# *Objects* in the Age of Virtual Reproduction: Aura and the Elusive Third Axis

by

Thoreau R.A. Bakker

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***Objects* in the Age of Virtual Reproduction:**
**Aura and the Elusive Third Axis**

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This thesis contributes to the body of scholarship on Walter Benjamin, his ideas about aesthetics, and the political implications of technologically mediated art. It disambiguates Benjamin's concept of *aura,* by considering aura's conceptual prerequisite of *physical presence, and* the *perceptual* presence offered by Virtual Reality (VR). Building on other research exploring the topic, this thesis takes a Research-Creation approach, using art-making as a method to navigate theory and vice versa. Specific technologies used include VR, 3D printing/scanning, computer numerical control (CNC), and photogrammetry. Outputs include two large (physical) lion sculptures, a VR experience featuring the same lion models (virtually) and a vending machine dispensing inexpensive artist multiples. The relationship between two-dimensional (2D) media and three-dimensional (3D) objects, is presented as challenging the Benjamin binary of original/reproduction, arguing it is not so much reproduction alone that diminishes aura but the translation (flattening) of an object from 3D to 2D.

Keywords: *Walter Benjamin *Aura *Presence *Virtual Reality *Research-Creation *3D *Sculpture *Art

**Acknowledgements**

On the first day of graduate school orientation at OCAD University, I was moved by our President, Dr. Sarah Diamond's land acknowledgement of indigenous Canadians and their original possession/custodianship of Toronto and the surrounding areas. While I am ashamed of my own lack of knowledge regarding this history, I would still like to note an awareness of my great privilege on this land. I would additionally like to acknowledge not only those indigenous Canadians who continue to face injustice, but those individuals and communities all around the world, who continue, at times, to be exploited by wealthier countries. I acknowledge both the opportunities to live in safety and to engage in art and research as great privileges, and pledge to forever try, to be mindful of those locally and globally with fewer opportunities than myself.

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# *Objects* in the Age of Virtual Reproduction[1]: Aura and The Elusive Third Axis

Thoreau Bakker

> Scarcely any twentieth-century author rivals Walter Benjamin's influence on the contemporary understanding of art and the aesthetic implications of new media. His thought has left its mark on all areas of contemporary theory and practice, from architecture, painting and sculpture to installation art, photography and film… Benjamin investigated the formal, historical and political dimension of visual phenomena with unparalleled creativity.
>
> — Jan Mieszkowski, *Cambridge companion to Walter Benjamin* (p.35)

> Even the most perfect reproduction of a work of art is lacking in one element: its *presence* in time and space, its unique existence at the place where it happens to be.
>
> — Walter Benjamin, *Work of Art in the Age of Mechanical Reproduction* (p. 3, Zhon translation, emphasis added)

> The physical assimilation of the virtual has become normalized action.- We are both here and there, in the moment of time and place with our bodies in a physical locale, and elsewhere at the exact same moment of time, engaging with a virtual self in a non-physical world beyond that time/place.
>
> — Sheila Dickinson, Post Physical: Visual Reactions to the Post-Internet Age at SooLocaL (1st para.)

## 1. Introduction

This support document is one component of an MFA thesis, representing about one year of intensive, exploratory research. In academia, excessive divergence can be distracting — a focused research lens is essential for articulating ideas in a way that makes them accessible to others. Many elements of earlier drafts of this document, have been cut in the pursuit of cohesion. For this reason, I must give the following disclaimer: this document leaves out many peripheral explorations and ideas in the service of clarity, and by nature of the

[1] In this literature review, "reproduction" and "reproducibility" are used somewhat interchangeably, influenced by grammatical appropriateness and by different translations of Walter Benjamin's essay *The Work of Art in the Age of Mechanical Reproduction / The Work of Art in the Age of its Technological Reproducibility*. (see works cited).

objective the document is tasked with, cannot faithfully represent the visual nature of the research. I have therefore created a database of sorts on my artist website, meant to supplement this text by providing a more complete and interesting view of the research process. These pages will be updated with documentation and resources over the coming months, and can be found at the following URL: thoreaubakker.com/mfa

**Thesis Overview**

This document outlines my MFA thesis research, including theoretical/philosophical exploration and artistic production. Although I separate theory and practice here based on different methods, I also acknowledge Arthur Danto's idea that "the distinction between art and philosophy becomes as problematic as the distinction between reality and art." (1983, 10th par).

Walter Benjamin's ideas on the mechanical reproduction of art — *aura* in particular — have served as conceptual lenses, through which the potential of emerging three-dimensional (3D) technologies are considered. Given the importance of the 'aura' concept to this thesis, the following are a few definitions to orient those unfamiliar with Benjamin and the term. According to *The Chicago School of Media*: "aura refers to the authority held by the unique, original work, which under modernity is liquidated by the techniques of mass reproduction" (Aura,1). MacIntyre et al. cite aura as "describ[ing] the cultural and personal significance that a place (or object) holds for an individual" (abstract, 2004), while Bolter et al. describe aura as "one of the most commonly invoked terms in media theory" (abstract, 2006). Finally, the Oxford dictionary defines aura as "the distinctive atmosphere or quality that seems to surround and be generated by a person, thing or place" (see Aura definition, Oxford). Benjamin used the term in

different ways across different publications, and this is outlined further under the section *Benjamin's Conceptual Model of Aura* in the literature review of this document.

These same conceptual lenses (aura and reproduction) used to assess the implication of 3D technologies, have also been inverted, to explore the theoretical implications of new technology for Benjamin's concept of aura. Emerging from this exploratory, inductive research, are a number of artworks and observations, that pertain not only to the conceptual and practical components of the thesis, but to the research process and relationship between art and academia. The most compelling of the findings to emerge from the production, exhibition, and assessment of these artworks*,* is an alternative interpretation of Benjamin's concept of aura, based on its relationship with virtual reality (VR) and the concept of presence.

Given the importance of the term presence to this thesis, I will briefly define and contextualize it here. It seems reasonable to assume that when Benjamin used the term presence (writing in 1936, before digital/virtual technology existed), he was referring to a presence of a physical 'thing', in a physical location. Today, however, the term 'presence' is also used in a related but slightly different way: as a perceived presence provided by technology that may not correspond with the 'real' physical world. Sheridan (1992), describes a number of variations on the term, including 'virtual presence', which he defines as a "sense of being physically present with visual, auditory or force displays generated by a computer" (p.1). Coxon et al. (2016), present a "narrow definition of spatial presence as the feeling of being spatially located in the mediated space (p.2). A rigorous and comprehensive 12 paragraph definition of presence is

provided by the International Society for Presence Research, from which the following quote (the first half of the first paragraph) is taken :

> Presence (a shortened version of the term “telepresence”) is a psychological state or subjective perception in which even though part or all of an individual’s current experience is generated by and/or filtered through human-made technology, part or all of the individual’s perception fails to accurately acknowledge the role of the technology in the experience. (see “Presence Defined.”, 2018)

In this thesis then, the term presence (unless otherwise noted) is used in the context of VR to refer to the technologically mediated virtual/spatial presence mentioned in the above definitions.

Emerging from the creation of artworks and this exploration of the aura/VR/presence relationship, is an artistic outlook that celebrates the potential of art that is post-physical[2]. This view emphasizes artistic expression as a vehicle for ideas, and away from physical production processes that may incentivize the creation of collectible objects. Theoretical reflections have converged with my studio practice, making me more critically attuned to this physical/virtual dynamic.

These views on art rest on a reinterpretation of Benjamin’s concept, and about the relationship between two-dimensional (2D) media and three-dimensional (3D) objects. I posit that it is not so much reproduction alone that diminishes the aura of an artwork, but the translation (flattening) of an *object* from 3D to 2D representation. This reinterpretation highlights the tremendous value of even non-physical 3D objects, especially given the unique presence afforded by VR.

[2] I am indebted to Dickenson (2014), for introducing me to the term ‘post physical’.

**About the Title of this Thesis**

As a studio-art undergraduate at the University of Guelph, I was mentored by the FASTWÜRMS through every sculpture course offered by the school. As a sculptor, physical *objects* were my focus — I was interested in mass, weight, volume, and scale, and was often encouraged to 'go big'.

Unlike an image that has two axes and is two-dimensional (2D), an object has three axes and is three-dimensional (3D). The *elusive third axis* is thus a reference to the difficulty of manipulating 3D data/geometry, across both physical and digital domains. The French polymath René Descartes invented the x/y coordinate plane in the 17th century, and the 'Cartesian plane' is a basic concept in early mathematics. When adding a third axis (z), this 2D plane becomes 3D grid, where x = width, y = height and z = depth. This x,y,z coordinate system can represent 3D space and the objects within it, and is essential to applications ranging from computer aided manufacturing (CAD) to the Global Positioning System (GPS).

Aura is a concept found in Walter Benjamin's essay *Art in the Age of Mechanical Reproduction* (1936)*,* an essay published three centuries after the death of Descartes, and one that would go on to become a staple of the media / cultural studies canon. A central proposition of this now well-known essay, was that through reproduction, the *aura* of an artwork — a concept generating much scholarly focus, despite it lacking definitional consensus — was lost. This loss argued Benjamin, had both aesthetic and political implications, perhaps most importantly the democratization of art through increased accessibility (Buck-Morss, 1992). *Virtual Reproduction* then, references Benjamin's aesthetic and political ideas, examined through the lens of VR.

**Background, Context, Problems**

This section briefly contextualizes VR in relation to other 3D technologies, outlining affordances and problems. It also points to issues around working with physical materials, involving cost, storage and transportation, as well as health risks and the material and scale constraints of physical production. Finally, it gives an overview of theoretical challenges, with Benjamin's concept of aura and its ambiguity.

VR and 3D

Over the past few decades, Major progress has been made in the field of 3D technologies — those harnessing the three axes of Cartesian space. These include scanning and photogrammetry (to translate physical reality into digital models), 3D printing and other computer numerically controlled (CNC) machines (affording the translation of those models back into physical objects), and virtual reality (VR). This last example (VR) is a technology providing a body-scale reference for the digital, and a sense of presence and immersion in virtual 3D space that I argue rivals any media before it. In the context of art, this presence provides new opportunities, like the ability to 'virtually sculpt' more intuitively, or to visit a virtual gallery halfway around the world. Despite this incredible technological potential, however, there are still disincentives, like the complicated and expensive equipment required. The price of entry for a home system (Oculus Rift or Vive coupled with a high end PC) is around $2000 and VR arcades charge high hourly fees. Additionally, much of the content and marketing around VR, is geared towards entertainment and traditional gamers, as illustrated by the

following anecdote: An old friend and I were recently chatting, and in response to a question he posed about how school was going, I mentioned my research and interest in aura and VR. “Oh” he said, pausing to reflect ”Cool! I was shooting Zombies in VR last night” (Isganaitis, 2017, personal correspondence). It is perhaps more than a little disconcerting that, despite having access to such sophisticated technology, many are still using it to kill zombies in video games.

Physical Difficulties

Artwork must be produced before it can be reproduced. Making physical artwork requires space and materials, both of which are finite resources and thus subject to scarcity. Acquiring materials can be expensive, and many physical materials pose a danger to an artist’s health. From the pigments in paint to polyester resins, materials have the capacity to damage the nervous system or even kill.[3] Although these types of dramatic occurrences are rare, they highlight the ‘realness’ of physical materials.

As individuals, our ability to reproduce objects is limited, relative to our ability to reproduce images. Although with the development of accessible 3D scanning/printing and CNC this gap is starting to narrow, these processes are still complicated, slow and expensive. This makes them impractical for the kind of distribution available to other mediums, like images and video disseminated on the internet.

[3] Less than a decade ago, a British student essentially lost her hands at school (all but two fingers), when they were burned after becoming stuck in setting plaster (Wainwright, 2009). Similarly, most readers of this thesis will be familiar with the story of a gallery worker’s death in the early 70s, crushed by one of Richard Serra's’ massive metal sculptures.

Aura's Ambiguity

With his ideas on art, technology and perception, Walter Benjamin contributed an influential and interdisciplinary conceptual model. The concept of aura has achieved substantial attention from theorists across a number of disciplines, interpreting and building on Benjamin's ideas. Despite this, Benjamin's ideas — the aura in particular — have also been attacked for their ambiguity, (Knizek, 1993), and this ambiguity is a problem because it can undermine the clarity and reliability of theory that rests upon it.

**Research Questions**

The issues above vary considerably, but are united conceptually, by the digital/physical borders that separate models from matter. These relationships are explored through the following four research questions.

1. What are the implications of Walter Benjamin's influential ideas on the aesthetic-political implications of art and reproduction, for our use and understanding of 3D technologies (technologies that facilitate the capture, creation and consumption of both physical and digital objects, including 3D scanning, printing, photogrammetry, game engines, CAD software, CNC and VR)?

2. More specifically, how might VR's unique offering of *virtual/spatial presence,* serve as a conceptual tool, to help us navigate the ambiguity of Benjamin's concept of *aura?*

3. How do physicality/materiality limit what we can and cannot do, and influence our perception of an object's utility and value?

4. How has the research process influenced my art practice, and vice versa, and what have I learned that might be useful to other researchers?

**Purpose of Research**

This section articulates the specific goals of the research, including an exploration of the relationship between aura and VR, emerging from an initial focus on 3D technologies more generally. Also included is the intent to be mindful of the research process, and context, to build foundational skills for further research.

Exploring the Relationship Between Aura and VR

The first goal of this thesis is to emphasize the role VR as a conceptual node, in the scholarly/theoretical discussion surrounding Benjamin's notion of aura. While other researchers have referenced this relationship before (McIntyre et al. 2004, Bolter et al. 2006), the recent surge of commercial investment in VR has provided a significant boost in access and thus active users. This suggests a fresh look at Benjamin, given his focus on mass culture, art, and technology.

A second goal is to apply these theoretical insights and their implications, to contemporary art practice, appreciation and education. These goals are multidisciplinary then, spanning pure theory on one end of the spectrum, and theory's implication for technical practice/process on the other.

Building a Foundation for Further Research

The position of research in the art world is a complicated one, influenced by differing incentives from a variety of stakeholders (i.e. the academy, funding bodies, public and private galleries). Our discipline raises difficult and interesting ontological questions, around the very nature of research and the relationship between physical artifacts and knowledge. In that sense, this thesis research is also meant for orientation, to clarify challenges unique to arts-related research, and to strengthen my research skills as a foundation for further research.

## Research Rationale

Why Benjamin

Over the past few decades, Walter Benjamin has received considerable attention across the humanities, as demonstrated by hundreds of translations, edited books and journal articles interpreting his body of work. So much has been published on Benjamin; in fact, one might understandably wonder what possible contribution there might be left to make. In response to this question, I point to the role of society in Benjamin's insights on technology, coupled with the fact that VR has only very recently become available as a mass medium. The recent mass availability of VR suggests that a return to Benjamin's ideas may be helpful in understanding the phenomena, and the recentness of this availability — only within the last year or two — makes it unlikely there is already publishing saturation on the subtopic. If VR provides a fresh look at an old idea, the following quote articulates why the old idea is worth reviving:

> Benjamin's conception of the aura… is that it underlies the importance of recognising both the interplay and the difference between the work of art as commodity and the work of art as object of interpretation. (Benjamin, Andrew, p. 34)

This quotes highlights art's relationship to knowledge and suggests that perhaps VR, as a digital/virtual medium lacking a physical 'thing', has the potential to shift focus away from the object.

