of sound manipulation that form part of the basis of what is also referred to as the “Lanois sound.” The concept of *master station* (Reserve Channel, 2013) involves developing a sound station that may consist of an instrument, microphones, cables, pre-amps, and other relevant recording equipment; when a sound station qualifies as a master station, it is left untouched such that the sound remains the same throughout the whole production process. *Operating by limitation* (Louisiana Channel, 2015) refers to exploiting the creative potential provided by limitations, which may be economic, technological, or time-related. *Locations* (Reserve Channel, 2013), or choosing suitable recording locations (the studio, the basement, the library, the barn, the castle, the kitchen), is a strategic aspect of leadership that further affects both process and product. *Preparing* is highlighted as one of the most important concepts in Lanois’s practice, where preparations are essentially his “whole thing” and his “best friend” (Reserve Channel, 2013) and, as Lanois emphasizes, symbolize engagement and commitment. The sixth concept, creating audio samples by manipulating previously recorded material, is termed *black dubs* (Neilyoungchannel, 2010).

## Method

### Methodology

At times one must step into the unknown and travel what Steinsholt and Juul (2018) refer to as the *necessary path* (p. 10). In this study, the necessary path for developing and presenting understandings follows a methodologically ABR (Leavy, 2018) direction. Leavy uses ABR as an umbrella category that encompasses all artistic approaches to research—she lists 29 different terms within this multifaceted field



(Leavy, 2018, p. 5). These likely are just some of the approaches that deal with research on, about, and with the arts. In this study I focus on the transformation process; consequently, I offer the lens of ABT as a possible way to explore concepts in a performative context.

Kara (2015) recognizes creative research practices yet also emphasizes that arts-based methods are subject to criticism (pp. 22, 154). Despite the criticism, however, some researchers choose the risk of negative reactions and implement arts-based methods. In this study the choice of the arts-based methodology is not motivated by a lack of respect for scientific traditions but, instead, can be perceived as a contribution to the development of the qualitative research paradigm. This *performative movement* (Gergen & Gergen, 2018, p. 54) may possibly represent a third research paradigm or a methodological shift (Leavy, 2018, p. 4), or it may be the qualitative paradigm that expands its own framework. It is not certain that researchers can or should agree on understandings of the performative movement's position within this discourse. Bearing this in mind, I do not seek to identify static truths, although I consider it appropriate that understandings and insights be developed and articulated as a contribution to further critical and creative reflection. Perhaps the concept "maybe" could also be recognized with regard to the paradigmatic discourse within research fields in constant and continuous motion, in which prejudices are put both into play and at stake.

## Analysis

The arts offer several perspectives that may enrich the analytic process regarding both experience (Gadamer, 2008, p. 18) and creativity (Kara, 2015, p. 117). In this study I investigate how an ABR perspective can contribute to developing understandings of six specific concepts through arts-based meaning interpretation (ABMI), through an ABT analysis, and finally, through the arts-based presentation of the composi-

tion “Supro Nova” (Øien, 2019), in which the performative approach serves as the analytical lens. ABMI is a term developed through this study, which deals with an analysis process at the intersection of ABR and philosophical hermeneutics. In other words, I explore the six concepts by expanding the interpretive perspective to embrace both a performative embodied and cognitive approach to how concepts can be understood. ABT is another term developed through this study, which relates to the concrete exploration of the concepts, where terms are transformed into music/sound in the form of sonic extractions. Considering this, “Supro Nova” is both a work of art and a result of a research process. By interpreting and transforming concepts through ABMI and ABT, this arts-based (Leavy, 2018) practice-oriented self-study (Bleijenberg et al., 2011, p. 147; Cochran-Smith & Lytle, 2009, p. 154) explores the aesthetic potential within theoretical concepts by examining them through a performative approach that aims to contribute to the research field by renegotiating possible frames of developing understandings within research practices.

## Research ethics and challenges

In this study I investigate my earlier findings (Øien, 2020) through an ABR approach by entering a research process at the meeting point, in an extended sense, of two practices: Lanois’s and mine. Thus, the concepts are mainly extracted without Lanois’s participation but also without the intention to impose my understandings and prejudices upon his work. Instead, I allow my interpretation of his practice to guide me along the ABR process that follows. In this way, I aim to treat Lanois respectfully to understand what the concepts can accommodate from a performative perspective. As a researcher, music teacher educator, and musician, I seek not to criticize Lanois’s practice but, rather, to examine how understandings can develop over the course of converging his practices with mine; as a result, I am in danger of claiming that I know Lanois better than he knows himself. Here openness becomes relevant; openness in this research context means I agree with what Lanois says by recognizing his practice

as an opportunity that can inform my understandings, and I explain various ethical challenges that emerge throughout the research process to equip the study with a necessary transparency. Leavy discusses this issue according to ethical practices and value systems within ABR regarding the potential of advanced caring and democratic participation in the research experience and the outcomes of research (Leavy, 2018, p. 11). In a study like this, it is not possible for me to achieve complete objectivity and totally avoid bias regarding how my interpretations are shaped by my gender, my cultural, historical, and socioeconomic origin, and other background factors, nor is it my intention to do so. Instead of trying to distance myself from my own prejudices, it is more important that I acknowledge my own understandings and make them visible in a transparent way. My background as a white male musician and music teacher, combined with my role as a researcher, creates bias in interpretations at all stages in this study. Furthermore, I stand by the ethical choice not to anonymize Lanois or the video sources. Generating data material from an open access channel with no restrictions (YouTube) does not infringe on his privacy since access to the source is open to the public, and I consider it more ethical that I announce both his name and the video sources in order to create transparency and verifiability.

## Findings of the study

### Arts-based meaning interpretation (ABMI) and arts-based transformation (ABT)

In my previous study (Øien, 2020), I did not fully understand the scope of Lanois's concepts. There was, therefore, a need to explore them in a complementary context. I developed ABMI as a possible approach to researching and interpreting six of the concepts musically. ABMI is, thus, an analytical approach that was developed to interpret the concepts performatively. Hence, I argue that ABMI is one of the findings

of this study, even though it has served as an analytical lens. The same applies to ABT, which deals with the transformation process from concept to sound in the analytical phase of the study. ABMI can then be understood as an abstract interpretive analytical approach through which the concepts are interpreted at the intersection of ABR and philosophical hermeneutics, while ABT is a concrete operationalization of the understandings developed through the performative analysis. Consequently, transformation through ABT is at the core of this study. The possibility of transformation can clearly be debated, but the principle of transforming text into another artistic expression is nothing new in the arts, exemplified by, for example, Bleken's transformation of Kafka's (2012) literary work "The Trial" in the form of the charcoal drawings "Proessen (Triptykon)" (Hansen, 2011, pp. 148–150). In this way, the study is informed by ABR, which develops into the analytical lenses of ABMI and ABT. Furthermore, the findings are disseminated in the form of sonic extractions as both works of art and results of a research process.

## Sonic extractions

In this section, I elucidate the findings extracted by interpreting and transforming concepts into sonic extractions summarized in the composition "Supro Nova" (Øien, 2019). Through ABMI and ABT, the six concepts, which are *sonic ambience*, *master station*, *operating by limitation*, *locations*, *preparing*, and *black dubs*, are interpreted and further transformed into *sonic extractions*. These six concepts comprise a random selection of findings from a previous study (Øien, 2020). The aim of this study is to investigate how ABR can contribute to developing understandings of the concepts in a performative context; therefore, I do not consider it decisive which of the previous findings/concepts I focus on in this study, so I will not elaborate on this further. The *sonic extractions* are presented using quick response codes (QR codes). The use of QR codes is becoming a common way to disseminate multimedia information

in research articles, as Knudsen, for example, does in his study on performative learning spaces on digital scenes (Knudsen, 2017, p. 6).