Why VR

Based on how it's marketed and the currently available content, one would be forgiven for seeing VR technology as an overhyped novelty. On closer inspection, however, VR is unique relative to *all* other technologies before it. The difference between VHS and Blu-ray for example, are mainly those of resolution quality and convenience. Networked online video is indeed a more significant shift, but the actual viewing experience (once content is acquired) is similar to the previously mentioned mediums. Whether watching a YouTube video or sitting in an IMAX movie theatre, immersion breaks, the second one looks away from the screen. VR is measurably different in this regard, in that one is embedded *within* the medium, rather than merely looking *at* it. A distinction should be made here between the inexpensive, phone-powered 360 headsets, and the higher end dedicated units. The latter provides an experience produced by an incredibly complex combination of technologies, including binocular vision and gyroscopes (like the lower end 360 units) but with the addition of infrared/light positional tracking. This positional tracking of the individual immersant, is essential to presence, uniting it to Benjamin's concept of aura.

Why Reflect

By trying, comparing and documenting my process explorations, I contribute insights based on experiential learning that may inspire others or save them time and money. By sharing my research experiences, I also hope to help others in their research endeavors — to do better work with less anxiety, and in a way that champions their particular strengths.

**Theoretical Framework**

According to the USC library research guide, a "theoretical framework may be rooted in a specific theory... in which case, your work is expected to test the validity of that existing theory in relation to specific events, issues, or phenomena" (Organizing Your Social Sciences Research Paper: Theoretical Framework, Beginning fourth section). Accordingly, this thesis tests Benjamin's theory of technology, art and *aura*, through the production and reproduction of technologically mediated artworks, across many mediums. Extensive coverage of Benjamin scholarship is presented in the literature review, providing further problems and praise from dozens of sources.

**Scope and Limitations:**

Conceptual Ambiguity

A foundational component of this thesis research, is Walter Benjamin's concept of aura. As already noted, this concept is somewhat ambiguous, being used by Benjamin in different ways across different publications. On the one hand, this ambiguity can be seen as productive: Hansen, for example, cites ambiguity as contributing to the "conceptual fluidity, that allows aura to become

such a productive nodal point in Benjamin's Thinking" (p. 339). On the other hand however, this ambiguity can also make it hard to pin down definitive answers.

Versions and Translations

It should be noted that Benjamin worked on a number of versions of the essay, and that these versions have since been translated from German to English. Ideally, one would study the original German texts, but given I have no experience with the language; I have based my ideas on the English translations. Benjamin himself was known as an important translator of contemporaneous French theory, and we have notes on his thoughts about the process in his 1921 work *The Task of the Translator.* In it, he writes (via translation, I would point out) "It is evident that no translation, however good it may be, can have any significance as regards the original." (Benjamin, Selected Writings 1, p.254) and that "the task of the translator consists in finding the particular intention toward the target language which produces in that language the echo of the original." (ibid, p.258). This 'echo' of the original shows the potential for *further* ambiguity, based on the interpretations of ideas and words.

A key example of this is the word *presence* — something at the core of my thesis exploration — and its relationship to the concept of virtual/spatial presence in the context of VR. In one translation of Benjamin's art essay, the word presence appears at least five times, while in another translation it appears only once. The following two excerpts of alternate translations demonstrate the idea:

> Even the most perfect reproduction of a work of art is lacking in one element: its presence in time and space, its unique existence at the place where it happens to be. (Benjamin, p.3, Zhon's translation in Illusions)

[vs]

> In even the most perfect reproduction, *one* thing is lacking: the here and now of the work of art — its unique existence in a particular place. (Benjamin, p.21, Belknap Translation)

On the surface, these two translations seem similar, but there may be important, if subtle, nuances between them. A further limitation of this research, then, is the further ambiguity of translation, and my ideas being based on a work originally written in a language with which I lack familiarity.

Divergence and Opportunity Cost

Barone and Eisner note that to be useful:

> "a piece of arts based research must succeed both as a work of art and as a work of research", that "..certain aesthetic qualities must be present within the work.." and that "lacking these qualities, the work may fail to attract the viewer into vicariously experiencing the phenomenon portrayed…" [and] "thus fail to stimulate a reconsideration of those phenomena" (third par.).

This points to a challenge faced by most if not all artist researcher/practitioners — that of choosing the appropriate allocation of finite resources (money, time, energy) between reading/writing and artistic production. The role of materiality in this project required a significant time and physical labour, and the virtual component, with its steep learning curve, required equally substantial amounts of focus. Balancing physical production, the acquisition of new skills and more traditional reading and writing activities, meant the research lens was not as focused as in more traditional disciplines. This diffusion of focus is acknowledged here as a potential limitation, but is also defended for its interdisciplinary bridging of the fine arts and more traditional humanities.

**Outline of Remainder of Document:**

In the following chapters, I will provide literature and contextual reviews, followed by the methodological approach, specific methods and then the findings/outputs of the research. After I will summarize the thesis, contextualize the findings, and discuss their implications for theory and practice.

## 2. Literature Review

This chapter explores scholarship around Benjamin's concept of aura, and a sampling of the way researchers have applied it to contemporary technologies. Important to note is that it was primarily done earlier in the research process, to gain familiarity with the subject and scholarly debate in the field. Because of this, it may at times feel a bit isolated from the art making/practice side of the research, like a separate module slotted in. For this reason I have retroactively gone back and added small introductory sections/annotations, to explain the relevance of the theory to my research methods and ideas. Again, let me emphasize however that the literature review was a dedicated process, using traditional academic publishing platforms and is thus separate from more general contemporary art discourse and my own practice.[4]

[4] Queries for keywords including **aura *Walter Benjamin *digital *art *mechanical *reproducibility *reproduction *aesthetics *presence *Virtual Reality *VR* etc, returned thousands of hits on the McLaughlin and Dorothy Hoover databases, at the University of Guelph and OCAD University libraries, respectively. What is included here is an attempt to synthesize the most pertinent of the lot, but given the staggering body of scholarship on and by Benjamin, there are surely important texts I have missed. Even of the 50-100 sources I finally settled on, only a dozen or so are well represented here.

The following review is broken down into the following conceptual clusters, emerging from my reading:

A. The Essay That Sailed 1000 Papers
B. Benjamin's Aura
C. The Aura Post Digital
D. Aura, VR & Presence

.

**The Essay That Sailed 1000 Papers**

Despite a prolific body of work including newspaper articles, translations of contemporaneous French philosophy, literary critique, radio programming and more, it is his essay *Art in the Age of Mechanical Reproduction* that remains one Walter Benjamin's most well known and influential works (Bolter et al, 2006). One would be hard-pressed to find a better summary of Benjamin's essay than that of Susan Buck-Morss:

> Walter Benjamin's essay 'The Work of Art in the Age of Mechanical Reproduction' is generally taken to be an affirmation of mass culture and the new technologies through which it is disseminated. And rightly so. Benjamin praises the cognitive, hence political, potential of technologically mediated cultural experience... (Buck-Morss p.3)

This is an accurate distillation of the essay as it is commonly understood. It is also, however, important to note that this *affirmation of mass culture* Buck-Morss attributes to Benjamin, contrasts significantly with the writings of other Frankfurt School theorists like Adorno and Horkheimer. Their critique of the manipulative *Culture Industry* that "endlessly cheats its consumers out of what it endlessly promises" (Horkheimer and Adorno p.111), through its control of mass culture, "the aesthetic equivalent of power" (Ibid p.103), opposes Benjamin regarding this dialectic around the value mass media. Horkheimer and Adorno

are certainly not alone in their disagreement with Benjamin either. More recent detractors include Ian Knizek, who attacks Benjamin's "questionable premises" and ponders the art essay's popularity given that "its main thesis is so obviously flawed' (p357). Another critique points to "the fallacy of attributing *intrinsic* political significance to an artistic medium or technology in abstraction...from *how it is used* by an artistic agent (Costello, p. 177).

Despite these (potentially) valid observations, it is undeniable that the essay has struck a chord in academia, consistently capturing intellectual focus and generating dialogue. Larsen's claim that "the essay continues to play a significant role in understanding how technology contributes to a de-aestheticization of the artwork in modernity",(para. 8), suggests there is continued interest in the essay, published over eight decades ago.

Even Knizek, mentioned in the previous paragraph as one of its harshest critics, readily acknowledges the essay's "perennial life" (p. 357). Indeed, my keyword searches returned a range of references, spanning multiple decades and disciplines.[5] This body of work, standing on the shoulders of Benjamin, reinforces the Mieszkowski passage at the beginning of this document, about Benjamin having "left [his] mark on all areas of contemporary theory and practice…"(p. 35).

An integral concept in *Art in the Age of Mechanical Reproduction* is that of the *aura*, a somewhat ambiguous term that may — at least in part — be

[5] In keyword searches I found not only hundreds of papers engaging with Benjamin's work, but dozens even reworking his title into their own. These authors apply Benjamin's ideas to a wide range of topics, included papers with titles like: *The Aura of the Periodical in the Age of Mechanical Reproduction (*Simon, 2015) and books including *Marcel Duchamp: The Art of Making Art in the Age of Mechanical Reproduction (Naumann, 1999).* Even contemporary examples reference Benjamin's essay, including *Curating Immateriality: The Work of the Curators in the Age of Networked Systems (Krysa 2006).* These titles represent only a small sampling of my findings.

responsible for the popularity of the essay on mechanical reproduction. The following sections will explore and contextualize this concept.

### Benjamin's Conceptual Model of Aura

> Aura: The distinctive atmosphere or quality that seems to surround and be generated by a person, thing, or place. — *Oxford Dictionary*
>
> Benjamin's aura bleeds history. It commemorates the utopian potential of modernity…
> — "*Benjamin's Blind Spot: Walter Benjamin and the Premature Death of Aura* (Patt, p. 8)

Botler et al. present aura as "one of the most commonly invoked terms in media theory" (p. 20). This quote speaks to the relevance of the concept, as do at least two edited books taking Benjamin's concept of aura as their primary impetus (see Patt, 2001, Steinskog & Petersson, 2005). According to *The Chicago School of Media*: "Aura refers to the authority held by the unique, original work, which under modernity is liquidated by the techniques of mass reproduction" (Aura,1). This is a clear example of the aura as it is commonly understood within the Benjaminian dialogue, as well as a helpful working definition. However, it's important to note that a review of the literature shows Benjamin's use of aura as far more nuanced than is often recognized.

It is tempting to see the concept of aura as a binary: Leonardo da Vinci's original *Mona Lisa* possesses the aura, while a postcard reproduction purchased in the gift shop of the *Louvre* does not. An object made by hand possess the aura, while one produced by machine does not. This understanding might be defended by pointing to Benjamin's own words when he writes: "perhaps nothing gives such a clear idea of aura as Van Gogh's late paintings, in which one could

say that the aura appears to have been painted together with the various objects" (p.58 On Hashish).

Although the reduction may be helpful when used as one component of a larger conceptual assembly, this general understanding of aura may not be entirely accurate. Costello cites Crimp's analysis of Benjamin as more sophisticated than other Benjaminian scholars of the late 70s / early 80s when he writes (referring to Crimp's ideas about Benjamin) "aura is not a predicate attaching to one category of artwork (i.e. painting) at the expense of another (i.e. photograph), but rather picks out a quality held in common — or not at all — by art in general at any given moment in history" (Costello p.167). This elevates the cultural context of aura and undermines a clear-cut materialistic distinction between a handmade/original artifact and one that is technologically reproduced.

Additionally, although the concept is generally understood in the context of artworks, there are also records of Benjamin applying it to human beings. In a 1921 letter to his friend Gerhard Scholem, Benjamin attributes a negative aura to Oskar Goldberg:

> ...I know very little about him, but *his impure aura* repelled me emphatically every time I was forced to see him, to the extent that I was unable to shake hands with him" (Benjamin - Correspondences, p. 173, emphasis added)

Benjamin also references *his own* aura. Reflecting on a shared experience with his friend Ernst Bloch, the following anecdote suggests Benjamin conceptualized his own aura as what today we might think of as one's personal space:

> Bloch wanted to touch my knee gently. I could feel the contact long before

> it actually reached me. I felt it as a highly repugnant violation of *my aura*. (On Hashish, p. 27, emphasis added)

If we are to value Benjamin's own ideas about aura as much as the interpretations of recent writers — and I would argue we should — one challenge is navigating the ambiguity of his words. In the following passage, he attributes aura not only to *all things,* but further pronounces that the aura is not fixed but dynamic:

> … genuine aura appears in all things, not just in certain kinds of things, as people imagine. Second, the aura undergoes changes… with every movement the aura-wreathed object makes… characteristic feature of genuine aura is ornament, an ornamental halo [Umzirkung], in which the object or being is enclosed as in a case. (On Hashish, p. 58)

What is confusing then, is that aura that is made up of different parts — human beings, physical object, *all things* — and employed by Benjamin in different ways across different texts. This ambiguity draws fire from Knizek, the same author who earlier in this review attacks Benjamin's art essay for its 'obviously flawed thesis' and questionable premises. Knizek accuses Benjamin of not adequately explaining the process of aura loss through mechanical reproduction, and struggles with Benjamin's definition of the aura. "Introducing the concept of aura he only succeeded in blurring it through the introduction of an allegory or metaphor.." writes Knizek (358), referring to Benjamin's example of seeing a mountain range on the horizon. Here is the passage Knizek refers to:

> We define the aura of the latter as the unique apparition of a distance, however near it may be. To follow with the eye — while resting on a summer afternoon — a mountain range on the horizon or a branch that

> casts its shadow on the beholder is to breathe the aura of those mountains, of that branch. (Knizek, pg. 359, citing translation found in Lang and Williams, Marxism and Art, WAAMR 255)

Knizek acknowledges the idea of aura as a *psychological* phenomenon, but has "doubts about both its ontology and fitness for the purpose assigned to it by Benjamin" (p358), pulling no punches, he calls it "vague and problem-ridden" and accuses Benjamin of taking it as self-evident, while failing to explain the *why* and *how* (p360).

Indeed, It may seem strange that a somewhat ambiguous idea — and one known mainly from a single essay published eight decades ago — has found such widespread attention and traction in academia. Perhaps it is the very ambiguity Knizek attacks however, that has made it most valuable to theorists. Hansen, suggests this in the following passage:

> Anything but a clearly delimited, stable concept, aura describes a cluster of meanings and relations that appear in Benjamin's writings in various configurations and not always under its own name; it is *this conceptual fluidity that allows aura to become such a productive nodal point in Benjamin's Thinking*. (Hansen p. 339, emphasis added)

Some of this "conceptual fluidity" may serve the same function for other scholars, providing a malleable tool for interfacing with other ideas. Indeed, if the concept was easily pinned down, it is unlikely it would have generated the discussions it has. In this sense, even if "the specificity of Benjamin's fragmentary, allusive style of thinking and writing… struggles against the application of any linear narrative upon his body of work" as Piggott suggests (p. 22), there is great value in his ideas as catalysts for theory. Of these ideas, the one that has elicited more responses than any other, is the triangulation of art object, aura and technology.

While there lacks consensus about the consistency of *aura* across Benjamin's output, in *The work Art in the Age of Mechanical Reproduction*, it is commonly understood as a unique quality embedded within an original work of art — a quality that is lacking if not absent entirely from reproductions of the original. A further (and sometimes overlooked) implication of this proposition, is that beyond the differing properties of original vs mechanically reproduced individual objects, these changes in technology change the very *system* of art production and consumption. This is illustrated by leading Benjamin scholar Susan Buck-Morss, who interprets Benjamin's essay to mean that "...the technological conditions of production have so thoroughly blurred the boundary between 'art' and cultural objects generally that its special, separate status cannot be maintained" (Buck-Morss, Interview, p.38). This technology-aura relationship is a particularly compelling component of Benjamin's work.