*Sonic ambience* is a comprehensive concept that contains elements such as sound, timbre, atmosphere, and creative experimentation (Øien, 2020). I especially experienced the exploration of the Boss RC-300 loop station as a key tool in this context, which I return to later in this section. In my performative interpretation and understanding of the concept, I encountered several other terms that relate to it, one of which is *sound station*, about which Lanois stated the following:

Yeah, I'm very neat with my tools. This is a beautiful, upright Steinway piano that I love the sound of ... So, that's a very beautiful, reliable piece, and great for songwriting, and just an all-round good instrument to have in the studio. If I find a piece like this and nurture it and it becomes a sound station, then I cherish it and respect it. (Reserve Channel, 2013)

A sound station can be developed into a *master station*, which represents the point at which the sound is considered optimal. At this stage in the production process, all involved instruments, as well as the recording and production equipment and conditions, are solidified such that the sound remains the same throughout the duration of the production process. Lanois explains it as follows:

And I would never change it, don't change the cable, don't change the preamp, nothing. It's a living, breathing station, and once it has reached that state where it's the finest that it can be, then it's never touched again...when something qualifies as a master station, then it exists, and then it is never touched again. (Shure, 2014)

By experimenting with numerous instruments over time and trying to understand the concepts by interpreting and applying them in my own performative practice, I have been searching for sound stations and master stations as a strategy for creating a

starting point from which concepts can be transformed into sonic extractions. Lanois talks about the importance of the pedal steel guitar in his work: “I always keep my steel guitar handy because it’s very liquid sounding and can provide me with a certain kind of direction for a day” (Reserve Channel, 2013). According to Lanois, the melancholy that occurs when playing the steel guitar may have as much to do with him as with the instrument itself, but he emphasizes the way the nature of the pedal steel guitar allows the notes to sustain (Shure, 2014). I have experienced the lap steel as a manageable compromise between the electric guitar and the pedal steel guitar. For this reason, I bought an early 1950s upright Supro lap steel with six strings. Its simplicity opened an easy and understandable entrance to a fretless slide instrument. For me, this guitar enables creative approaches for exploring sound, timbre, melodies, and harmonies. The setup with the lap steel, Boss RC-300 loop station, a limited pedal board, and Magnatone guitar amplifier (see Figure 1) has become a master station of mine.



*Figure 1: Master Station Created by Researcher*

Exploring *sonic ambience* through the sound station and master station principles is an example of how I have developed a performative understanding by allowing the earlier identified concepts to inform my artistic practice.

*Operating by limitation* is another key concept for Lanois (Louisiana Channel, 2015), who focuses on the enabling factors that various forms of limitations can represent. According to Lanois, the artistic product is not a result of available equipment and resources but, rather, a product of the competence of the one who produces the work. If one operates by economic, technological, or other limiting factors, the limitation(s) may free up creativity such that the potential of what is available becomes more fully utilized than it may otherwise have been. After thirty years as a musician in a rather wealthy European country, I have had both time for and access to a comprehensive technological palette. Nevertheless, I wanted to test the idea of how a small selection of effects might free creativity to more fully exploit the potential of some of my equipment. I scaled down my pedal board from twenty guitar effects to a smaller board comprising four effects; I used to take a dozen electric guitars, guitar amps, and pedals to concerts or to the studio. After examining the principle of operating by limitation, I altered my solo rig to include only a lap steel, a baritone guitar, and a guitar amp in combination with the scaled-down pedal board and Boss RC-300 loop station. This can be perceived as a dogmatic and unnuanced approach, wherein minimalism becomes a point in itself, a point that could have been carried even further, as Lanois, during his career, has experimented with countless instruments and instrument groups. Nevertheless, in this context, it was necessary that I investigate the concept to see what creative possibilities the principle of operating by limitation enabled. Due to the interactions made possible through the concept, creativity was released in the encounter with the performative context. I argue that my understanding of the concept expanded as a result of the performative interpretations that I ex-

plored throughout this study, an acknowledgment that may be relevant to others as well. Furthermore, I explored numerous variations of equipment and setups. Other limitations I explored were related to *locations*. I wanted to fully pursue the principles of operating by limitation and locations by establishing a master station at my 8 m<sup>2</sup> office (see Figure 2). This constitutes some of the frames for investigating the concept of operating by limitation in this study.



*Figure 2: “The Researcher’s Laboratory” Consisting of a Master Station and Writing Room in 8 m<sup>2</sup> office*

Lanois’s philosophy of minimalism encouraged me to limit myself compositionally as well. Lanois described his fascination with the steel guitar as a liquid-sounding instrument, noting that the atmosphere created by playing very few notes on the steel guitar promotes a certain kind of melodic journey by responding to the harmonic interplay (Shure, 2014). Based on this, I wrote two chord progressions. The first progression became the basis of my composition’s A-theme, while the second became the basis of the B-theme, as illustrated in Figures 3 and 4.



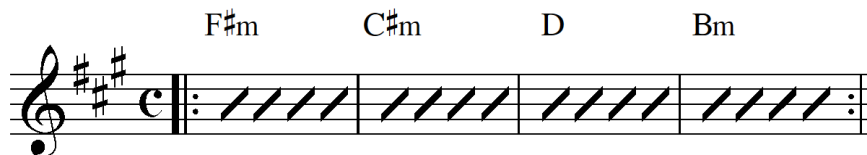


Figure 3: First Chord Progression: A-Theme in the Key of F# Minor



Figure 4: Second Chord Progression: B-Theme in the Key of A Major

These chord progressions developed into different harmonies that ultimately laid the groundwork for a melody based on the chords' top notes, here presented through sonic extractions as the A<sub>1</sub>-theme and the B<sub>1</sub>-theme, which can be heard by scanning the QR codes in Figures 5 and 6 or by clicking on the hyperlinks below the codes.



Figure 5: Sonic Extraction: A<sub>1</sub>-Theme of the Composition:

<https://mediasite.nord.no/Mediasite/Play/1ff3172do422493cb9b9c59ab7b5d34d1d>



Figure 6: Sonic Extraction: B<sub>1</sub>-Theme of the Composition

<https://mediasite.nord.no/Mediasite/Play/6fo2c2d8c4ca47be807adoe1ac3601e11d>

*Preparing* seems to be the core of Lanois's practice: "So, the preparation is pretty much my whole thing" (Reserve Channel, 2013). This principle symbolizes both engagement with and commitment to those with whom he works (Reserve Channel, 2013). He explained that preparation is his best friend and that he prepares the re-

recording room, programs beats, and makes sound collages, along with performing other preparatory tasks, such that when the band or artist arrives, they never enter what he describes as “thin air” (Reserve Channel, 2013). Although the first phase of the recording process for this study was conducted in my office absent any collaboration other than with Lanois’s concepts and the musical exploration I conducted, I largely relate to the preparation principle in several ways. Initially, I prepared for half a year by experimenting technically (technical skills on the instrument, such as the slide technique) and technologically (equipment/gear/tools) with the instruments and effects. To challenge my own understandings and prejudices, I examined unknown instruments, technological gear, and possible constraining limitations to discover and acknowledge their advancing potential through an ABR perspective. While it may be an exaggerated claim that this led to a fusion of horizons, I argue that my horizon has expanded as a result of new understandings that I developed through a performative exploration of the concepts. The same principle applies to the actual recording situation: I can easily relate to being constrained in the recording phase due to poor preparation. Therefore, I have challenged my recording practice, wherein the entire composition is recorded on different tracks on the loop station before I visit a studio. By doing so, I have time to refine all parts of the composition within frames that provide space for handling time-consuming technical, technological, creative, and reflective challenges. In this way, the limitations involved in the project initiate creativity. Preparing goes along with planning the recordings; in view of this, the *locations* concept serves as a key principle in choosing a recording room (Reserve Channel, 2013), a principle that also influenced the “Supro Nova” composition. Lanois has experimented with sound and different locations by recording in such settings as a basement, library, barn, castle, and kitchen, as well as in traditional recording studios. In the process of recording “Supro Nova,” combining use of my office and the recording studio became an important factor for the resulting sound. The loop station itself may operate as a limitational recording factor to create an intermediate link that

sonically adds a unique compression, overdrive, and frequency response. Plugging in and playing the loop station back from a guitar amplifier produces a sound different than does connecting the lap steel directly to the amplifier. The sound quality is affected by the technological detour the loop station represents in a way I find pleasing. This limitational aspect, among others, equips the “Supro Nova” composition with the necessary elements to achieve a sonic result. In addition, the loop station emerges as an important element in the process of transforming theoretical concepts into sonic extractions in terms of both sound and technical experimentation.

*Black dubs* deal with the manipulation of previously recorded audio instead of recording over dubs (Neilyoungchannel, 2010). After a recording, new instrument tracks do not need to be recorded if further nuances are required. Instead, Lanois manipulates extractions of previously recorded tracks and puts them back in:

I put days and days...of work into that song building what I call my black dubs. He hits a certain chord, you think, how did that sound ever happen from a guitar? It happened that way because I extracted, I manipulated and put back in. I did not over dub, I didn't put a piano on or another guitar or add a bass or anything like that. No, I took what was already there ... It's not an addition, it's an expansion. (Neilyoungchannel, 2010)

I experienced the concept of building black dubs during the mixing phase for “Supro Nova.” The composition is recorded using a Supro lap steel, a Fender Jaguar six-string baritone guitar, and a Boss RC-300 loop station. The baritone is tuned in a string range from “A<sub>3</sub>” (220 Hz) to “A<sub>5</sub>” (880 Hz) and the six-string lap steel from “E<sub>4</sub>” (329.63 Hz) to “E<sub>6</sub>” (1318.51 Hz). This means the lowest available tone is “A<sub>3</sub>” (220 Hz), which is located between the lowest pitch on a four-string bass guitar (“E<sub>3</sub>” / 164.81 Hz) and the lowest tone of a six-string electric guitar (“E<sub>4</sub>” / 329.63 Hz) based on an equal-tempered scale (Physics of Music, 2018). To create a sound, I recorded an underlying drone using a double bass bow on the baritone guitar's lowest A-

string (220 Hz), which can be heard by scanning the QR code in Figure 7 or by clicking the hyperlink below the code.



*Figure 7: Sonic Extraction: The First Drone (220Hz)*

<https://mediasite.nord.no/Mediasite/Play/8563f89b443a410dbeec5fd4a7c7ecf31d>

The mixing phase of “Supro Nova” revealed a low frequency lack. I could have re-recorded the drone using an octave effect and lowered the lowest string on the baritone guitar by one octave to “A<sub>2</sub>” (110 Hz) to address this. Instead, black dubbing the baritone track became the solution; this was accomplished by copying the track and lowering the drone a whole octave using a pitch scaling plug-in effect in Pro Tools (music software by Avid) and then pasting the copied lowered track into a new track. The tracks were then played together, creating a sound more complex than the sounds they produced individually. The sound produced by playing the tracks together can be heard by scanning the QR code in Figure 8 or by clicking the hyperlink below the code.



*Figure 8: Sonic Extraction: The Second Drone (220 Hz and 110 Hz)*

<https://mediasite.nord.no/Mediasite/Play/d44ficcee4fe4c5182ceaa4e249662a1d>

Lowering the frequency added a depth of sound. An additional black dub example in this context is the use of the reverse effect. The drone, originally recorded on the loop station, was played from the loop through the guitar amp and recorded on a third track in the studio, but this time in reverse. The reverse function is a built-in effect in the loop station that can be activated or deactivated before or after a track has been recorded. As a result, both possibilities are available during playback. The reverse

track was additionally pitch scaled down to “A2” (110 Hz). Together, these tracks make up a three-dimensional timbre that creates a low frequency atmosphere, which can be heard by scanning the QR code in Figure 9 or by clicking the hyperlink below the code.



Figure 9: Sonic Extraction: The Third Drone (220 Hz, 110 Hz, and 110 Hz in reverse).

<https://mediasite.nord.no/Mediasite/Play/b82ba91e90bo45bba8c39b85b69732f61d>

Figure 10 shows the waveforms of the three recorded baritone tracks. The green waveform is the original track (220 Hz), the blue is pitch scaled an octave down (110 Hz), and the red waveform is an octave down in reverse (110 Hz in reverse). In this context, black dubs affect timbre, volume, intensity, and dynamics. It was interesting to experience how the process of exploring the concept of black dubs gradually expanded my understanding of the term.

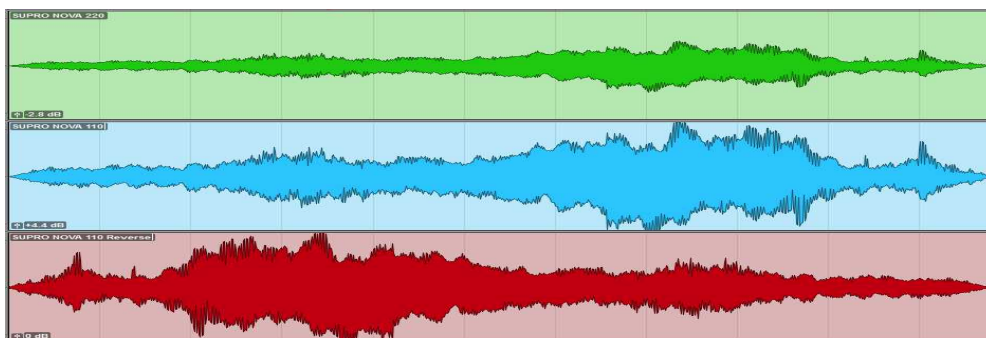


Figure 10: Waveforms of the Three Recorded Baritone Tracks

For this study I chose to relate to the six concepts of *sonic ambience*, *master station*, *operating by limitation*, *locations*, *preparing*, and *black dubs*. This process expanded my understandings of the concepts by exploring my performative practice through ABR in the form of ABMI and ABT. Examples of this are as follows: (a) creating black dubs by pitch scaling and reversing the recorded tracks of the baritone guitar to

a low frequency drone; (b) investigating the principle of operating by limitation using the Boss RC-300 loop station as a central part of the recording of “Supro Nova”; (c) exploring sonic ambience by creating overtones played by flageolets on a lap steel guitar combined with reverse effect; (d) string scratching with my fingernails, combined with delay and wah-wah effects; and (e) palm strokes against strings, combined with chorus, reverb, wah-wah effects, and the sound from playing with the baritone guitar’s double bass bow between the saddle bridge and the stopbar tailpiece. These examples additionally address the principle of developing understandings of the concepts in focus in this study in a performative context, exemplified by the introduction of “Supro Nova” sonic extraction, which can be heard by scanning the QR code in Figure 11 or by clicking the hyperlink below the code.



Figure 11: *Sonic Extraction: Introduction of “Supro Nova”*

<https://mediasite.nord.no/Mediasite/Play/f24b2966907044e8a86648d38b9c23b71d>

This study investigates how ABR can contribute to developing understandings of six specific concepts in a performative context, where the concepts are investigated and explored through ABMI and ABT and presented in the form of *sonic extractions*. Contextual frameworks are offered by ABMI and ABT for both analysis and presentation, allowing further triangulation of and nuanced insights into the concepts developed along the way from a performative perspective. By developing and implementing ABMI and ABT as analytical lenses, the findings of this study are further constructed as *sonic extractions* summarized in the form of the composition “Supro Nova,” presented in its entirety in the “Supro Nova” *sonic extraction*, which can be heard by scanning the QR code in Figure 12 or by clicking the hyperlink below the code.