**The Aura Post Digital**

If a concrete definition of aura seemed elusive in the writings of Benjamin, the arrival of digital raises even more complicated questions. Digital distribution channels have the potential to amplify and extend the democratization associated with the mechanical reproduction of artworks: rather than having to leave the house to purchase a postcard or print for example, the digital jpeg of the *Mona Lisa* is available on a Google search from home. Given this extended reach, and lack of a physical object, it would seem like digital is the archetypal example of object aura-loss through reproduction.

In a paper exploring this digital-aura relationship, Michael Betancourt "recognize[s] a fundamental distinction between digital and non-digital artworks" (para. 1) and argues the binary code uniting digital objects makes them

“fundamentally different from any type of physical object, precisely because it lacks the unique characteristic of form that defines the differences between paintings, drawings, books, sounds, or any other physical object or phenomenon” (para. 3). Therefore, digital intensifies the dialogue on aura, adding a distinction not only between 1. physical objects with volume (as opposed to those that are flat), but between 2. physical objects in general, 3. those physical objects that house and display digital data and finally, 4. the actual data “virtual objects / code” themselves. On this last note, how are we to conceptualize data in the context of objects? If digital data is the binary unit 1s and 0s that represent some other image, text, number etc., is the “purely digital” object simply an idea? Is our conceptualization of the digital-analog binary a fair one? How is binary code on a hard drive different than the same code printed on reams of paper, or a sequence of numbers – 1,1,1,0,1,00,1 for example – read aloud? Is the utility/accessibility the major factor in our conception of the digital?

Mario Carpo traces the conceptual roots of the digital to Leon Battista Alberti, a Renaissance man who:

> ...aimed at identical reproductions of almost everything: of texts and images, of letters and number, of drawings and designs, or paintings and sculptures, of architectural parts, occasionally of entire building, and of other three-dimensional objects, both natural and man-made; in short, of almost every manifestation of art and nature. Alberti’s relentless pursuit of identical copies highlights one of the most significant turning points in the modern histories of art, science, and cultural technologies... (Carpo p.52)

Alberti and his strategies for these reproductions applied to both 2D and 3D works, storing the information in numeric notation rather than the pictoriality or as objects. Alberti knew “the risk of copying affected the transmission of text and images in a markedly asymmetrical way: alphabetical texts, and numbers,

were known to travel across space and time faster and more safely than pictures", and this knowledge influenced his strategies of storage and reproduction (Carpo, p.53). Alberti, based on his surveying, created a map of Rome and translated it into numbers for publication. This publication consisted mainly of long strings of numbers and instructions for assembling the numbers back into the map (Ibid). Alberti's treatise on sculpture, *De statua,* describes the reproduction of objects through the use of coordinates surrounding a subject in three-dimensions — an "analog" precursor to digital scanning. This method allowed different parts of a sculpture to fabricated in different studios, later to be combined into a finished assembly. Carpo describes Alberti's "notion that the perpetuity of a monument would be guaranteed by a sequence of numbers better than by the original monument.." ( p.57) as perhaps sounding odd, but to those familiar with CAD and CAM technology, it seems Alberti was centuries ahead of his time.

Depending on our interpretation of Benjamin's concept, it is entirely possible reproduction does *not* liquid the aura. Based on the interpretation of economist Hans Abbing, Betancourt suggests that "instead of diminishing the 'aura' of art, reproduction helps to extend the aura of the works reproduced… the more widely promoted an art work through reproduction… its 'aura' would logically then increase as well." (para. 6) . Depending on what variable we see digital as extending, applying the same principal (promotion as extension) to the digital seems entirely logical. This relationship returns to the idea that the aura is made up of (at least) two components: knowledge and belief about the object's social context and provenance, and the physiological (sensorial presence) impact of the actual artifact. If one has reason to believe a painting in a gallery is genuine, unaware it is actually a forgery, to what extent does the individual still

feel in awe of the work, or afraid to touch it? Although this thesis is primarily concerned with three-dimensional objects, the digital arm of the music industry is an interesting illustration of the idea. Many of us are familiar with the experience of downloading a 128kb (low quality) .mp3 file. This audio quality of this experience pales in comparison to that of a commercially released CD, as the same compression that has allowed faster sharing of the digital file has substantially degraded the sound quality. We can hear that the treble lacks clarity and the bass lacks depth. On the other hand, if one is aware that ten million people are listening to that song — regardless of the audio quality of the reproduction — that knowledge influences our perception of the artist/band who created it and the experience of hearing its live performance.

As important as the impact of digital on a work of art's aura, are the political implications of the digital platform and process. In *The Work of Art in the Age of Mechanical Reproduction,* Benjamin described how mechanical reproduction had given a platform to the average citizen, changing the barriers between the consumption and production of media:

> ..today there is hardly a gainfully employed European who could not, in principle, find an opportunity to publish somewhere or other comments on his work, grievances, documentary reports, or that sort of thing. Thus, the distinction between author and public is about to lose its basic character… the reader gains access to authorship. (Benjamin, Belknap translation, p. 33)

These words resonate with digital platforms like social media, where one need not even be 'gainfully employed' to 'publish somewhere', about one's grievances etc. The power of individuals to have their voice heard is

demonstrated by the political impact average citizens have had on politics and business through social media posts and boycotts. With the recent controversy over the Federal Communications Commission's rolling back of net-neutrality laws however, (Gambino 2017, Chang 2018) this power is under attack. The same changes raising questions about the kind of author/publisher relationship discussed Benjamin, also have implications for the work of art and entertainment industry.

A recent *Economist* report notes that although "one of the axioms of technological progress is that it democratises entertainment… as a business, entertainment has in some ways become less democratic, not more" (Mass Entertainment in the Digital Age, para. 1, 4). Listing the "oligarchy of giants, including Facebook, Google, Amazon, Netflix and Disney", the report points to how hard it is for individual content creators to get noticed and how "the same technological tools that have atomised entertainment have also made it easier to aggregate audiences" (Ibid, para. 11). This view of technology, art and aura, is more in line with Adorno and Horkheimer's critique of mass media entertainment— ideas that were far more critical than Benjamins (Sherratt, 2007), (Peim, 2007).

The withering of aura as suggested by Benjamin, may indeed be accelerated by digital reproduction. While this is due to technologies that facilitate mass distribution, both technical and human factors undermine the generalization. In 2014, Hip Hop act the *Wu-Tang Clan* made headlines when they announce they would release one (1) and only one copy of their latest album, *Once Upon a Time in Shaolin*. Fans — as one can imagine — were extremely disappointed, and the album ended up being purchased by now infamous pharmaceutical mogul Martin Shkreli for two million dollars (Kornhaber,

2015). In a paper connecting the remarkable event with Benjamin's essay on mechanical reproduction, Ben Green describes how the album's producers presented the album as an artwork, standing against "easy access to music, which they blame for reducing its cultural value" (p.427). This is an interesting example of an easily reproducible work of art, artificially restrained from this potential by human choice. With a few clicks of a button and within an hour, a torrent of the album could reach millions through digital downloads. Instead, it is kept in a decorative locked box by a single individual. Perhaps even more interesting is something Shkreli himself says in an informal interview on when asked about the album. He laughs and points out people frequently assert their desire to hear this (7th) album, yet when he asks them the name or any songs of the 4th, 5th or 6th albums, they are unable to do so (Shkreli 2017, around 50 minutes into the interview). This suggests it is the provenance / backstory of the album that creates this desire — an aura of something they have never even heard or seen. The aura in this sense is synonymous with the exclusivity and prestige, rather than the experience with an original work of art or its reproduction.

A second exception in regards to digital reproduction, is the recent phenomenon of *Crypto Kitties,* a 'game' based on block chain technology (think Bitcoin and Ethereum) (Bowles, 2017). Difficult to fully comprehend, let alone explain, it involves the collecting, buying, selling and 'breeding' of *digital* cats, cats that — and this is the important part — are absolutely unique. These data 'objects' cannot be duplicated and emailed to a friend like a digital image or audio file. Players of the game have spent "the equivalent of $6.7 million and counting buying Crypto Kitties…" and a number of specific cats have sold for over $100 000 (Cheng, 2017). Cheng, quotes an investment officer when suggesting "...this

stuff is almost digital artwork… It doesn't have any inherent value other than what you think it's worth" (2017, para. 2). The question as to whether these digital investments are art is an interesting one. Many would consider a digital .jpeg image of a Picasso painting 'art' and more clearly, an artist working with digital tools from beginning to end would be making 'digital artwork'. Few would value these digital artifacts in the same way as *Crypto Kitties* however, as they are easily reproducible.

Another example of the aura in a post-digital age, is articulated by Hito Steryl's essay *In Defense of The Poor Image* (2012). This essay emphasizes the distributive potential of the humble, low resolution (poor) image, and how it "enables the users active participation in the creation and distribution of content…"(p. 40). Writing contemporarily in the age of the internet, this dramatically extends Benjamin's observation that it had become easier for "gainfully employed European[s]" to publish something or other in some shape or form, and his prediction that "the distinction between author and public is about to lose its basic character" (Benjamin, Zhon tran.p. 12). Despite no citation or reference to Benjamin, one can't help but think of him in the following passage, in which Steryl describes "political punch" and aura:

> By losing its visual substance it recovers some of its political punch and creates a new aura around it. This aura is no longer based on the permanence of the 'original', but on the transience of the copy".
>
> (Steryl, p. 42)

Steryl's idea of the poor image is important as it both extends and questions Benjamin's ideas of reproduction and authenticity. The poor image "is no longer about the real thing — the originary original" writes Steryl, as she writes about

“swarm circulation, digital dispersion” and “fractured and flexible temporalities” (Ibid p. 44).

This section has explored the relationship between digital technology and Walter Benjamin’s concept of the aura. It has shown that digital can intensify the democratization of mechanical reproduction through accessibility to media and publishing platforms. It has also presented exceptions that point to the nuance of the aura. These show aura is not simply about an ‘original work’ vs a reproduction, but about human beings perception of, and access to, an artifact. It also suggests there is such a thing as a digital ‘original’, and that even a reproduction can possess one element of aura through human imposed scarcity.

The next section will cover where VR fits into the conceptual model of aura, the body of research that currently exists, and why the emergence of *consumer-accessible* VR is a promising area of interest.

**Aura, VR, and *Presence***

In *Art and the Age Mechanical Reproduction,* Walter Benjamin describes “even the most perfect reproduction of a work of art [as] lacking in one element: its presence in time and space. ”(Benjamin, p.3, Zhon translation in Illusions). This *presence* is an integral component of Benjamin’s concept of aura — in that viewing a reproduction is not the same as being in the presence of an original. When I initially came across Benjamin’s writing about presence, I immediately connected it with the way the term is used in in the context of VR. Although my keyword searchers had hinted at this, it was not until Dr. Alexis Morris gave me the citations I outline in the following paragraph, that I realized just how often the general connection between aura and presence had been made.

A number of other scholars have explored these connections to varying degrees, including most prominently Bolter et al. (2006) and MacIntyre et al. (2004). While less directly, other scholars have also engaged with the combination, including Patterson (2006), and Mosaker (2001). Bolter and MacIntyre, both given first authorship on their respective papers, work together, and propose the term aura as "provide[ing] a necessary complement to the concepts of presence, which is commonly used to evaluate VR applications" (MacIntyre et al. p.1). The two emphasize mixed reality as opposed to VR and see aura as a "...psychological condition of the user…" (MacIntyre p.42), and propose that aura "has been in a permanent crisis since the introduction of mechanical technologies"(Bolter et al. p.34). In the context of the aura and reproduction, Bolter et al classify VR as fully reproducible:

> Because the computer is capable of perfect reproduction of information, the same media experience can be offered repeatedly to a series of users. VR experiences are completely repeatable wherever the VR equipment can be set up (p.24)".

Their paper explores aura not just in terms of VR, but in all mixed / augmented reality applications, and they point to the consistency of experience in VR — based on isolation from the outside world — and thus argue VR is *not* auratic, while augmented reality/mixed reality *is*:

> In a pure VR application, the physical location of the user is irrelevant. Ideally, the user neither sees nor hears the laboratory where her body is situated, but experiences instead a wholly virtual world. In an MR application, however, the experience is a hybrid, in which the physical and the virtual are necessarily intertwined. The physical place, which is unique, lends uniqueness to the experience and may revive the possibility of evoking aura. (Bolter et al. p. 24)

This alternate interpretation, in line with Benjamin's idea of authenticity and reproduction, maintains that aura is dependent on the physical world. Patterson (2006), explores aura with a focus on haptic devices, and emphasizes presence in regards to distance and remote control. Mosaker (2006) only briefly mentions Benjamin, (p.22), but again, in the context of a paper featuring two case studies of virtual simulations.

Having briefly outlined other researchers exploring the connection between Benjamin, aura and presence, I will return to the the presence/VR connection more specifically. North & North describe how a "well-known aspect of virtual reality is a sense of presence in the virtual environment…[and how it] …is often thought of as the sense of 'being there'.."(p. 1). They also note that despite a large body of VR research (citing at least 20 studies over the last decade), "the theoretical aspects of presence remains limited" (Ibid p. 2). Sanchez-Vives and Slater argue "that presence is worthy of study by neuroscientists, and that it might aid the study of perception and consciousness" (p. 332), pointing to the peculiarity of fear in virtual reality:

> You see a deep precipice in front of you, your heart races and you are frightened enough to be reluctant to move closer to the edge. From a cognitive point of view, you know that there is nothing there, but, both consciously and unconsciously, you respond as if there is. This paradox is at the root of the concept of presence. (Ibid)

In addition to the fear of a deep precipice above, the same paper discusses a VR simulation in which a participant is to give a public seminar presentation (Ibid). Seeing the cartoonish rendering of the seminar participants (this paper was from over a decade ago), I was surprised by the findings: that "the physiological responses measured in these participants showed that people responded

similarly to how they would in a real environment" (Ibid, p.337). It is clear, then, that there is a connection between presence in both real and virtual environments, at the very least physiologically if not psychologically as well.

This section has cited previous research papers concerning aura in the context of presence and technology, emphasizing those focused on the combination of aura, presence and mixed reality. It has also highlighted the combination of presence in VR *specifically* (excluding aura), and the paradox of fear and anxiety causing physiological changes in an immersant's body. These changes, including measurable phenomena like an increased heartbeat, occur despite one's cognitive awareness of safety (i.e. knowing one is in the room of a research laboratory, with no danger of falling into a deep precipice).

This literature review as whole, has provided an overview of scholarship engaging with Walter Benjamin's concept of aura, proceeding with publications considering aura through the mechanical, digital and finally virtual reproduction. The following chapter will shift focus away from the literature, and towards some of the same ideas in the context of artworks.

## 3. Contextual Review:

This chapter presents artworks and other objects/phenomena, related to the ideas of aura, authenticity, physicality, and perceived value. Its primary focus is on the relationship between physical art-works and their digital/virtual reproduction, with a secondary look at non-art objects for comparison and clarity.

### Physical, Digital, Virtual Objects

<u>Balloon Dog + Augmented Vandalism</u>

The following is promotional text preceding the Christie's auction of Jeff Koons's *Balloon Dog (Orange)*, Lot 12 in November of 2013 (Christies 2013).