Figure 12: *Sonic Extraction: "Supro Nova"*

<https://mediasite.nord.no/Mediasite/Play/2coe300091364795b98617a649213bcd1d>

## Discussion

### ABR as a philosophical hermeneutical impetus for developing understandings

In this study I examine how ABR can contribute to developing understandings of six identified concepts in my own performative practice. By applying a philosophical hermeneutical perspective, I explore the six concepts through ABMI and ABT, both in the study's analysis and through the construction and dissemination of the research findings. This approach, thus, also affects how understandings of my performative practice are developed. In this way, both my research practice and my performative practice are challenged through a hermeneutical and arts-based learning process that has broadened my horizon both as a researcher, musician, and music teacher educator. The study also shed light on how the findings can contribute to developing understandings relevant to other practices: in other words, how the practice of my own learning through an arts-based practice-based self-study can inform other practices, such as teaching and learning. Furthermore, this study can offer knowledge that informs cross-disciplinary intersubjective spaces at the junction of performative and pedagogical perspectives, which seems to be an under-researched field. From such a view the study may develop insights by emphasizing the performative approach as a possible inspiration for creating practical and creative learning processes. By examining how ABR can help to develop understandings of the six concepts discussed in this study in a performative context, knowledge developed can also be relevant for

teaching and learning in general and music education in particular. The purpose is not motivated by a desire to adapt or copy Lanois's thinking and practice but, rather, to investigate how understandings can be developed through ABR; in this investigation, my perceptions and prejudices are challenged. Here, I do not focus on how my understandings can be merged with Lanois's; instead, I focus on how his thinking can inform my practice. Although developing understandings in this context occurs on a micro level between Lanois's practice as manifested in YouTube clips and me, it may also occur on a macro level in the meeting between art and theory by investigating how ABR can help to develop understandings of both my research practice and my performative practice. Thus, I argue that this study offers understandings on how horizons can be expanded, such as how my horizon has expanded by developing understandings new to me through a performative exploration of the six identified concepts. This study's employment of ABR may be viewed as an academization of the arts, which, according to Angelo et al. (2019, p. 96), seems to challenge attitudes, hierarchies, positions, disciplines, and profiles in performing programs. However, it can also be understood as a tentative impetus to bring performative and academic traditions into dialogue by recognizing a potential for knowledge development when put into play by and with each other.

## **Implications of applying ABR to this study**

ABR does not necessarily strengthen the artistic or performative results by articulating the research process, and artistic performance practice is not always research. The purpose of this study is to develop understandings on how concepts can be transformed into a performative practice using an ABMI and ABT analysis and through an arts-based presentation of the sonic extractions in the form of the composition "Supro Nova." While the theoretical dissemination of knowledge risks providing purely cognitive-based understandings, an arts-based approach opens the communication of multi-dimensional understandings by challenging affective and cognitive as-



pects. Muijen and Brohm (2017) argue that art is about evoking different senses by simultaneously generating new perspectives to communicate and create: “Art addresses qualitative nuances in (social) situations; evokes empathy and compassion; generates new perspectives on old patterns of interaction and routines; helps create awareness of our feelings rather than cognition” (p. 2).

In this view the essence of art may contribute a perspective for developing understandings in the interaction between cognition and affectation through its creative, reflexive potential. This recognition, along with the findings, may be the implications of applying ABR to this study. Some examples of how the findings of this study can contribute to developing insights relevant to other practices follow.

## Contribution and relevance of the study

In this study *ABR* serves as a creative impulse that offers different perspectives for developing understandings of concepts and disseminating *research* than is possible using numbers and words alone. This approach is not presented as an alternative but as a supplementary perspective to more traditional research domains. Some examples of how arts-based research can contribute to developing understandings of six identified concepts in a performative context follow. (a) *Sonic ambience* relates to sound, timbre, atmosphere, and creative experimentation that can be relevant as an aesthetic approach that becomes a practice for *teaching* and *learning* techniques. This can, for example, be operationalized by challenging students’ understandings of possibilities that lie in unexplored approaches and the use of instruments, recording methods, and creative experimentation with musical styles. (b) The *master station*, which can serve as a relevant approach for exploring potentials within instrumental *teaching* and *learning*, is a principle that may contribute to developing student identity regarding sound and artistic expression. Students’ understandings of their own instruments can be challenged by exploring playing styles and technology with which they are not

familiar. For example, applying guitar amplifiers and effects may be a new approach to some who play wind instruments and strings. (c) *Operating by limitation* can inspire a creative impetus in the face of economic, technological, or other limiting factors in educational contexts that may free up creativity such that the potential of what is available regarding *teaching* and *learning* becomes fully utilized. A limitation in the form of a four bar ostinato can be an example of such a limitation in a teaching context, where student creativity can be challenged within a limited musical context. (d) *Locations* are considered in the context of this study related to the selection of suitable recording rooms. As a principle of challenging conventional perceptions, this concept may be relevant to other practices as well. What happens when children practice musical interaction at a mall or in a church? How does an open environment affect a professional ensemble recording? Conventional understandings of what locations are suitable can be challenged in different contexts in light of this concept, which is likely to affect both process and product. (e) *Preparing* can inform different stages of planning associated with practices of *teaching* and *researching* that symbolize both engagement with and commitment to those with whom one works. How a teacher prepares a classroom for teaching, or a conductor prepares a concert hall before rehearsal, may affect the group participating and, thus, also the outcome of the session. (f) Finally, *black dubs* deal with the manipulation of previously recorded audio. This is a principle that may represent a philosophical approach to developing creative *researching*, *teaching*, and *learning* environments in educational contexts, such as in music education. The principle of exploring existing material may contribute to offering understandings relevant to other practices and contexts. An example is exploring the principle of manipulating existing sound/music combined with recording a new part, such as when rap artists manipulate original recordings and combine them with new textual/harmonic/rhythmic/melodic elements. These examples are presented as opportunities and starting points for exploring further possibilities.

## Final reflections

In this study, understandings on transforming concepts into sonic extractions through ABR are developed in a performative practice, thus constituting a basis for further examining how ABR can develop understandings relevant to other practices. In light of cross-disciplinary research paradigms wherein different perspectives can offer nuanced and multi-faceted understandings, practices can be investigated and challenged as a further contribution to engage ABR in the ongoing research discourse. By involving the whole sense apparatus, ABR may offer a unique space for developing understandings in a philosophical hermeneutic perspective, something I experienced throughout this study. Hopefully, the articulation of these understandings can serve as a contribution to methodology and analysis as well in the ongoing research discourse. In addition, ABR can potentially open the path from dissemination and communication to understandings in the sense that it affects those aspects in another way through an embodied approach of developing understandings. Gadamer (2017) claims that the essence of the question involves opening opportunities and keeping them open (p. 43), while Steinsholt and Juul (2018) assert that through new experiences, our expectations are tested by unrest and uncertainty (p. 6). Considering these reflections, I choose to keep the question open to encourage further discourse on art's own premises by presenting the composition "Supro Nova" at the study's digital starting point YouTube, which can be accessed by clicking (Ctrl + click) on the image in Figure 13 to follow the YouTube link or clicking on the hyperlink (Ctrl + click) below it.



Figure 13: Cover art (Sand, 2018): "Supro Nova"

[https://www.youtube.com/watch?v=s3kH5VHx\\_eE](https://www.youtube.com/watch?v=s3kH5VHx_eE)

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# Science as Art, Art as Science

human thinking and the act of  
understanding

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&

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## Abstract

In this essay, I am exploring scientific conduct within an artistic frame. I endeavour to reveal the closeness between science and art by displaying the similarities in both the intellectual and practical human effort within artistic and scientific work. I will thus use art and artistic work, and especially the work of Leonardo da Vinci, as a kind of allegory of science and scientific work. The focus in the essay will be on the underlying and formative scientific and artistic work, and with the human act of understanding serving as the contextual framework for this exploration. My thesis is that such an exploration of artistic work will help us find the essence – a more rightful understanding – of scientific practice.