> ..one of the most recognizable images in today's canon of art history. This monumental work, with its flawless reflective surface and glorious color, is the most beloved of all contemporary sculptures. Its spectacular form has been celebrated around the world, having graced the rooftop of New York's Metropolitan Museum of Art, Venice's Grand Canal, and Versailles Palace outside Paris. It has become an icon of Popular vernacular, adored by the public and collectors for its unabashed celebration of childhood, hope and innocence. (Christies, Ibid).

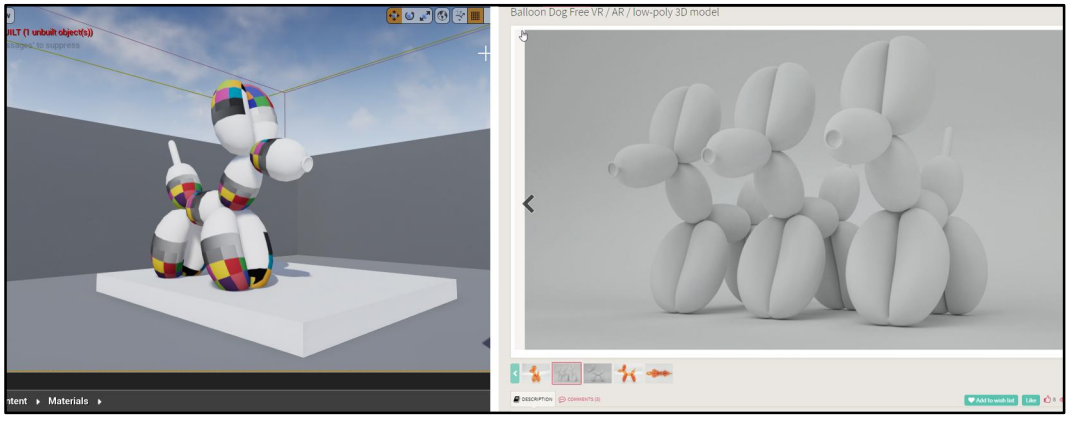
The *Balloon Dog (Orange)* sold for $52,000,000 and "has become the most expensive piece of art by a living artist.. [breaking] the record for the most expensive living artist, held by Gerhard Richter, whose 1968 painting, *Domplatz, Mailand*, was sold for $37.1 million at Sotheby's in May 2013" (Pereira, 2015). Note that the *Balloon Dog* is not really an isolated work. Pereira lists it as an edition of 5. There are also editions of small *Balloon Dogs* in a much smaller, collectible format. These multiple colour editions of 2300 units, have sold for as much as $20,000 each (ibid).

On the other end of the spectrum, one can find a similar product on Etsy as room decor, for CA $61.09, saving $10.78 with their 15% sale. Particularly interesting then, are questions about authenticity and aura in the context of the small reproductions. How can one value an object at $20,000, knowing that it is but one of an edition of 2,300? Does it give them the sense they are in the company of others of fine taste? Is it purchased for investment purposes (Koon's work seems to hold its value well)? Perhaps the small works are associated with the more significant works, elevating their prestige through association.

Even more intriguing is the origin of the *Balloon Dog*. It appears Koons hired the company *NVISION, inc.* to scan an actual balloon dog, which they did,

and then handed back a digital CAD model. The promotional blurb on NVISION3D's website notes how the artist (Koons) "wanted his balloon dog scanned into a 3D model that could then be enlarged, providing the exact dimensions needed to create the final series of full-size sculptures" (NVISION3D, 4th par.). This knowledge, when coupled with the prices of the reproductions mentioned above, might (or might not), surprise collectors, as it means that Koons has a digital model, and is likely using CNC milling at some stage in the creation of his works. These objects are an interesting test of aura in that the visual impact/aesthetic of work contribute an the knowledge/association with Koons contributes, yet it is difficult to understand the role of authenticity or presence of an original, given the rendering consistency of the various multiples.

The knowledge that Koons used 3D cad models in the production of his multi-million dollar Balloon Dog endeavor, makes the availability of various free models online all the more interesting. I was able to download a CAD model someone had created of Koon's work, for free, and import it into the Unreal game engine to create my own digital renderings.




[fig 1. From left: Rendering of Balloon Dog CAD model in Unreal Engine, by author. Original models accessed: www.cgtrader.com/free-3d-models/sports/toy/balloon- dog-7eb91ac2- 6e40-45aa-b82c-fb85c236ec18 ]

Finally, an interesting blurring of the virtual/physical, raises questions about the importance of physicality to aura. In his talk *The Last Days of Reality* at OCAD University in late 2017, Mark Pesce described an augmented art collaboration between Koons and Snapchat, in which Koon's *Balloon Dog* was situated (virtually) in Central Park, NY, NY. "Within 24 hours, artist Sebastian Errazuriz had 'tagged' the work (again, entirely virtually), in a 'symbolic stance against imminent AR corporate invasion' (OCAD University, 2017). Both the Snapchat renderings and the Errazuriz rework, are digital representations that don't physically exist. While searching for the Snapchat image, I stumbled on another — an oversized *Balloon Dog* on stage at a Jay-Z concert — and this image represents a real physical thing. Not having seen either of the works, however, I was struck by my own inability to distinguish prop from reality. That the screen mediates our experience of the works, masking their ontological existence is not a new observation, but it is especially compelling in the context of scale, reality and the virtual.

The Digital David

This past summer I had the pleasure of joining the *Florence Contemporary* course, a unique opportunity offered through OCADU. Months after returning from Florence, I stumbled on *The Digital Michelangelo Project:* a research group from Stanford scanning sculptures in Florence. A hyperlink labeled "models" actually redirected to a relatively complex licensing page, and no scan data was available directly to students. Upon learning of this data-set, I made a mental and written note, to remind myself to bring it up with my primary advisor at our next meeting. My thought was to access the model, and load it into

my high-end virtual reality system, allowing me to compare this experience with the ‘real’ in the context of aura.

Later in the year, I was surprised to learn I was not the only one with the idea of importing David into VR. A group from the Unreal Engine had not only had the same idea, but had already executed it and presented it at SIGGRAPH 2017. Reading the documentation online, two comments stood out. The first was a twitter post, embedded at the bottom of the page, reading: “The Michelangelo VR experience is great. Maybe better than 'real' bc I was able to get so close I could actually see individual chisel marks” (twitter user @cryptoguyal). Further down the page however, a second comment reads “I wish this was available to try out at home. seems like a waste to do all that effort for an event and then do nothing with it after” (user anthonyr87 on the *Making Michelangelo’s David in VR for SIGGRAPH 2017 page).* This is a fascinating example of the relationship between presence, aura and VR, as well as illustrating that being virtual and digital do not necessarily equate to availability.

[fig 2. VR renderings of Michelangelo’s *David* in the Unreal engine, accessed:www.unrealengine.com/ en-US/blog/making-michelangelos-david-in-vr-for-siggraph-2017 in Feb. 2018].

The Treachery of Images ("Ceci n'est pas une pipe) René Magritte

Renée Magritte's famous painting, *The Treachery of Images,* features an old-fashioned tobacco pipe, coupled with the following text: “Ceci n’est pas une

pipe”(1928) (translation “this is not a pipe”). It’s a conceptual puzzle that encourages us to ponder the relationship, between the words, the image, and the actual ‘object’. This idea becomes even more complicated when we swap the painting for a screen, rendering a real time 3D model of the pipe that one can rotate in Cartesian space. Although, like the painting, it is viewed on a flat surface, the 3-D model of the pipe grants us the ability to change the pipe’s perspective. It also allows us to output geometry for rendering, or fabrication. I asked a philosophy professor mentor about my thoughts on the painting and its relationship to a 3D model, and he kindly articulated the idea/title for the 2D/3D translation as such: “this is not a representation” (Lavery, conv. 2018).


[fig 3. From left: “Smoking Pipe VR / AR / low-poly 3D model “by ‘joaquin-a-cossio’ (text added), accessed: www.cgtrader.com/3d-models/ architectural/decoration/s-b6b450e3-137e- 4bc0-9f7f-044923d662b4 feb. 2018, “The Treachery of Images”, Renée Magritte. accessed: www.artsy.net/artwork/ rene- magritte-la-trahison-des-images-ceci- nest-pas-une-pipe feb. 2018]

Scanning Cultural Artifacts 3D Repositories

One day in Berlin, artists Nora al-Badri and Jan Nikolai Nelles, covertly scanned a bust of Queen Nefertiti in the Neues Museum, with a portable scanner cobbled together from a Microsoft Kinect (Wilder, 2016). They ‘liberated’ the object by making the scan data freely available online, providing an .stl file that all could download, manipulate, reproduce etc. What made it more controversial,

was that external scanning experts suggested the quality of the scan was far beyond what would have been possible with the technology they were using — meaning the Museum's own high resolution scan was hacked or even that the Museum may have participated in the project.

Other examples are the scans of historical Chinese columns uploaded by Oliver Laric. These columns were "taken from their home.. after the Anglo-French lootings of the Second Opium War in 1860, and donated to the KODE Art Museum of Bergen, Norway" (Sayej and Magdaleno, 2nd par.). The original artifacts, housed in Norway, are soon to be returned to China. Counter to the view of some stakeholders invested in column's cultural origins, authors writing about the works suggest that "scanning and uploading replications of the columns is simply a process of dissemination, without doing any damage to the originals. Copying, but not theft" (Sayej and Magdaleno, 9th par.).

These two examples join growing collection of online repositories, including *Scand the World* and many models of models found on *SketchFab.com* and *The 3D Additivist Cookbook* by Morehshin Allahyari & Daniel Rourke, a project offering a large collection of .obj and .stl files to download and remix.

Virtual Reality, Galleries, Art and Aura

Artists and institutions are already embracing VR: Elizabeth Edwards makes beautiful 3D illustrations in Google *Tilt Brush*, Giovanni Nakpil is making incredible sculpture in Oculus *Medium* (Sharma, 2017), Jon Rafman has been engaging VR for years and more locally, Trinity Square Video has curated and exhibited multi-artist VR shows. Just yesterday, The New York Times published an article titled "Virtual Reality Lets Rare Works of Art Take a Field Trip" (Siegal,

2018), about Dutch art collectors George and Ilone Kremer and their production of a VR experience featuring 74 works from their collection. These are but a small fraction of the VR related artists and experiences available, and more are being released almost daily.

Given all of this 'virtuality', an important, if not obvious question here, is where money and the market fit into the equation. Global Director for *Art Basel*, Marc Spiegler notes that "it takes a pretty pioneering spirit to be a collector of digital art" and that "for the entire history of the art market, what was sold was a physical object — a sculpture, a painting a drawing.." (Spiegler, 2017 timecode 02:08). He states these new digital works change the game, raising questions like "what [am I] buying, will friends understand it, and is it really art?" (Ibid).

After considering various forms of technology and art, let us return to Benjamin and aura. Spiegler's emphasis (above) on the history of the art market, as physical, speaks to another type of aura-related object. Objects in this category are not considered art, yet appear to possess some special property seeming strangely similar to aura. This category includes mass-produced items somehow imbued with an 'essence' -- an article of clothing worn by a celebrity, for example, or a home run winning baseball. While categorically distinct, these examples are valuable conceptual tools. in our attempt to understand the aura, given that the objects are, technically, *all* reproductions. In the case of a mass-produced object, its essence/magic/aura is obviously based on association (with a moment in time, story, person etc.) whereas with art, the backstory of an object is mixed with its unique aesthetic/visceral experience. For more examples on this phenomenon, please see Appendix C, at the end of this document.

This chapter has discussed physical sculptures produced by Blue-Chip artists like Jeff Koons, as well as other digitized, augmented and virtual artworks.

René Magritte's painting of a pipe was presented to highlight the difference between a representation and an object, and a global (commercial) art fair director was cited as acknowledging a distinction between purchasing physical vs. digital artworks. Finally, the idea was presented that even mass-produced, non-art objects, can possess something akin to aura, and that therefore, these objects can help us navigate various possible components contributing to the concept. The next chapter will transition from the literature and contextual review, to my research and the methods used to explore the ideas presented thus far.

## 4. Research Overview

This chapter gives an overview of a methodological approach that is both inductive and exploratory, in relation to my creative practice, including a wide range of physical and digital methods.

### Methodological approach

As a contemporary artist working in an academic research context, my general approach might be called *research-creation.* The Social Sciences and Humanities Research Council (SSHRC) defines research-creation as an "approach to research that combines creative and academic research practices, and supports the development of knowledge and innovation through artistic expression, scholarly investigation, and experimentation" (SSHRC, 2012). According to Natalie S. Loveless at the University of Alberta, research-creation is:

> "..the main term used in Canada to speak about arts-based research. Terminological precursors to research-creation (such as practice based research, practice-led research, and artistic research) find

their origin in over thirty years of international discussion focused mostly in Western and Northern Europe and Australia" (Loveless, 2014, p.52).

I have yet to find a 'perfect fit' label for my own methodological approaches, but it's comforting to know these struggles are common in art/design research. The following excerpt from Gray and Malins' *Visualizing Research* articulates the difficulty well in that "..methodology in its scientific sense implies a common or shared research approach that is transferable…[and that]… this is not likely to be effective for creative practitioners" (p.18) Similarly, Macleod and Holdridge note that "while there is a great deal of literature on quantitative and qualitative research methods in the humanities and sciences, there is little consensus in art and design and other creative and performing arts.." (p.226). Epistemologically, Gray and Malins propose that "In Art and Design research, personal and tacit knowledge are often the starting points for inquiry (p.198) and that "in Art and Design we learn by doing — inductive learning through the particular experience of practice — and make broader sense of this through reflection and discussion" (p. 199). This *reflection* on 'learning by doing' described by Gray and Malins, might be described as *autoethnography*, "an emerging qualitative research method that allows the author to write in a highly personalized style, drawing on his or her experience to extend understanding about a societal phenomenon (Wall, p.1). In summary, while specific labels chosen here may not be used exactly as they would in more traditional social or natural sciences, the methodological approach is somewhat inductive and exploratory.

**Methods**

The following section describes my specific research activities, which can broadly be broken down into the traditional categories of reading/writing and

various forms of technical/artistic production. Some of these methods have been systematic — literature review keyword searches for example — while others have evolved more organically.

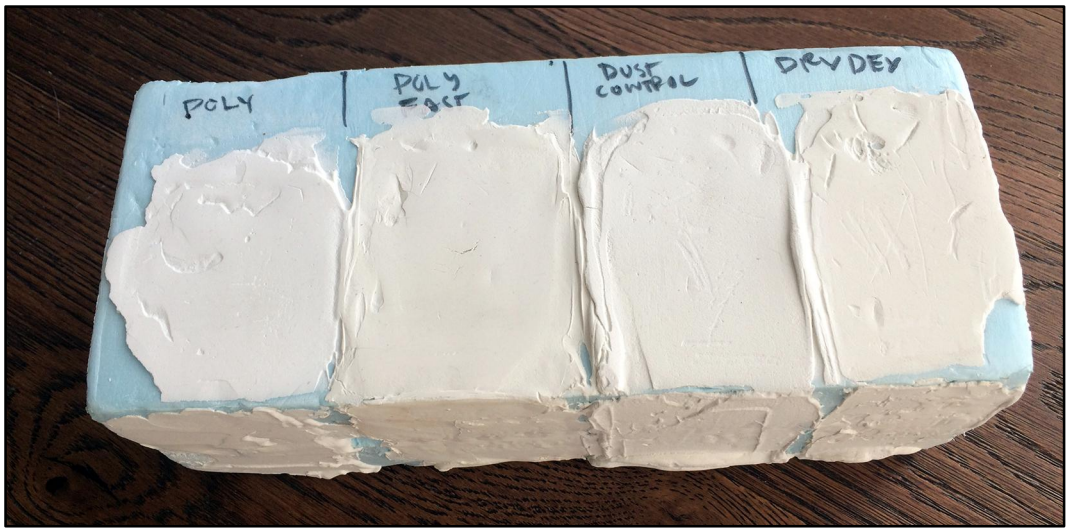
If ideas emerging from a thesis are more important than its artifacts, then the process to produce the artworks themselves can be valued as a mode of inquiry. Accordingly, the knowledge gained through the process of conceptualizing and producing these artworks, is as important, if not more, than the final results. Being mindful of the research questions while oscillating between reading, writing, production and reflection, has provided me with small flashes of insight into the theories with which I've been engaged.