Keywords: *Artistic and scientific work, Leonardo da Vinci, underlying and formative processes, merging of subjectivity and objectivity, the humanities*

# Science as Art, Art as Science

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## human thinking and the act of understanding

Thomas Dillern<sup>1</sup>

### Introduction

**A** common notion in contemporary society is that a fundamental separation exists between science and art. That they constitute two not comparable sides of human culture. One explanation for this separation might be that science, and especially natural science with its linear methods based on logic and causality, has become such a dominating force in our human mind-set. According to Wackerhausen (1992), it has become a colonising, standard-setting function of our whole world. Because of this position of precedence, the ideals of natural science – the simplistic, dualistic, reductionist approach with its pursuit after objectivity and fully explicit expressible unambiguous facts – are something every human conduct, directly or indirectly, is mirrored against. I believe this undermines the whole humanistic tradition in which art is found, and hence that it contributes to the separation between science and art. In the striving for objectivity, any elements of humanity,

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subjectivity, are only considered something we ought to free ourselves from (Dillern, 2020). What is real has become synonymous with tangible and external reality, and where our personal and contextually situated intangible internal reality suffers from lacking acknowledgement.

Further, another worrying symptom of contemporary society, in this relation, is that we, affected by some neo-liberal desire for efficiency, are giving less room for patience. There is no opportunity, no time, to dwell on anything at all. Dewey (1934), describes that, in this notion, doing as much as we can in the least possible time is considered the ideal way of life. Our human efforts towards what we aim to achieve are thought of as highly instrumental and where there is no room, no focus or appreciation, of underlying form. Analytical, instrumental practice powered by efficiency and focus on the finished – the represented – leads to less focus on, and assimilation with, the basic workings: the process of developing the finished.

This notion does not take into account human creativity and appraisal and the synthetic practical, often tacit, processes of making. Unsurprisingly, our appreciation of the work of art suffers and the gap between science and art widens. In my opinion, however, this diminished appreciation of the human work undermines science just as much. The practical doings in contemporary science, all the actions behind the formalised procedures and protocols, are given little recognition. Latour (1987), stated that we know the input and we know the output, but we do not know, enough, about the inside (the black box) of scientific conduct. He urged (Ibid.) more focus on science in the making, the underlying processes leading to scientific knowledge.

In this essay, I will explore this underlying process of scientific conduct. In my opinion we can bridge the gap of our comprehension of science and scientific work on the one side and art and artistic work on the other side – to bring them together in a unification – exactly by exploring this process. Through such exploration we will see that they relate closely. We will see that they both deal with the attempt to under-

stand, and subsequently describe, world phenomena: that what we within science and art are struggling to accomplish is basically the same. They can both be characterised by an endeavour to reach out for an exterior reality. In science, the conventional ambition is to develop scientific truths about this reality, but Gadamer (2012) states that we also have to acknowledge that art aims to develop a truth transferable to our exterior reality.

Hence, in this essay I will try to show the closeness between them. However, as described, in any attempt to explore any human conduct we stand the risk of making an approach with too much weight on scientific criteria. Such an approach will place art in the frame of science. I will, take a counter-perspective and explore science in the frames of art. I endeavour to disclose the closeness between them by displaying the similarities in both the intellectual and practical human effort within artistic and scientific work. My thesis is that such an exploration of artistic work will help us find the essence – a more rightful understanding – of scientific practice. I will thus use art and artistic work as a kind of allegory of science and scientific work. By this approach, I attempt to understand science and scientific work in a new manner, or at least from a new perspective. My focus will be on the underlying and formative scientific and artistic work and with the human act of understanding serving as the contextual framework for this exploration.

For this purpose, Dewey's descriptions of the work of an artist in the book will be used as a kind of basis conception of artwork<sup>2</sup>. However, I do believe Leonardo da Vinci constitutes a kind of manifestation of this unification. I will hence use him, and especially his work with Mona Lisa, as an exemplification of how sci-

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2 In this essay, I use theory to express my thoughts, and of course, in this process, I have found support and guidance from many scientists/philosophers, not just Dewey. For some of the sources I refer to, it is I who connect da Vinci, even though the scientists/philosophers themselves have not explicitly dealt with him. This is my construction and something I take responsibility for.

ence and art in fact are in deep conjunction. Interestingly, this contemporary opposition between them would not have been recognised by da Vinci himself, as he thought, “no reliable model of nature could contain one without the other” (Gharib, Kremers, Koochesfahani, & Kemp, 2002). Nevertheless, da Vinci was a universal genius, a tremendously gifted person with his deep going, “aesthetic sensibility, deep providence and patience in work” (Prvanovic, 2003, p. 6).

## The work of Leonardo da Vinci

### A sensitivity

Did you know that da Vinci used more than a decade to paint Mona Lisa? And, did you know that modern analyses have revealed the painting to consist of approximately 30 layers of paint? Recently, it has also been speculated whether other women, or at least earlier versions of Mona Lisa, are hidden underneath the visible portrait. To me, this emphasises the tremendous scope of exertion behind this exceptional piece of art. For da Vinci, Mona Lisa represented a work in forever progress, a constant effort towards perfection: something serving as the ultimate definition of the things, which according to Dewey (1934) are known as art. One of the features especially highlighted with the painting, perhaps the aspect where its true beauty is found, is the vivacity brought forth in Mona Lisa’s expression. Her well known, mysterious and emotional expression: “...but the expression, wise, deep, velvety, full of promise, attracts you irresistibly and intoxicates you...” (Gautier, in McMullen, 1975, in Prvanovic 2003, p. 6). Gombrich (1995, in Prvanovic 2003, p. 6) elaborates further: “What strikes us first is the amazing degree to which Lisa looks alive...Like a living being, she seems to change before our eyes and to look a little different every time we come back to her...”. Yet, this feature of the painting was by no means a coincidence; on the contrary, it was something da Vinci truly

endeavoured to realise. In fact, it is well known that to accurately portray the intentions and emotions of the human soul was one of his overarching artistic aims (Da Vinci, 1888, Del Maestro, 2015).

To be able to do so he therefore studied human expression and human anatomy on a large scale: making observations and sketching those down. With a kind of empathising attitude, he approached this phenomenon attentively and open-mindedly, trying to acknowledge it for what it was (Gadamer, 2003), and where all the things he saw, he attempted to form into a holistic and meaningful way of perceiving them. Based on this deep interest, and a profound intellect, he over time thus developed a remarkable receptiveness for, or understanding of, and ability to appraise, his observations and the surroundings he found himself within. The combination of these personal characteristics of da Vinci and this phenomenological closeness to first-hand experiences in the context in which he was situated does in retrospect appear as the ultimate starting point for everything that was to come. To Dewey (1934), a true artist is found exactly in people holding such an unusual sensitivity to the qualities of things seen. Da Vinci's observing abilities as well as his abilities to grasp connections between what he saw thus stand out as especially determining elements of his genius.

## Human thinking

Everything da Vinci observed and everything he thought about, were then systematically stored in some kind of mental arsenal – something like a parallel universe – a universe thereafter serving as the basis for the way in which it was possible for him to express himself through his painting (Jørgensen, 2008). In his endeavour for perfection, and with his imaginative abilities, he thus created a projection in his mind – a vision of what the painting should be: a vision serving as the ultimate target towards which to aim his efforts. These qualitative structures of



da Vinci's mind constitute the constructive facets of intellectual activity, and they are, according to Dewey (in Strøm, 2018), what defines human creativity. da Vinci was hence not just a leading artist, but also a leading intellectual of the Italian Renaissance, something functioning as a figurative description of how aesthetic powers and intellectual powers merge to such an extent that their separation loses meaning. Again, his achievements were by no means a coincidence, they were the result of significant effort and targeted intentions.

As we understand it then, the work with Mona Lisa did not consist of simply dipping the brush in the paint and then stroking the brush on the canvas. It all started with an interest, followed by thinking and observing and then thinking again. da Vinci then perhaps did some painting before he again observed and thought about what he had done – as a continual act of shaping and reshaping (Dewey, 1934), shadowed by observations and critical thinking. If one part of the painting was changed, another part perhaps needed revision as well. The path towards the finished picture was thus a long and strenuous one where he had to solve, and perhaps even resolve, different obstacles on his way, and where no such thing as a completely pre-given recipe of what was to come, existed. This emphasises a unique fragility in the artistic work where a myriad of deliberations, decisions and actions has to be made, and where it is for the individual acting and thinking human being to make those.

With the projection as a guiding light, da Vinci aimed his focus and attention towards what he chose, and used general rules of conduct, techniques and equipment as extensions of his own intentions. The artist is thus not some kind of passive observer of the world, attempting to present something he has fully understood, or seen, beforehand. On the contrary, Mona Lisa arose alongside the endeavour of his work. What he understood or saw, which ultimately manifested in the finished picture, also occurred because of these very exertions of expression (Johansen, 2012). Hence, the vision, or projection, of what the picture was to become grew as the

picture grew (Dewey, 1934). da Vinci attempted to unify all the parts and connections he had made and to make this wholeness become manifest in the picture itself. According to Dewey (1934), the aim of all intelligence is exactly to grasp the full range of content and full range of connections in every experience we make. For this matter, Polanyi (1958) has also stated that we have to reinstate our reliance on our own thinking and appraisal as the supreme authority in all intelligent performance. Through this great amount of pondering da Vinci's put in his work, we even more than before realise the significant ties between scientific and artistic work (Strøm, 2018). For da Vinci, painting, therefore, was not just a formative creation, it was also an act of getting forward to some kind of understanding, as a method of inquiry (Richardson, 2003).

Mona Lisa hence appears to us, not solely as some kind of exterior product by da Vinci, but as a manifestation of the development within him. In his whole practice, a kind of harmony therefore arises between himself and his work. This harmonising attitude, discloses a special way of caring about his doings (Pirsig, 1999), and emerges as a fundamental prerequisite in da Vinci's excellent doings, making the intimate connection between the artist and his work even stronger. It is therefore undoubtedly that, da Vinci's impetus for his work arose from within himself, yet, also, in a close relationship with something exterior. According to Høffding and Roald (2019), artists working at this level feel an intense force, or will, arising from the phenomenon they are working with: that there is a logic in the phenomenon that guides them to such an extent that they feel as if they are becoming just a mediator of external forces.

As we understand it then, da Vinci's projection of Mona Lisa did not solely grow out of his own subjectivity. His personal experiences made in the particular context in which he was situated were met with, and calibrated against, something exterior, something objective. If being able to make the picture expresses something

objectively and universally understood, if he was going to be able to make the audience recognise the feelings and emotions behind the visual portrait, da Vinci had to understand these very feelings and emotions himself (Coessens, 2012). His formal study of the anatomic structures of humanity is one representation of this kind of objective and universal point of view, a point of view also merging into the wholeness of the picture. Such conceptual reflection represents a kind of higher ground, or distance, in da Vinci's thoughts enabling him to move on, and to relate to, different levels simultaneously. This hermeneutical process with its movements back and forth between closeness and distance makes it possible to reinforce the particular and the universal through each other (Gadamer, 2003). Every part of the work was thus closely linked to the other parts and, at each phase of the work, he was in a state of completing: constantly integrating what he was doing to what he previously had done, as well as with reference to the wholeness of what was to come (Dewey, 1934).

The projection in his mind therefore manifested in a desire for fulfilment, like an intense anticipatory force (Dewey, 1934), where the different parts were in a common movement towards this fulfilment – a common movement towards an integrated, completed, experience. Furthermore, in da Vinci's desire to fulfil, we can also find an urge to express. The projection he had when he was working was thus also public in its content, because he developed it in reference to the production of a completed work, accessible to the world (Dewey, 1934). To reach a fulfilment, da Vinci hence needed his work to gain some kind of public reception, and where his own qualitative judgement of the painting further, in a way, depended a great deal on highly depended this exterior validation.

## **The act of understanding**

When it comes to us, as the viewers or recipients of the finished painting, we however stand the risk of only being capable of considering it in its finished representative

form. The scope of exertion behind it, and the intimate relation between the practical acts accomplished and da Vinci's process of undergoing, are not necessarily things we are capable of grasping. And, if we do not grasp this, it corresponds to no more than pure recognition, something that does not enable us to reach an understanding of the painting's true meaning. This resembles a passivity where there is no possibility for perception because perception requires some form of responsive acts from the receivers (Dewey, 1934).

This pure recognition is, however, the very starting point in any act of understanding. When we attempt to understand something new, it always starts with the recognition of the preliminary meaning we have of the things we attend to (Gadamer, 2003). To Gadamer (2003), this first meaning, though, only reveals itself because we already have some expectations of what the meaning will be. In every new encounter we always bring with us, "a full range of biases, assumptions and beliefs" (Kallio-Tavin, 2015, p. 2), which we initially seek to confirm. To come any further we have to penetrate deeper into it, and by doing this, new things will reveal themselves, making it necessary to revise the initial conception we had of it. In fact, the process of understanding something is always a continual revision of the preliminary understandings we already have of the thing we try to understand (Gadamer, 2003). Hence, we always are, or at least we have the potential to be, in some kind of movement towards an expanded point of view. Just as for da Vinci, Mona Lisa represented a work in forever progress, so it does for us as receivers. What we know, and what we come to know is not something static, it is something dynamic. If we describe knowledge as an attribute of a human subject and his or her understanding, it emphasises so clearly that knowledge can be better described as a process of knowing (Polanyi, 1961), as a process of continuous development.

Hence, if we want really to understand the true meaning of Mona Lisa, we need to strive for creating our own integrated experience – something corresponding to a

kind of re-creative act, where we, in a manner, try to go through the same operations as da Vinci did (Dewey, 1934). What we perhaps soon then will come to realize is that the expression of Mona Lisa in fact is an integration of different expressions (Prvanovic, 2003), and that this is one of the main aspects behind the painting's mystery. The expression has an ambiguous and *flickering* quality (Livingstone, 2000, in Prvanovic 2003) which manifests into an enigmatic and seemingly changing mode, making it not fully comprehensible, and making us believe she is alive (Prvanovic 2003). The combination of different, or even contradictory, entities is perhaps what gives the painting its profound quality: "The object is no longer static and stable, it is in latent motion, has a sort of vitality" (Prvanovic, 2003, p. 6). By the use of small details, narrative pieces – lights and shadows, dark areas, blurred outlines and mellowed colours with smooth transitions making a continuous flow from one form or mood to another – Da Vinci introduced and balanced discrepancies, yet always leaving something to the audience's imagination (Prvanovic, 2003).

The main issue regarding the comprehension of Mona Lisa's ambiguity is her mode: whether she smiles or not. Some have analysed her mouth and concluded her not to be smiling. To what extent it is possible to conclude that she smiles or not, when analysing her mouth solely has, however, to be discussed. According to Polanyi (1965), when we attempt to understand something, we cannot attend to the focal object directly, on the contrary we have to rely on our subsidiary awareness of all the parts that together constitute the whole. To see the object as it is, we thus have to approach it holistically, or else we won't be able to see it for what it is. Livingstone (2000, in Bohr, Carbon & Hutzler, 2010, p. 378) states that, "you can't catch her "(Mona Lisa)" smile by looking at her mouth". It is more viewable from the periphery of our vision (Bohr, Carbon & Hutzler, 2010). Prvanovic (2003) further emphasises that the whole expression is built upon the *corners of her mouth* and the *corners of her eyes*, and even though it is not possible to identify the eyes to be smiling, they may function as emotive amplifiers for an expression (Kontsevich & Tyler,

2004). As Pirsig (1999, p. 439) wrote, “quality is what you see out of the corner of your eyes”. The picture’s mysteriousness is nevertheless, as described, one of the main features making it so well known, so much discussed and so well recognised, and is, ultimately then, a constituting feature for the picture being such a tremendous piece of art.