General Making Overview

As an artist, I identify as a sculptor, and have generally worked towards the production of physical artworks. Unlike many traditional sculptors however, I often rely on computer aided design tools and rapid prototyping technologies to produce them. OCADU boasts a variety of studios and resources, and part of the first two semesters of my MFA experience were spent getting oriented to possibilities. This exploration was a vital stage in my research, and helped with brainstorming about potential processes for artworks. The following is a brief summary of this exploratory stage, from which the specific techniques used for the thesis work (outlined immediately following this overview), emerged.

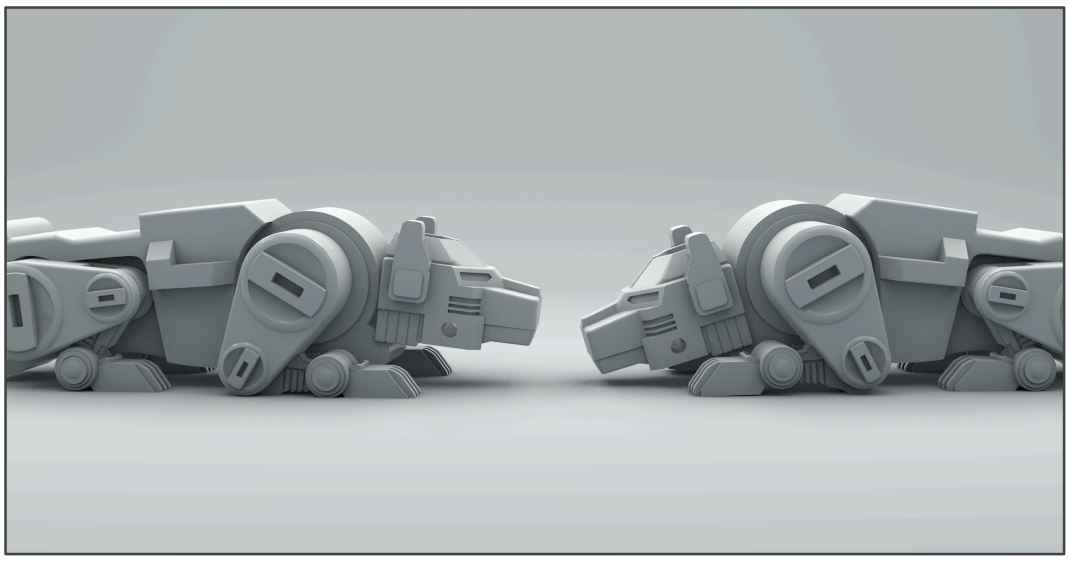
Physically, I engaged with a number of techniques, materials, and processes, including vacuum forming, casting, sculpting (cardboard, clay, foam) and painting, as well as the assemblage of toys and other readymade objects. Extensive material tests were done with various adhesives, plasters and resins, as well as with paints and substrates. Outputs include material and process

references, paintings, small clay maquettes, 3D printed studies and artist multiples.




[fig 4. Various plaster/drywall material tests]

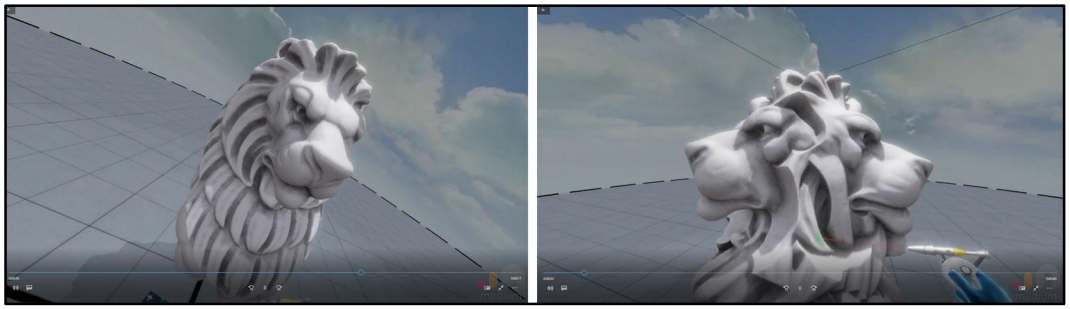
On the digital side of things, I already had familiarity with many applications, and the Digital Futures graduate program introduced me to many more. The following are software packages I have created and/or manipulated content/data with, prior to and during, the thesis research: Fusion 360, Cinema 4D, Maya, 3ds Max, Agisoft Photoscan, Unity, the Unreal Engine, Cryengine, Kinect SDK, MeshLab, Mesh Mixer, Cura, Slicer, ZBrush, Oculus Medium, Final Cut Pro X, p5.js and the Adobe suite. Outputs included photogrammetry captures of monuments (used later in artist multiples), digital scans of my cohort and toys, reworked and original 3D models from both traditional CAD and VR sculpting applications (see monuments above), 2D renderings, a video game, a short narrative film on virtual reality, and virtual reality sketches. Further processes that blur the line between digital and physical, included the research and assembly of a high end PC workstation (for VR), a 3D printer kit (for sculpture production) and an assortment of physical computing electronics.



[fig. 5. ‘Toy Lions’ 3D software rendering. Head and Body modeled by author using Beast King GoLion / Voltron *Blue Lion* as reference.Legs found as cad model digital ready-mades, user: ‘Shadeling’ www.thingiverse.com /thing:1271950 accessed Dec. 2018]

Focused Making Overview

Of all of these techniques, a few stand out, as most important to the works in the final exhibition. The photogrammetry software *Agisoft Photoscan* was key to capturing the traditional lion statues outside the Fairmont Royal York hotel, which were employed in the multiples, while *Oculus Medium* was important in re-sculpting the model in VR.



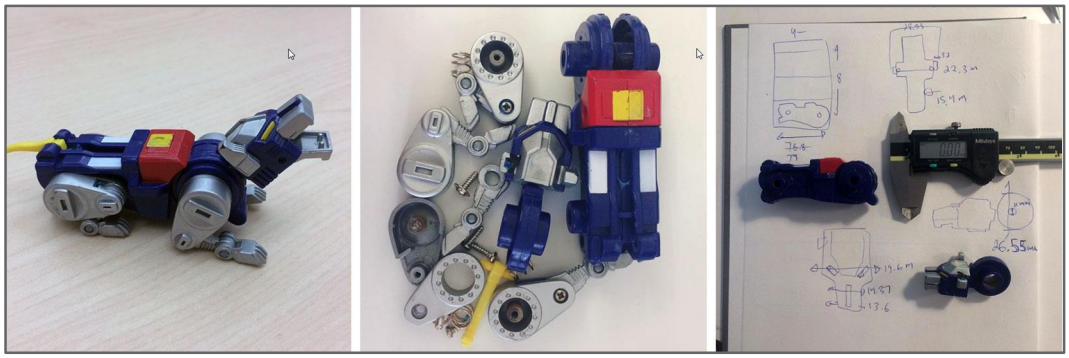
[fig 6. Lion model (Fairmont Royal York), imported and sculpture in VR. Software: Oculus ‘Medium’]

These resculpted models were printed on a *Formlabs SL2 printer* at the Digital Haptic Lab (DHL) at the University of Guelph, and molded/cast as

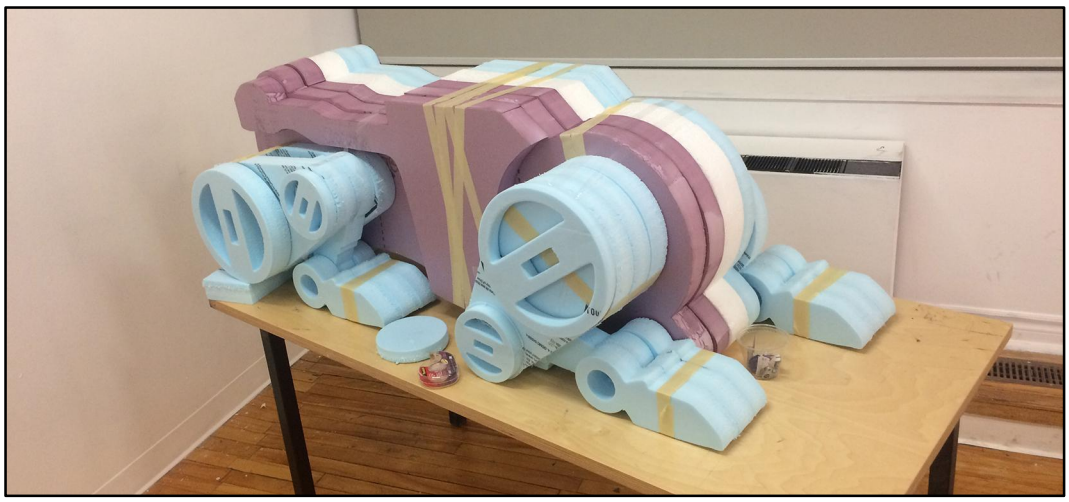
multiples using silicone and resin at Al Green Sculpture studio. The toy vending machine for dispensing the multiples, was located at a thrift-shop about an hour west of London, ON, (and initially remained locked, and without keys for many months).

[fig 7. Author with vending machine, *Lion Trinity* 3D print and toy capsules]

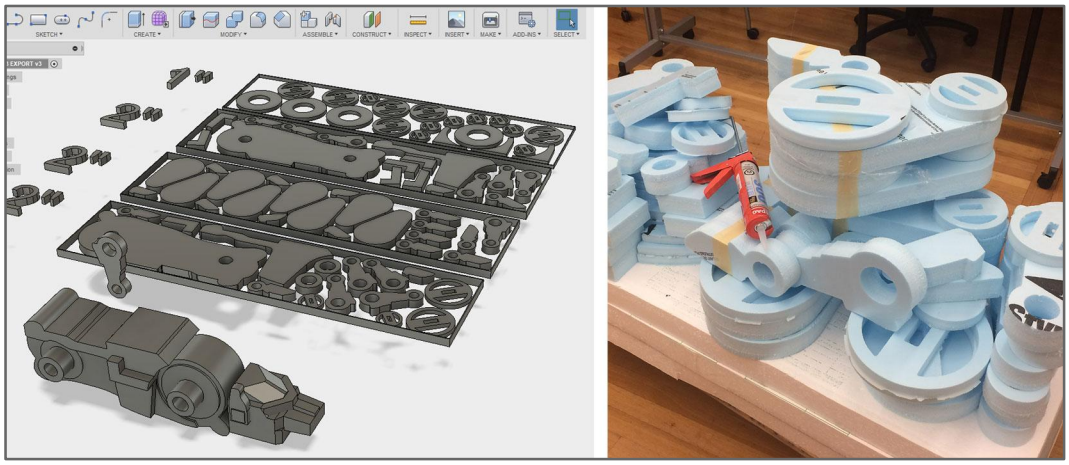
The bodies of the larger toy lion sculptures, were designed in *Autodesk Fusion 360*, from reference photographs taken from the original toy. The pieces were cut on the CNC machine at the OCADU Rapid Prototyping Centre, and assembled/finished by hand at the Al Green Sculpture Studio.



[fig 8. From left: Voltron / GoLion *Blue Lion Toy,* deconstructed, measurements ]



[fig.9. Early progress on Toy Lion]

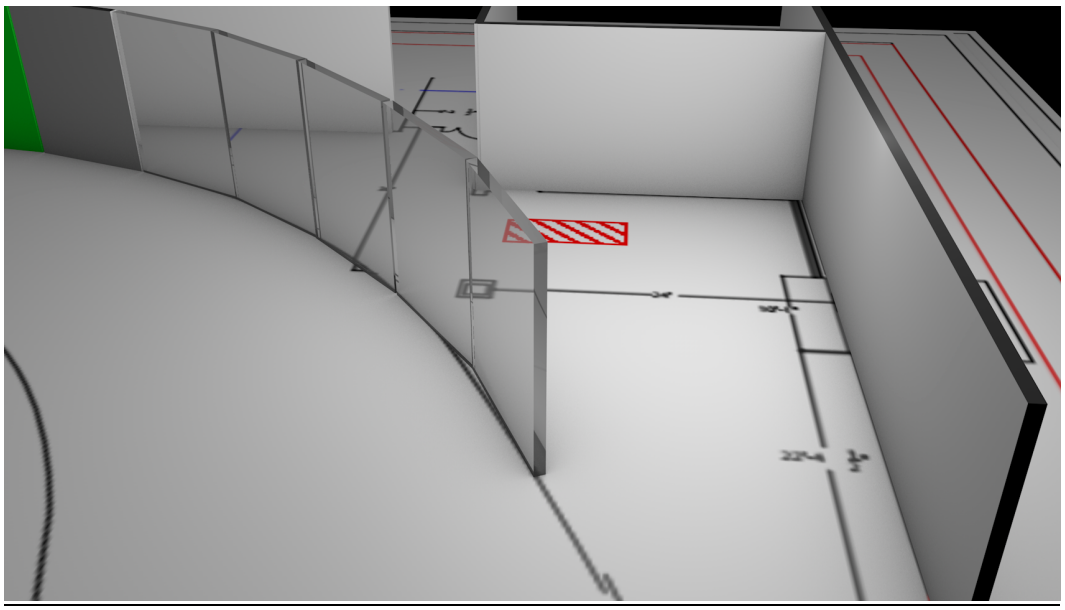


[fig 10. From left: Toy Lion cut sheet in Fusion 360, XPS foam cut outs]

The head was scanned at the DHL, and this scan was used as the reference for rebuilding a fresh CAD file in Fusion 360. It was then divided into pieces and 3D printed in parts on a number of printers, including my own Prusa i3 MK2, and the Lulzbot Taz6 at the OCADU Maker Lab. The materials in the lions include expanded polystyrene, drywall compound, screws and glue, and they are covered with an epoxy *resin* named *Epsilon Pro*, a gypsum polymer hybrid named *Aqua-Resin,* and finally, an oil-based white top-coat.

[fig.11 3d printed lion head components]

The VR component of the thesis features a model matching the geometry of the interior of the Open Exhibition Space, where the Thesis Exhibition was held, at 49 McCaul St., in Toronto. It was built on a high quality-floor plan in 3DS Max (credit: Shaun Kelly), then imported to the Epic *Unreal engine* to be viewed with the Oculus Rift.



[fig 12. first attempt by author at room modeling (proof of concept) of 49 McCaul. Cinema 4D]

Reflections On Textual Methods (see Appendix A)

The preceding section has given an overview of the physical production methods. For further information on the research approach regarding text and reflections on that process, please see Appendix A at the end of this document.

## 5. Results: Outputs and Observations

This chapter highlights the outputs of the thesis research, including core artifacts and observations on theory and practice. The former consist of three main works making up the thesis exhibition, while the *observations,* based on the work*,* are about aura, presence and process, as well physical, digital and virtual reproduction.