Nonetheless, one of the mistakes made when attempting to understand any artwork, is the belief that the main essence is found in what is purely represented – the visible. To the French philosopher Henry (2009, in Delay, 2017), on the contrary, the essence is found in the invisible. As shown, Mona Lisa moves our attention to what we immediately don’t see and forces us to go beyond the external phenomenon that stands before us, and to enter into the internal layers of what it is (Delay, 2017). Artwork (e.g., music) first reaches its full meaning, “when it points beyond its own structure to other structures and relationships – that is, to realities and possibilities around us and within us” (Lachenmann 1996, in Coessens, 2012, p. 453). The internal, the invisible, is then an expression of the transcendental self-affectivity of the artist (Delay, 2017) – expressions of the formative and undergoing process of da Vinci. This is a perspective that brings the subject alive, both the painter and the viewer – and again reveals the close relationship between the artist and the artwork (Beavington, 2017).

A question is, though, how is the internal, the invisible, revealed? Henry (2009, in Delay, 2017), replies that it is expressed in a way of life. In fact, according to him, the quality of a painting comes down to its ability to locate and express the essence, or even the pathos, of life itself (Ibid.). This is, though, not solely something we see in the painting, it is on the contrary something we *feel* when we see the painting (Delay, 2017, p. 157). Delay (ibid. p. 164) states that a good painting (like Mona Lisa) makes us wonder, and where questions like what would it have been like to be there...sitting beside her, talking to her, arise. As described, the boundary between ourselves and

the thing we attend to might in such experiences become permeable and blurred, and where everything else is left almost as if we disappear into the work fully absorbed in its ethos (Høffding and Roald, 2019). It is something we feel a resonance with that, “matters behind, beyond the matter” (Coessens, 2012, p. 468): a depth that surpasses the material, it is something inherent in the manifestation of the art object that moves and captures us (ibid.). In this process, we embody the painting (Delay, 2017) where our subjective relatedness to the object and/or environment guides us. Like the artist, we are now caring, and we are attentive, and we feel identified with what we attend to. We are freeing ourselves from the dualistic disinterested insistence on the purely representative and opening the door to something more.

Hence, we realise that art has the potential to disclose worldly relations familiar to our own form of life. In our movement from pure recognition to deeper understanding, the number of relations included in our vision widens extensively. We go beyond the focal and purely externally represented objects of the painting and enter the interior world of the artist with a potentially infinite number of projective relations portrayed in the invisible (Delay, 2017). All these relations reveal some kind of background horizon, and in a way make, as described, a way of life come to light (Delay, 2017, Beavington, 2017). It emerges as a quality which the focal objective representation is unable to express purely on its own.

According to Polanyi (1961), it is all these subsidiary relations that make the object what it is. Heidegger (Ihde, 1993), expressed it in a similar way as he described that every little thing in this universe is what it is in reference to its surrounding context, and that it is this contextual relation that makes the thing what it is. In a way, it is a synthesis of all the features, different points of view, all associations in the experiential background, which perhaps are not in attentive focus, that make the thing what it is. Furthermore, all these relations are, again, not necessarily directly visible, but more something dependent on our abilities to tacitly and sub-consciously orientate

ourselves towards. The movement from an attempt of purely recognition to a deeper perception in our probing of Mona Lisa thus requires that we free ourselves from our categorical thinking and open ourselves to what is truly expressed. This process is, yet, not about setting the focal object aside. It is more like the picture's exterior and interior are different modes of manifestation which first express their essence when synthesised into a meaningful whole.

In our effort to deepen our understanding, art can be a facilitator for questioning our conservative and confirmative thoughts and might, "convey layers of meaning" (Beavington, 2017, p. 31). Art makes it possible for us to break the pattern in which new impressions, or new information, are placed in already existing perceptive or cognitive categories and schemas, thus enabling us to go beyond our preconception of the things we attend to. Art, therefore, not only stimulates our routine conceptions, but also exceeds them. When we immerse ourselves in an artwork, "the profane suddenly takes a sacred aspect" (Coessens, 2012, p. 467).

To be able to free ourselves from habitual thinking, to open the door for what is really being told, we need to share some of the background – the life-world – of the artist. Hence, as Mona Lisa constitutes an expression of a kind of aesthetic experience of da Vinci, it also needs to constitute an aesthetic experience for us as recipients. We need some common ground, some familiarity, to have walked some of the same trails as him, if to come in a position to grasp the essence of, to feel a resonance with, the invisible expressed. When what is expressed is some kind of subjectively experienced pathos of life itself, we, as the audience, need to have some similar experiences. To really understand the phenomenon we address we need a life lived, a wealth of impressions and experiences from a diversity of human contexts (Dillern, 2021). We need what Coessens (2012), describes as a sediment layer, a pool of embodied experiential knowledge which again nourishes our imaginative, foresighted abilities making us capable of creating and understanding something new. Of course, how well the re-



cipients can recognise themselves in the artwork – in a way something that concerns its plausibility and universal significance – is primarily for the artist to facilitate. Yet, we also realise that it demands something of the audience.

## Context

Another element making our understanding of Mona Lisa difficult is that we always understand the things we understand within the context in which we are situated, and that which context we find ourselves in, and the specific context itself, is not something invariable (Liaci, Fischer, Heinrichs, Tebartz van Elst & Kornmeier, 2017). When it comes to the facial expression of Mona Lisa it has been shown that in eastern and western cultures different facial expression decoding-strategies exist, which might lead to different understandings of which modes and emotions an expression is a manifestation of (Jack, Blais, Scheepers, Schyns & Caldara, 2009). This contextual element, of the in itself difficult interpretations of these contradictions found within the painting, leaves us obviously in a state of confusion and makes us incapable of coming to any final conclusion regarding Mona Lisa's mode. We do not seem to fully come to understand her. Bohrn, Carbon and Hutzler (2010, p. 380) state that even when we catch her smile, "she keeps her mystery". This is, nevertheless, not a problem, is it? There are very few things in this world of ours that are one-sided, all or nothing affairs.

In my opinion, this ambiguity, this mysteriousness, is one of the main aspects of the inherent quality in the things we face in life, and something which Mona Lisa constitutes a brilliant example of. It is not black or white, not static, not something we can know with absolute certainty. On the contrary, it is something we have to appraise, interpret, and if to really understand it, requires human imaginative and foresighted abilities at their highest pitch. The whole process of understanding is thus a process of knowing, and it is dynamic, it is shifting and it is developing. Even more

so, as our understanding of the picture develops, perhaps the picture itself might change as well. Our world is an everlasting changing world, our knowledge of this world is logically, then, taking the same character. The process of knowing is hence a continuous path of self-transcendence, a self-transcendence that has the potential even to transcend the world itself.

## Concluding remarks

In this essay, I have attempted to explore the underlying process of scientific conduct. I have explored science in the frames of art and used artistic work as an allegory of scientific work and I have done this with human sensitivity, creativity, thinking and the process of understanding as a contextual framework. My thesis was that such an approach would help us find the essence, at least a new perspective, of scientific practice. Furthermore, although it was not a definite aim with this essay to explore art or artistic work in itself, I am sure my attempt to unify science and art has implications in this direction as well. Nevertheless, by means of this essay, what we now have come to realise is that the act of understanding – of really coming to a new point of view - is not an easy thing to accomplish, and to embark upon such a task is something many feel a kind of repugnance for. Dewey (1934) describes how, when faced with something we find difficult, a discrepancy, and which we feel a kind of resistance against, whatever it might be, we have two choices: we can continue to recognise, or we can begin to perceive. To Lindseth (2015), this resembles the choice between embarking on some form of broad, easier, un-reflected road, or a more narrow, demanding and reflective one. If we are unable to see the difficulties we face, or if we are not open to seeing them, the broad road becomes the obvious one. For further learning and developing to happen, for any self-transcendence, we thus have to be open to accepting these difficulties (Lindseth, 2015): we have to have a willingness for, as well as an impetus for, entering this, perhaps, hard and demanding narrow road.

At the same time, it is about reaching out for what is prominent and interesting in our surroundings (Høffding and Roald, 2019). It is an engagement of our affective and bodily dimensions of subjectivity, a dynamic continuum of potential life-lived experiences we can integrate in our view (ibid.), where we, from the position we have, attend to something external. However, it requires that we are interested, that we have a driving force similar to the passion that inspired the production in the first place (Delay, 2017). If we are not open to this new, and perhaps difficult, we fail to construct the necessary mental space needed to understand what we attend to as a meaningful whole (Høffding and Roald, 2019). Høffding and Roald (ibid.) describe how we, when attending to something new, like music, at first mainly will hear noise and diverse sounds without being able to grasp the structure and flow of the melody. With some effort, though, we gradually learn to make sense of the different pieces of the work, and only then is it possible to move into a kind of “deep listening” required to really be able to embrace the unique quality expressed (ibid., p. 17).

Through the work of da Vinci, we further see how the close relationship between the formative underlying process of the artistic subject and the objects he works with constitutes a synthesis of the visible and the invisible in the painting. We also see that it is in this manifestation, this aesthetic experience, that the painting’s true quality is found. The invisible in the painting – a life lived or the pathos of life – is, “irreducible to any [purely] objective representation” (Delay, 2017, p. 160). As described, the notion in art, but not least in science, of creating and representing something purely objective, absolute, explicitly expressible, is fallacious. On the contrary, due to the significance of the artist’s prolonged, both highly specific and targeted and more general, formative process and all the underlying often tacit relations – the fundamental aspects of the entirety of the phenomenon we address; the complexity and all the dimensions; all the appraisals, decisions and judgements – our overarching aim has to be an attempt to un-conceal all these invisibilities (Gadamer, 2012).

The contemporary division of objectivity on the one hand and subjectivity on the other is therefore wrong. To reach something truly universal, something objective, subjectivity in its richest form is needed. In order to understand something external, our gaze must just as much turn inwards into our own subjectivity. If not, a main part of the essence, the quality, is left outside (Pirsig, 1999). Quality, in art or in science, is thus the point where the two meet, like an event (ibid.). Quality is when the invisible and visible; the creation and manifestation; the underlying formative process of undergoing and the purely represented; the subjective tacit relations, dimensions and levels and exterior objective focal point to which we attend, unite into a comprehensive, yet enigmatic whole. This synthesis is still, though, something of a liminal entity. It is a point of transition, a point which again could lead to new diversity.

The process of getting to know something exterior is thus always a self-encounter (Gadamer, 2012) – an open window on ourselves. Art and science have the potential to be the ultimate manifestations of this encounter. The machine (motorcycle) Pirsig (1999) attempted to refine in his book, *Zen and The Art of Motorcycle Maintenance – An Inquiry into Values*, was in fact himself. The undermining of the whole humanistic tradition and the common notion that there is a fundamental distinction between science and art, thus needs adjustment. As this essay illustrates, we have to place the sensitive, creative, thinking human subject with her endeavour for understanding the external reality in front. Any extrospection is always an introspection. There is no contradiction between the humanistic and the scientific tradition – quite the opposite, their symbiosis is a defining feature of quality. It is time for every fragmented and highly specialised education or training programme to acknowledge this symbiosis. Aspects of the humanistic tradition are not just a kind of broad supplementary addition to any disciplinary knowledge. On the contrary, it constitutes substantial and essential assets of this disciplinary knowledge itself. By such an approach we are re-contextualising and re-humanising science because we understand that the development of any scientific truth (or artistic truth), as well as any recipients ap-

praisal of this truth, is just as much a human personal development. The merging of science and the humanistic tradition is how we, and increasingly precarious in contemporary science, can give science and scientific knowledge meaning and make them matter again – it is how we can bring the kingdom back to the king (Aarnes, 1996, in Asdal 2005, pp. 254-255)<sup>3</sup>.

As we understand it though, it is not a straightforward, linear, certain process leading to something like unambiguous answers. The contradictions, tensions, refractions, oppositions are necessary parts of our developmental process and inherent entities giving quality to the objects we address. In his work, da Vinci was interested, exactly, in combining contradictory entities, as he believed this was where the quality in any artwork was found (Prvanovic, 2003, p. 6). As with *Mona Lisa*, our deepest reality is not static and stable, it is in latent motion, and it is the unambiguousness - the balancing of opposites – that ultimately gives it its deep vitality. For *Mona Lisa*, this vitality, as described, is especially a feature of her expression manifested in her smiling eyes. da Vinci (1888) thought of the human soul as the manifestation of life wisdom: the fusion of every lived experience, every observation made. As previously pointed out, one of his overarching artistic aims was exactly to portray the intentions of our human soul. Interestingly then, he termed the eye “the window of the soul” (ibid., IX, 653). He also wrote (ibid., I, 22) that, “[h]ere [in the eye] forms, here colours, here the character of every part of the universe are concentrated to a point; and that point is so marvellous a thing.... Oh! marvellous”. This thing (the eye) thus becomes a highly focal object on the one side, and on the other side the culmination of boundless life pathos: the synthesis of object and subject, of the finite and the infinite. Beauty or quality in its most profound form.

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3 Here I borrow, and make a little twist on, Aarnes’ metaphor where he originally stated that it was positivism that had become a king without a kingdom.

By acknowledging and trusting our own subjectivity, this self-encounter constitutes not just the only, but the ultimate starting point for anything to come (Dillern, 2020). It is a position which surpasses sheer subjectivism because we are attending to, and aiming towards, an external reality (Polanyi, 1958). However, the modern craving for objectivity has caused a kind of fear of our own subjectivity – a fear of these self-encounters. Delay (2017) writes about contemporary society’s negation of subjectivity - the self-negation of life – and that it results in few individuals who are willing to confront themselves by appreciating a work of art. Contemporary man is fleeing from himself and thus avoids any self-encounter that any work of art might trigger. Delay (*ibid.*, pp. 168-169) further describes how those who do not want to, “confront the pathos of their own subjectivity”, will lose the ability to feel or experience anything at all, and when their human sensibility is gone, there is no possibility of experiencing what an artwork expresses: for the, “insensible, the work is mute”. In contrast, Beavington (2017) writes about the opposite process in relation to a group of student’s encounter with the rainforest. As the students gradually begin to, “breathe in the rainforest”, they begin to feel, “more permeable, more interconnected” with nature (*ibid.*, p. 9). Bit by bit a receptivity and a wonder for what surrounds them arise, where they begin to hear the voices of the world around (*ibid.*). Beavington (*ibid.*, p. 9) accentuates his message with a poem (*Amazonia*) where he emphasises that the rainforest comprises of, “a million lessons for those who listen”.

By embracing the world out there, by embracing something new, or something difficult, our assumptions and preconceptions can be tested and made subject to possible nuancing and development (Gadamer, 2003). This process becomes vital for avoiding being stuck in a potentially, “shallow, dogmatic or perhaps fanatical pre-understanding” (Lindseth, 2003, p. 48). It is within these discrepancy-experiences that we awaken our critical thinking; hence, they become a prerequisite for learning, a fundamental necessity for being able to become wiser (Lindseth, 2003). In this way we constitute our life in the frames of an everlasting refinement. Still, for many, most

of their experiences have a beginning and an ending that occur without them noticing. One thing replaces the previous in a habitual laxity (Lindseth, 2015), and these experiences are recognised in a manner where the essential, and perhaps demanding, questions are covered up. It is a sign of our speedy and impatient civilization that our experiences do not seem to penetrate the surface. The question now is which road do you take?

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