**Outputs**

MFA Exhibition Components

The MFA thesis exhibition featured three primary components:

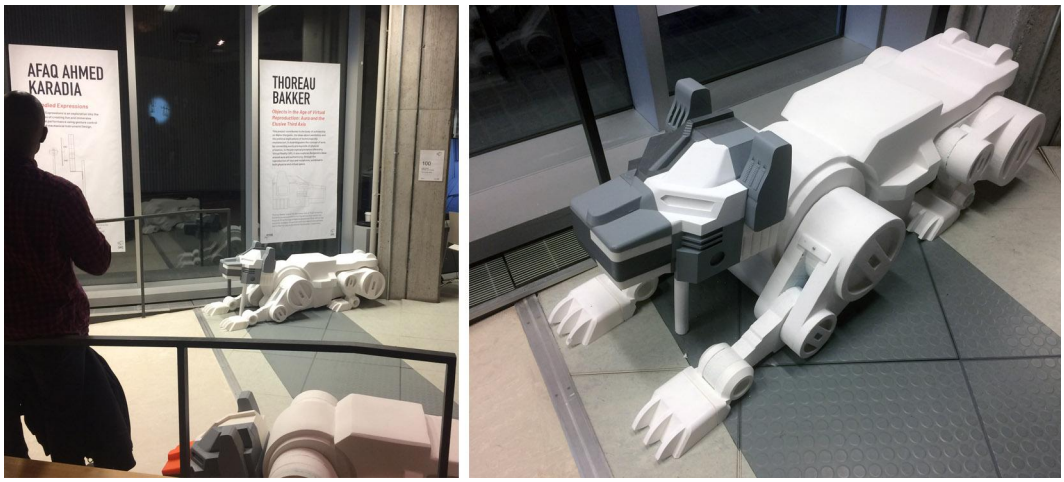
a. A set of large **lion sculptures** [Toy Lions],
b. A vending machine for **small artist multiples** [Royal York Lions]
c. A **virtual reality experience** set in a room that matched the geometry of the Open Exhibition space. [Virtual Gallery]

The following section gives an overview of these three components, followed by a table and comparison of the three outputs, in terms of their representations of reproduction, aura, and presence.

Toy Lions

The lion sculptures were presented as contemporary art, but were sourced from popular subject matter (toys) found at a thrift store. The sculptures represent an inversion of the aura-technology relationship, in that a small aesthetic object designed for mass production was enlarged and imbued with the mark of the hand. Despite digital and mechanical technology being significant components of the process (CAD design tools, CNC produced parts), the greatly enlarged scale of these works made full automation all but impossible for an individual artist. The combination of digital, mechanical and hand-made processes then, blurs the relationship between modes of production in the work of art; its authenticity and its aura. The same lions exhibited as physical sculptures, were also rendered in the VR gallery experience. The intent here was to hold something constant between the physical and virtual environments, and

to provide the viewer with a clearer comparison of the work(s), in both their physical and virtual manifestations.




[fig.13 Toy Lions in situ]

The toy on which the sculptures were modeled also serves as the right leg of a gestalt (combining) robot, in what most North Americans know as the *Voltron* franchise. This franchise was originally created in Japan under the name *Beast King GoLion,* and tracking an authoritative source for the original designers of the toy has been difficult. *Voltron.wikia.com* gives credit to Katsushi Murakami (see Beast King GoLion), while Wikipedia credits a number of mechanical designers, including Katsushi Murakami, Takayuki Masuo, Yoshiro Harada, and 'Submarine'.[6]

The plot of the original Japanese series is a complex mix of myth and science fiction, and was heavily edited and reworked when brought to North America. I

[6] Wikipedia also credits one Kazuo Nakamura as the chief animator and character designer, but although the Wikipedia page links to Japanese-Canadian painter and sculptor Kazuo Nakamura (b. 1926), who "was made an honorary fellow at the Ontario College of Art & Design" and had a retrospective at the AGO in 2004, I was unable to find any evidence that this Nakamura worked with toys or animation (see Kazuo Nakamura and AGO in works cited).

was somewhat unfamiliar with the narrative of either franchise until recently, learning more about them while researching the original toy's designers to give them credit. Both the original Japanese and, later, American franchises present a metaphor for teamwork, in that the 5 lions mechanically unite to form a larger, combining figure. While it may seems like a stretch, I see a connection here with both the collaborative spirit of the Digital Futures Graduate Program and the conceptual evolution of this thesis — shifting from an intent to produce large sculptures akin to trophies, to producing multiples dispensed from a toy machine, and finally, to the production of VR work to be shared within the physical and digital worlds.

Upon entering the graduate program, my original desire was to emulate the fabricated finishes of artists like Takashi Murakami, Damien Hirst, Kaws and Jeff Koons, a desire based more on aesthetics and formal qualities like shape, colour, texture and mass, than on their conceptual intent. In the thesis process, an emerging appreciation for art as a vehicle for ideas, combined with my work in VR, has made the emphasis on physical rendering less of a priority. In the virtual world, the appearance of a large bronze sculpture is accessible to many. In VR, the sculptural rendering is faster and better than I could currently produce in reality. These large lion sculptures, then, are presented as an output of the learning process, and combined with the multiples and the VR environment, represent these evolving priorities; firstly from large and singular, secondly to small and multiple, and finally from physical to virtual / post-physical.

Although VR may never capture the subtlety and nuance of the 'real', for all intents and purposes, the visual rendering and sense of scale are incredibly accurate. And within the context of aura, it became apparent to me that this

rendering is conceptually important — for it replaces the physical object perceptually, freeing it from exclusivity, ownership, and provenance.

Artist Multiple Vending Machine: Fairmont Royal York Lions

The vending machine represents the accessibility that comes with reproduction, and is intended to symbolically diffuse the concentration of the market and ownership that comes with the purchase of a single large work. It is the *inversion* of previous toy lions elevated to statuary scale: in this case traditional (life size) lion sculptures were captured in a public space using photogrammetry, they were then reworked in 3D software (VR), and reproduced as inexpensive miniature artist multiples. These reworkings of photogrammetry (scan) data were printed, molded and cast in a variety of colours, available in an edition of 40 for $2 each. This series was presented with the idea that by enabling any interested viewer to easily afford and obtain an art-work, they might be more likely to acquire them, and then perhaps to reflect on the piece, or on the ideas presented in the exhibition.

[fig.14 Artist multiples and vending machine in situ]

I would like to acknowledge a few relevant sources regarding the multiples: firstly the unknown artist(s) who initially sculpted and cast the lions outside the Fairmont Royal Hotel. The plaque on the sculptures mentions a museum in the UK, but there was no reference to a name of any sculptor. Multiple calls to the desk of the Fairmont and an email to a public relations officer that bounced back have returned nothing, but I am slowly making progress. Recently finding an image of an almost identical lion online outside the Natural History Museum in London, England, I sent an email to their Library and Archives department, trying to track down the original sculptor. An email was received noting “the architect of the Natural History Museum, London, was Alfred Waterhouse”, and in a follow-up email citing “Monsieur Dujardin of the firm of architectural modelers, Farmer and Brindley. (Pethers, 2018, email, citing ‘Survey of London’).

Secondly, I’d like to acknowledge the work of Catherine Heard and her *Magic Gumball Machine of Fate* project at the OCAD University campus at 100 McCaul St. in Toronto (Lee, 2017). I had no awareness of the project when conceiving of my own work, but surely had walked by it many times over my time at OCADU. I had a good meeting with Professor Heard and appreciated her insights, and would like to thank Professor Judith Doyle, too, for this introduction.

I also consider it essential to cite the Japanese phenomena of *gachapon,* an onomatopoeia for the sound a toy vending machine makes: two turns of the money crank wheel (Ga, Sha) and the small capsule falling to the bottom of the device (Pon). An excellent article in the Japan Times summarizes the phenomena, and was influential in my desire to acquire a machine. The article notes that while vending machines were invented in America, the practice of

embedding small toys and artworks in plastic bubbles originated in Japan (Hornyack, 2017). The first machine was set up by Ryuzo Shigeta “known today as the Gacha-gacha Ojisan” and his brother in the mid 1960s (Hornyack, 2017, 8th para.). The article, describes them as “miniature works of art in plastic” and describes how the originals are hand-carved then manufactured and reproduced in great numbers (ibid). I would like to thank Natasha Mody, who pointed out similarities between my Lion Trinity and the four lions making up the national emblem of India. Although the emblem features four lions, 2D renderings make it appear as if there are only three.

Finally, I would like to acknowledge the role of Laird Henderson and Nicholas Crombach who work at the Al Green sculpture studio, for their essential assistance with casting and designing the molds.

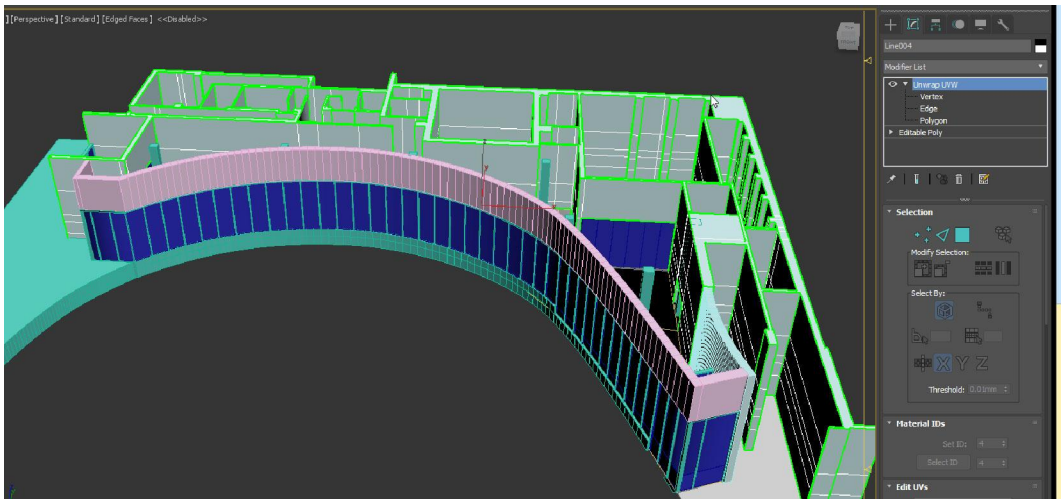
Virtual Reality Experience and Model of 49 McCaul

The virtual gallery is both the most recent and what I consider the most important component of the exhibition. The idea began as a pre-production tool early in the project, but later came to emerge as a final result. When viewing the Toy Lion sculptures in a virtual space with the same geometry as the physical exhibition, a variable is held constant, providing the opportunity to compare the two models in both the physical and virtual worlds. This is an important connection between the works in the context of aura and presence — between the presence of these objects in both virtual and ‘real’ worlds.

[fig.15 VR experience display monitor in situ]

Early models of the room were based on low-resolution copies of a floor plan, and I was later provided a high-resolution copy of the original architectural drawings by OCADU IT technician and artist, Mike Steventon. After many weeks of working independently and struggling to acquire the modeling skills needed to recreate the room faithfully, I commissioned the help of a friend and neighbour, Shaun Kelly, who had professional experience in architectural visualization. Kelly took the floor plan and built up the geometry in 3ds Max, then sent me the project file to finish, populate and export to the Unreal engine. The plan was always to share this final architectural model with future students and faculty, for those who might want to use it for show planning or other creative purposes (an invitation was extended to all graduating students who wanted to contribute to the virtual component of the group show, but at the time most students were busy with their

own installation plans). This digital 3D model of the 49 McCaul St. Open Exhibition Space can be accessed at thoreaubakker.com/mfa3dmodels.



[fig.16 Raw 3ds Max file of 49 McCaul, modeled by collaborator Shaun Kelly]

Early proof of concepts featured the lions and other models, with basic navigation and tests of lighting/rendering. Ideas for the final experience included many lions all through the venue, rendered in the kind of materials that would be impractical to produce in real life. I conceived of the virtual exhibition playfully as almost a ‘virtual solo show’, where I would have access to the whole space and have the opportunity to highlight a number of digital sculptures I had been working on over the past year. In a class walkthrough with professor and Acting Graduate Program Director Kate Hartman, however, I was cautioned about placing virtual objects in spaces where students in reality had placed their work, thereby displacing their works in the virtual world. I agreed, and decided to ere on the side of caution, keeping the experience minimal, as it also more accurately mirrored the real life rendering of the lion sculptures in their physical location.

The VR gallery represents the final result and evolution of the research: from initial large, resource-intensive sculptures, to smaller, more accessible artist

multiples, and finally, to a technology (VR) providing the potential for *post-physical* artworks. The virtual space is presented not only as a tool for preparing or complementing art production in the 'real' world, but as a viable artistic platform for creating and experiencing entirely digital/virtual art.

Table and Comparison

The following table describes the three main exhibition components, along the variables of reproduction, aura, and presence, followed by paragraphs exploring the various points in context with each other. These interpretations are qualitative, based on my own perception of the process, work in situ, and informal conversations with viewers who experienced the work during the four-day exhibition.

**Table 1: Comparison of Exhibition Components**

| Artwork(s) | (Re)production | Aura | Presence |
|---|---|---|---|
| Toy Lions (Physical Sculptures) | -design based on a mass produced toy<br><br>-outcome was 2 digital/hand produced sculptures<br><br>-combination of machine and hand processes blur reproduction boundaries<br><br>-hand processes resulted in obvious flaws (blemished surface finish etc.) which reflected the hand-made<br><br>-large scale required considerable resource investment (time, materials) | -perceived (by self) as auratic, despite a lack of plinth and not achieving intended surface finish<br><br>-received an inquiry about purchasing the physical sculptures, indicating others perceived and were interested in the aura of the original artworks<br><br>-hand processes and imperfections added to the aura of the individually produced artwork<br><br>-received considerable feedback on physical sculptures | -achieved a prominent presence, due to positioning in a prominent location at entry of exhibit<br><br>-large footprint in physical space relative to other components also added to presence<br><br>-symmetrical duplication of the sculptures added to presence<br><br>-ever-present for duration of event<br><br>-low viewing angle likely undermined presence |

| | | | |
|---|---|---|---|
| | -compressed spraying of oil based paint and solvents in small space was dangerous to the artist | relative to all other components<br><br>-addition of light from projection mapping augmented presence and acted as a metaphor for aura that didn't end up making it into the exhibition (see image below on p.60) | |
| VR Exhibit (Toy Lions in Virtual 49 McCaul Model) | -same digital model employed for production of physical sculptures<br><br>-virtual lions exact digital twins (contrasting with differences of physical manifestation, finish, etc., see above)<br><br>-digital models (and therefore instantly reproducible)<br><br>-struggled to reproduce a render in the game engine that matched that of the 3D editing software<br><br>-more difficult to fix digital rendering issues: also featured digital flaws (rendering glitches) | -perceived (by self and viewers) as immersive, fulfilling the physiological presence component of aura<br><br>-VR experience contrasted with view on screen (flat)<br><br>-generated curiosity by some, lack of interest from others<br><br>-perhaps less auratically compelling while viewer is in proximity of physical sculptures (ie. video of Paris less interesting when visiting Paris)<br><br>-given lack of physicality, least auratic (in traditional sense) of all components | -featured dual (doubled) viewing on both HMD and large screen<br><br>-scale of lions in VR slightly smaller which reduced presence in the VR environment<br><br>-isolated models meant they received most of the focus in VR experience<br><br>-occasional surprise when viewer first realized the VR model was a mirror of the physical environment<br><br>-off in evenings, occasionally out of sight (inconsistent presence). |
| Artist multiples (and vending machine) | -multiples almost indistinguishable from each other, in series<br><br>-high quantity, with consistency of production/ reproduction<br><br>-fewer coloured casts (making relatively rare)<br><br>-carcinogenic pre- | -brightly coloured versions perceived as more auratic based on scarcity (based on observations of viewer behaviour)<br><br>-participatory purchasing and vending mechanism increased attention and interest<br><br>-ability for viewer to | -machine attracted much attention during interaction<br><br>-smaller objects less visually present than larger ones<br><br>-multiple stages of presence: on display, in capsules, absent after purchase |

| | | | |
|---|---|---|---|
| | mixed materials required breathing tube while working thereby posing risks to the artist | easily and cheaply purchase, combined with scarcity, seemed to enhance aura | -most variation between all components |

Table Comparison: Reproduction

The three components varied widely in regards to reproducibility, regarding both the (re)production process and results. Important to note is that none of the works would necessarily qualify as 'mechanically reproduced' — at least not in the way Benjamin referred to film and photography in his essay. The sculptures, while containing parts produced by CNC and 3D printing, required assembly by hand and considerable construction/finishing work. The master copy used to generate the artist multiples was produced on a high 3D end printer (qualifying as mechanically reproduced), but the molds, material mixing and individual castings, were all done by hand with no automated reproduction.

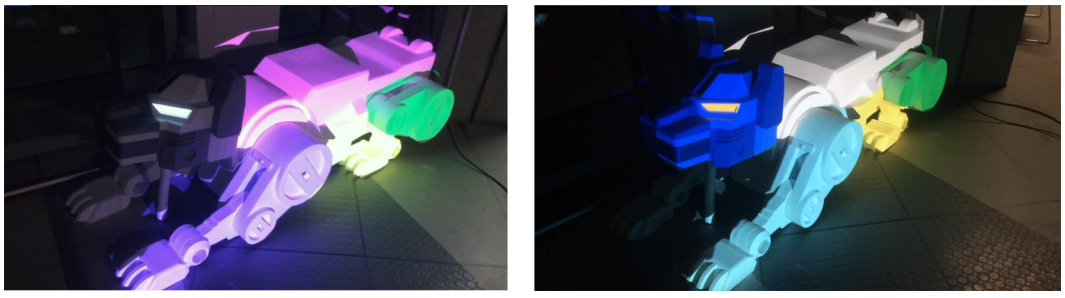
In theory, the digital nature of the VR component makes it the most reproducible, in that the file can be endlessly copied and shared around the world through a networked connection. Given a lack of a VR distribution channel, coupled with the need to have a robust computer to view it, however, the experience (in its original form) currently lies dormant on my computer hard drive. The irony here is that the most infinitely reproducible work is (as of now) the least experienced/disseminated.

Two other notable reflections on the reproduction process, include the unexpected difficulty in achieving the digital skills required to reproduce both the physical toy lion, as well as the virtual architecture, faithfully, and the dangers and toxicity of certain production processes, undertaken in pursuit of the physical sculptures and multiples.

Table Comparison: Aura

Given the ambiguity of aura as a concept, this section is qualitative, and acknowledged as relatively subjective. In the way aura is often understood in the context of Benjamin, I would rank the works auratically, with the sculptures being highest and the VR experience being lowest. This is based partly on the general reception of the works in the exhibition, and on the fact that I received an inquiry about purchasing the lion sculptures, while no such interest was expressed regarding the VR experience.

On the other hand, based on my view of aura having a physiological component (seeing light and sound as auratic, in contrast to the generally accepted emphasis on psychological perception), I was also aware of the light emanating from the large monitor and its draw on exhibition-goers. While the monitor and the content were obviously reproductions (the television was one of thousands, and the content was digital and therefore reproducible) the screen nevertheless caught the attention of many, leading them to inquire about the work. Similarly, the evening before the opening and defense, I was attempting a projection mapping setup using dual projectors on the lion sculptures with the help of my colleague Afaq Karadia. While we ended up abandoning this endeavour based on the environmental conditions being too bright, it resonated with the physiological component of aura.



[fig.17 Projection mapping tests on the Toy Lions with the help of Afaq Karadia]

One of the most interesting observations during the four-day exhibition, regarding the artist multiples, was that colour and perceived scarcity influenced value, even when the reproduction processes and materials were almost identical. The artist multiples were reproduced by mixing two equal parts of liquid plastic together, and rotating these around a mold while hardening. To a few of these mixes I added neon pigment, making them visually distinct from the others, and it was these coloured versions that seemed to appear the most desireable. I received a number of requests from individuals wanting me to save them one, and during the vending machine sale, cheers erupted when someone opened a capsule containing one of the rarer versions. An unknown variable here is to what extent these multiples were desirable strictly based on their colour, as opposed to the fact that their quantity was in fact limited relative to the larger edition of their white counterparts.

Table Comparison: Presence

As noted in the table above, the lion sculptures showed the most consistent physical presence of the three works. From the evening of installation to the afternoon of tear down a week later, the works remained in the same position for the duration of the exhibit. Their place at the entrance and their relatively large footprint gave them a strong physical presence, which made them stand out, being the component about which I received the most feedback.

The behaviour of viewers during the four day exhibition, however, suggested that the lions had a presence in the VR experience as well. At least a half dozen individuals knelt down to get a closer look at the models, physically

moving their bodies lower to the ground as if there was something actually there in the room. This is interesting, in that few people did this to view the physical lions. A possible explanation for this difference might be that the virtual lions were ever so slightly smaller (making them harder to see from a standing position), combined with the reduced clarity of the HMD lenses relative to our vision of objects in the physical world. Another explanation might have to do with perception of social norms possibly being reduced (feeling more alone in a VR environment where others are out of sight). Yet another reason could have to do with the sparseness of the VR experience, enhancing focus by stripping away all but the two lion models in the virtual space. This contrasted with the physical exhibition, in which there were many other artworks and lots of motion with people walking about. Insight was also gleaned by comparing the experience of viewing the VR experience through an HMD, vs. seeing the same model on a flat screen with a controller, in that the latter lacked the sense of scale (in relation to one's body) provided by the former.

The main edition of artist multiples contrasted with both the physical and virtual presence of the larger lions. The full edition was only installed the morning of the opening, placed in capsules during the reception, and sold out by the end of that evening. This meant that their presence was dynamic and temporally the shortest. Their presence was also likely intensified by being part of an edition of 40, and would likely have been much less present (given their small scale) had they been shown individually. Despite a lack of consistent presence, they were also unique in their affordance of tactility — being the only artwork of the three that individuals could pick up and hold in their hand.

**Observations**

The following are more general observations about aura, presence and process. These observations come from reading the literature, making art, and sustained contemplation on the two in relation to each other. These are certainly not entirely original observations — they are built on the ideas of those scholars featured in the literature review, who have already pondered the aura and technology at great length. What I have contributed is an engagement with their ideas in combination with making, and have come up with interpretations of phenomena that differ, to some extent, from both Benjamin and other Benjamin scholars.

<u>On Aura, Reproduction, and Presence</u>

One premise argued by this thesis, is that Benjamin's concept of aura is made up of, and can be separated into, at least two separate components. These include both longer-term psychological thoughts/beliefs about an object and the more immediate physiological/visual impact of their perception. The first is illustrated by examples mentioned in the contextual review (and expanded upon in Appendix C), about seemingly rational individuals bestowing meaning on mass-produced objects like pens and baseballs, based on some imbued essence or association. The second is illustrated by the sense of visual/spatial presence afforded by VR. By providing a sense of presence, despite being reproducible (and therefore lacking physical singularity), VR suggests a more immediate (physiological/perceptual) component of aura. It challenges Benjamin's claim that "even a perfect reproduction of a work of art is lacking in one element: its presence in time and space" (Zhon translation, par. 2, line 1), as unlike in an image or film, in virtual space, a (virtually) reproduced object *does,* in fact,

appear to be present (“here” and “now”). It shows parallax in relation to other objects and the environment around it, and, depending on the specific configuration, can even be interacted with.

A second premise, based on the previous examples, is that reproduction does *not* necessarily diminish the aura, but it is in fact representation, or *flattening* that does. The first half of this observation owes much to economist Hans Abbing’s suggestion (presented by Betancourt, 2006), that increased promotion through reproduction may *enhance* the aura. Real world examples of this are Jeff Koons’ large editions, works of art produced in an assembly line fashion. The high prices these aesthetic objects fetch suggest some auratic quality, yet they are clearly reproductions, almost identical to all others in a series of thousands. The second half of the observation (regarding flattening) is presented as a somewhat more original proposition, arising from my 3D focus and the observation that Benjamin’s examples of reproduced art are mostly flat. Towards the end of the 5th Chapter, Benjamin writes “To an ever greater degree the work of art reproduced becomes the work of art designed for reproducibility”(Benjamin, p.6, Zhon translation), primarily referencing the camera and cinema etc. In this context, the loss of aura through reproduction intuitively makes sense, but I argue in these cases it is *not* because of reproduction*,* but because of *representation.* The camera and the film capture a *representation* of a thing on a flat surface, from one fixed angle and lacking geometry. One cannot circle a traditional film or a photograph in the way we can an object, or interact with them in a dynamic way. Traditional artworks — in general — are not images, or screens, but objects. Even a painting on a stretcher has depth, many thousand times that of a photograph or print. The reproducibility of an object then, does not necessarily reduce the aura. What *does*, in general, is turning it into a flat

representation. It is not the lack of singularity (originality), but the lack of geometry that reduces aura.

Also important to note is, that the word *reproduction* covers a vast range of objects and processes. Reproduction can mean a photograph or a 3D print, and the two have tremendously different affordances. A photograph is relatively agile and quick — it can be captured and disseminated to the world in minutes. A high-quality 3D reproduction on the other hand, might take days — getting an accurate scan and post-processing data. It has become more difficult to generalize about reproduction, because reproduction is now so diverse, and Benjamin's model is therefore harder to defend today. Latour and Lowe (2010), support this observation, when they write about "the generic term 'reproduction'... [and the] intellectual oversimplifications and category mistakes [that] happened when Benjamin wrote about 'mechanical reproduction" (p.13).

A final observation, based on experiential learning, is that in the context of *presence*, not all technologies are equal. While 360 video and entry-level HMDs are still unique relative to more traditional mediums, they lack the essential component of positional tracking. This positional tracking is required for a high level of presence — integral to the physiological component I argue as contributing to aura. Without this positional tracking, there is little presence, and without this presence, there is no (digital/virtual) aura.

## Further Reflections on the Research Process

Please see Appendix B for further reflections on the oscillation between studio and text-based research, as well as on perceived learning differences between physical and digital processes.

## 6. Summary, Discussion, Implications, and Further Research:

### Research Summary

This support document has given an overview of my MFA research, including theoretical/philosophical exploration and artistic production. Walter Benjamin's ideas on the mechanical reproduction of art — *aura* in particular — have served as a set of conceptual lenses through which the potential of emerging 3D technologies are considered. These same lenses have also been inverted, using the same technologies to attempt to disambiguate Benjamin's concept of aura. Emerging from the exploratory, inductive research, are first and foremost a series of artworks. These include digital maquettes and material explorations, sculptures exhibited in both physical and virtual spaces, and limited edition, inexpensive artist multiples, sold on the evening of the exhibition opening. Also emerging from the research, are observations on the conceptual and practical components of the thesis, as well as general reflections on the research process and relationship between art and academia.

Through a combination of undertaking research, producing these artworks, exploring the literature, and philosophical inquiry, a number of small claims have been made on the topic. I have observed that it is not necessarily the *reproduction* of photography and film that diminish the aura, but the translation of three-dimensional objects into two-dimensional (flat) *representations* of those objects, lacking geometry. In addition, I have proposed that the presence offered by VR emphasizes a physiological component of aura, and have challenged the original/reproduction aura binary as it is commonly understood.

**Discussion**

As mentioned throughout this paper, Benjamin has received considerable attention from established researchers across many disciplines. Publication after publication has explored his corpus, and his essay on the mechanical reproduction of art is well known and frequently cited. As an art student at the Master's level, contributing original ideas to this body of intellectual work is a tall order and my knowledge claims are thus presented softly, and with a few disclaimers.

The first is that scholars more established than I, (notably McIntyre et al. 2004, Bolter et al. 2006), have already explored the connection between VR, presence and aura, and additionally, these scholars have come to very different conclusions from mine.

Given the ambiguity of aura, however, I believe alternative interpretations can only serve to enrich the dialogue. The subjectivity of aura makes it difficult (if not impossible) to definitively assess an argument as "correct" or not, and I respect Hansen's idea of aura as a "…cluster of meanings and relations that appear in Benjamin's writings in various configurations…" and her view of the "…conceptual fluidity that allows aura to become such a productive nodal point in Benjamin's thinking (p. 339).

Furthermore, I contrast my ideas with those of other scholars for the sake of clarity, but am indebted to, and deeply respect their work. My distinguishing argument is based on the perception, that in general, the "Benjamin binary" regarding aura (original vs. reproduction) is an oversimplification. An example of this is when Bolter et al. (2006), acknowledge that while they are "prevent[ed]… from simply equating mixed reality with aura and pure virtuality with the rejection of aura" (p.24), it is still "the physical place, [of mixed reality] which is unique,

lends uniqueness to the experience and [thus] may revive the possibility of evoking aura" (ibid). This re-emphasizes the unique vs. reproduction binary mentioned above — something through my research I have come to question.

Many researchers emphasize the psychological side of the concept of aura, such as when MacIntyre et al. (2004) present aura as "describ[ing] the cultural and personal significance that a place (or object) holds for an individual" (p.1). I believe this definition undermines the importance of the visceral component of aura and its variations, and in contrast, am emphasizing the visual/spatial presence of an object's aura in VR; based on the medium's unique execution of three-dimensionality.

The claim here is that the relationship between flat representations and physical or virtual geometry, is as significant as the relationship between originals and copies in the context of diminishing aura, if not *more* so. This claim challenges both Benjamin's concept, and those who accept it at face value, attempting to apply it to current technology. Let me clarify that this challenge is dependent on context — in an age when the mechanical reproduction of objects was much less developed than of film and print, the logic of Benjamin's model may well have been sound. In 2018 however, when 'presence' is not limited to physical reality in the same way, our ability to physically, digitally and virtually reproduce objects questions the model as presented by Benjamin in 1936.

Although I may have done so uniquely, critiques of Benjamin's concept of aura have been undertaken many times before, by many different thinkers. The concept has frequently been dismissed as ambiguous and/or naive, raising the question of why it is even still being cited. I believe it is the *optimism* in his ideas about the democratic potential of reproduction, that has resonated with so many and endured for so long. The sustained interest in aura and its loss, at its core, is

about human value, capacity, perception and access. It's also about the power of technology to inspire and enlighten — and herein lies the most exciting part of my argument. If the presence afforded by VR provides a physiological component contributing to aura (unlike photos or video), it suggests a reduction of the division between the physical world and our technologically mediated experiences. This reduction has many intriguing implications, a few of which will be covered in the following sections.

**Implications**

This section will briefly outline opportunities for the art world (including artistic, academic and commercial stakeholders), as well as for the individual practicing artist.

Implications for the Art World

The most immediate implication emerging from my argument, is the potential for VR based experiential learning in the perception and production of art. VR is already being used for training in disciplines from mining to medicine, and is especially well-suited for arts related appreciation. This is because, generally speaking, fine art is a visual medium. In art schools, museums, and both public and private galleries, we are rarely — if ever — allowed to *touch* the art. In this sense, sluggish developments in the field of haptic technology are less of an issue, as the primarily visual emphasis of VR parallels our real-world constraints.

In 1937, (around the same time Benjamin's seminal art essay was published), Picasso painted *Guernica,* one of the artist's most important works. So well known is the work I need not even describe it; most readers of this thesis

will have a mental image of the work already and some sense of the story behind it. What I will mention, is the *scale* of the work: at almost 4 x 8 meters, it is *very* large. The way many of us have come to know the painting is through a printed page or a computer screen, and I hypothesized that the experience of viewing this work in VR would provide a better sense of scale relative to my body. I sourced a high-resolution image on Google and imported it into the Unreal Engine, scaling it to a height similar to that of the original using images with humans as references. I stood 'there' in my Oculus Rift, viewing the painting in virtual space, and was surprised at the impact the experience provided. This quick and simple set up allowed me to look at the work in a very different way — a slower, more focused looking and exploration with my eye. These kinds of experience in VR arcades, for example, could provide similar opportunities to others, who lack the resources or time to travel.

[fig.18 "Installation view of Picasso's *Guernica*. Photo by Joaquín Cortés / Román Lores, Courtesy of Museo Nacional Centro de Arte Reina Sofía." accessed: https://www.artsy.net/ article/artsy-editorial-guernica-picassos-influential-painting in Feb. 2018]

[fig.19 3D still frame capture of my Unreal virtual environment sketch, featuring .jpeg of Picasso's Guernica in Unreal Engine. Image access: http://www.museoreinasofia.es/en/collection/artwork/guernica in March 2018]

As powerful as these tools are for experiencing alternate realities, they are equally, if not more powerful, for creating art and design. My experience as a 3D generalist over the years, has brought me in contact with dozens of 3D software packages, yet none have been more intuitive than working in VR creation applications. Rather than using complicated hotkey combinations to orbit a viewing angle, all I have to do is move my head to the side. Rather than moving a mouse on a 2D plane, I simply move my arm as if I was holding the tool. Objects float in the air, free from gravity, and in VR, I can scale the model of a human as large as a house, to sculpt an ear as if it were the size of a refrigerator. These intuitive tools can reduce barriers for those with little technical training, allowing them to create more, with less frustration. In this sense they could be excellent introductory learning experiences, giving people a taste of what CAD tools have to offer.

The third stakeholder here (besides arts appreciation and education) is the market, and while VR in this context is a little more complicated, there are implications here, too. A collector might want to keep a multi-million dollar work locked in storage to avoid a loss of investment through sun damage, without necessarily wanting to deprive the world of the enjoyment of the work. Collectors, in this case might follow the lead of Dutch art collectors George and Ilone Kremer, and their VR experience, featuring digital reproductions of 70 paintings from their collection (Siegal, 2018). Even in the absence of any altruistic desire to make a work accessible, enhanced public interest in a work may increase its financial value.

Implications for the Individual Artist

Of the many implications of VR for the practicing artist, two come to mind. The first is practical, and concerned with constraints, based on the reality that studio rental, materials, and storage are all expensive. In VR, neither the scale of a work nor storage are restrictions, allowing an artist to create work (virtually) at any scale they desire. While the same could be said of other digital tools like Zbrush and Photoshop, neither of these software packages provide the sense of an artwork's scale, relative to one's own body. VR is thus a revolutionary tool for an artist, giving them the chance to see what a work might *feel* like before being actualized. Even for the artist who plans to work exclusively with physical materials in the long run, VR can serve to visualize work without as much investment. This is true for the sculptor, sculpting in virtual clay, or for the painter who imports small thumbnail sketches and views them at the scale they eventually plan to paint, as well as for the post-physical artists working strictly in the digital domain.

A second implication is a liberation that can come from focusing less on the market, not worrying about whether or not someone will buy one's work — as there is no 'physical' thing to buy. VR is certainly not unique in this regard (the same can be said for mediums like performance, and video art), but is particularly interesting for more traditional object makers, like painters and sculptors. On the surface, this idea of making art without thinking about money may seem utopian, and there is certainly nothing wrong with wanting to have a career doing what one loves. I would imagine many artists share the dream that I did, up until very recently; the dream of waking up every morning and producing work in a studio that is then purchased by some as of yet unknown wealthy collector, or showing my art in an architecturally intriguing, well-lit, spacious and air-conditioned venue, where sophisticated people slowly contemplate and discuss my work. Few artists, however, will be able to achieve this vision of success, and some may feel tempted to give up on making art. This is where the freedom from commercialization comes in, as the enjoyment of learning and creating art, is inherently rewarding on its own.

The implication here, then, is to emphasize *art as idea* — for learning, creating and communicating knowledge about the world around us. Success doesn't have to mean getting one's work in a prestigious institution, or being collected by high-status, wealthy collectors. Real success is the about integrity and commitment to one's work, regardless of acclaim and/or commercialization. VR enables an incredible new experiential, post-physical platform, potentially de-emphasizing the importance of a physical, acquirable art object and thus changing the incentives.

## Future Research

There are dozens of interesting avenues for further research, but I will limit this section to one: the development of a non-commercial, open source repository of digital artwork, primarily three-dimensional, prioritizing the reduction of technical barriers to access and emphasizing technological cross compatibility. The emphasis of the project will be on documenting artworks for aesthetic enjoyment and philosophical inquiry, and the research will focus on the needs of stakeholders, as well as possible workflows to efficiently digitize and disseminate the works. A talented artist and friend, Patrick Cruz, is an example of the kind of artist who the repository could showcase, given his large bodies of sculptural work and painting installations.

[fig.20 images showing work by Patrick Cruz. Titles unknown. Work on left, October 2015. Work on right, May 2017 Accessed from artist's site: http://www.patrickcruz.org/ in Feb. 2018]

## Conclusion

I acknowledge the many researchers who have explored the ideas referenced in this thesis, and further acknowledge that the general connection between Benjamin, aura and presence, has been thoroughly discussed across numerous fields of endeavour. My thesis has attempted to synthesize available knowledge, and to make a contribution, through a research-creation approach,

that includes the production of artworks. In this thesis I have proposed that the presence offered by VR, emphasizes a physiological (in addition to the more commonly claimed psychological) component of aura, and I have challenged the original/reproduction aura binary, as it is widely understood. I have done this by proposing that it is not necessarily the *reproduction* of artworks that diminish their aura, but the translation of three-dimensional objects into two-dimensional (flat) *representations.* These ideas have implications for the art world and artists — implications that are ultimately positive and exciting on a number of levels.

The combination of VR and presence has served as an essential conceptual tool, in the reassessment of Benjamin's model and the interpretations of other scholars. One thing I would like to make clear, however, is that I am not championing VR as a magic bullet. VR is but one of many technologies, extending our capacity to create and consume three-dimensional art.[7]

The connection between the prerequisite of presence within VR, offers a unique opportunity, excellent for applications that require presence and a sense of scale relative to one's own body. Let us not forget, though, that Benjamin celebrated film and photography *despite* their lack of 'presence', and keep this in mind when looking at the potential of new technologies.

A final and fascinating example of aura, is embedded within the institutional context of this document. It was recently announced that physical copies of theses in graduate programs at OCAD University, will no longer be printed by default. A thesis is not a work of art, and the digital copy contains the same information. It is curious, then, that so many students — myself included —

[7] Facebook, for example, recently announced the ability to embed 3D content in posts. using the '.gtLF' file format, a format the Kronos group claim as being to 3D, what Jpegs are to Images and what Mp3s are to music (gltf, 2013). This development is surely a breakthrough for the dissemination of 3D work online, regardless of presence, and is already more accessible than premium VR HMDs.

still desire a physical copy of our thesis to be stored on the shelf in the Graduate Studies office. There is something about a specific ‘thing’, in a specific and meaningful space, that is special, not just in the context of art, but in regards to any kind of object.

This time last year, reading in the OCADU studio in Florence, I came across the following quote, one that has inspired me ever since:

> …research (and not only artistic research) often resembles an uncertain quest, in which the question or topics only materialized during the journey, and may often change as well. Besides not knowing exactly what one does not know, one also does not know how to delimit the space where the potential answers are located. (Borgdorf p.56)

Aligned with this observation, I have found the final outputs of my research to be surprising and liberating, shifting my values and producing ideas I would never have expected. Regardless of what my future in the art world and/or academia brings, I am grateful for this opportunity and hope this research will serve to inform and inspire others.

Thoreau Bakker, May 1st, 2018.

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## Appendix A: Peripheral Methods

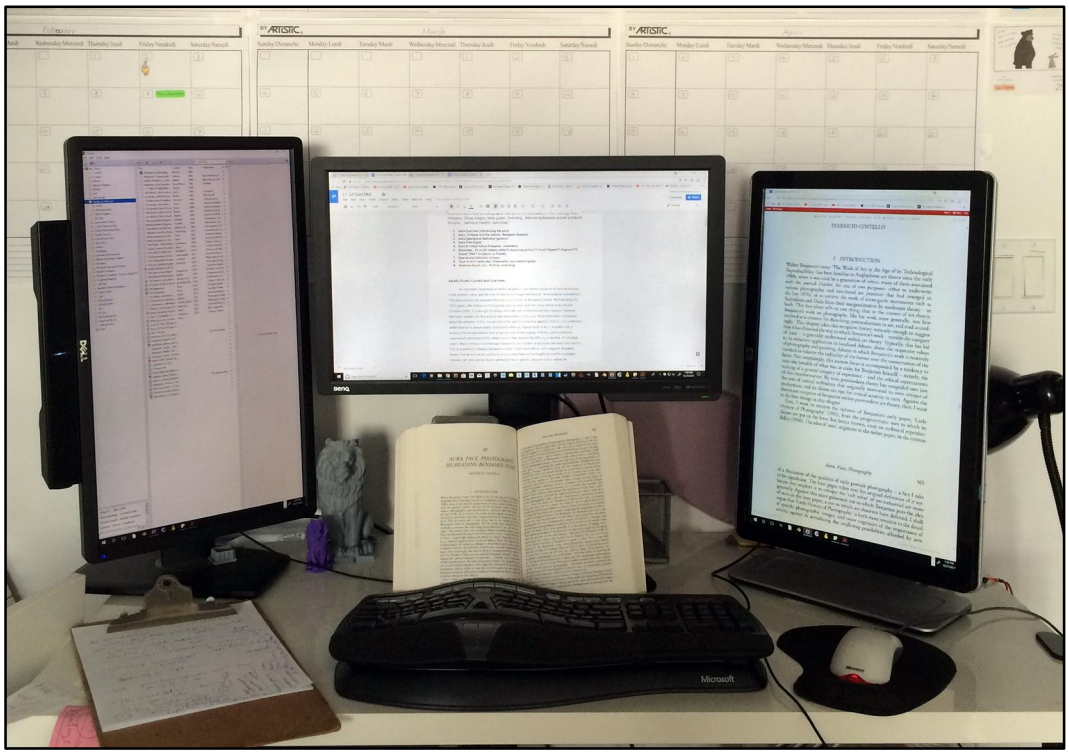
The following small sub-sections were originally located in chapter 4 (Research Overview), and mainly involve reflection on the textual component of the research process.

Reading / Writing / Organization

A 'picture may be worth a thousand words', but those words can be subjective. Without a didactic panel describing an artist's intentions for a contemporary artwork, for example, it's possible — almost guaranteed — that different viewers will interpret the work in different ways. This speaks to the importance of words (either through speech or text) in the context of art, clarifying the ideas and intent of the artist. For methodological clarity then, I will briefly highlight my reading/writing process here.

Searches generated vast amounts of information, embedded in a variety of formats including both purchased and borrowed books, pdfs, saved HTML documents, screen captures, photocopies and photographs of books. I diligently collected citations and ideas as they came to me while reading, in text transcriptions on my laptop(s), PC, and phone in audio notes, scraps of paper and in many sketch books. A major breakthrough was my adoption of *Zotero* software — the iTunes of .pdf files — introduced by Glen Farrelly, while working as a research assistant with Dr. Martha Ladly. This software helped frame and consolidate my pdf collection, proving essential to a broad literature review of Benjamin scholars and the emergence of a focus on aura-VR connection. Despite Zotero being able to ingest any media format (personal notes, screen captures etc), these felt conceptually walled off from official/traditional research

publications. For this reason, I have added little of the non-official academic work into the filing system, and much of that data remains orphaned across computer hard drives, binders and random pieces of paper.




[fig.21 One of many workstation configurations]

Text Alternatives and Accessibility Technologies

The extensive searching, downloading, organizing and synthesizing of texts, has led to frequent eye and wrist strain. Because of this, over the past few semesters, I have experimented with accessibility technologies, including Rapid Serial Visual Presentation (RSVP) and its variants, text to speech and speech to text applications. I have also experimented with multiple monitor configurations, only to take breaks from the screen and return to paper. The oscillation between consuming text through paper, digital, audio and other applications, influenced divergence and organizational strategies and is thus being noted here.

Other Data Capture

While working in software and on art production, I captured thousands of screen captures and photographs. This substantial collection of images and video, while yet to be cataloged in full, will serve as an informative bank of documentation on the research activities. See following URL for a small, initial sampling of this documentation: thoreaubakker.com/mfa

## Appendix B: Process Reflections

This section was initially located in in chapter 5 (Results: Outputs and Observations), and contains reflections on research methods and processes.

On the Research Process:

The following observations are reflections on the research process. To defend the importance of sharing these insights despite their divergence from the central research topic, I present the following passage by Gray and Malins. They suggest that: “knowing how to research is perhaps much more valuable than finding out a particular thing, gaining a particular piece of knowledge, particularly [as]‘Knowledge keeps as well as fish!’ (anon)... [and therefore that] the most important thing is meta-knowledge” (p.17). As a graduate student, I have been learning how to research *while* conducting it, and have attempted to be mindful of this fact. The following are a few of the important challenges I’ve faced.

Oscillation Between Methods: Conceptual Benefits, Logistical Challenges

When sitting at a desk typing, one cannot be in the studio making, yet both of these activities are essential to research in the arts. While the written word is often prioritized for assessment — as ideas expressed through words are less subjective than those expressed through artworks — the making process is also essential and can require considerable amounts of time. A possible concern here is the allocation of time and focus, and the risk, for lack of disciplinary specialization, of becoming a ‘*Jack [or Jill] of all trades, master of none’*. Bradfield (2016) points to a “pervasive value-based concern: that art research cuts it neither as ‘good’ contemporary art nor as ‘relevant and rigorous’ Research“

(p.64), for example, echoing a recurring theme I have frequently come across while reading about arts-related research.

Despite a personal familiarity with this struggle of oscillation, I also see another side of that (valid) concern. Practitioner/researchers, while perhaps unable to compete with either contemporary artists or traditional academic researchers in their own domains, have a unique opportunity to *bridge* these two disciplines (and others). In this sense, the loss in knowledge as *'Jack [Jill] of all trades'*, is offset by *'the whole* [being] *greater than the sum of its parts',* both in the mind of the researcher, and between the three disciplines combined .

Even when this metaphor is accepted as theoretically sound however, real-word logistics are another matter entirely. In my own experience, one of the greatest challenges was neither making nor writing, but switching between these disciplines — switching between research methods and mindsets. Deadlines would alternate weekly, with document progress updates/presentations due one week and artwork/prototype updates the next, meaning I would often spend a week in the studio, then a week at my desk. This type of oscillation between methods also required a shift in 'mental sets', an idea of interest to psychologists for many decades (Jersild, 1927). Similarly, recent psychological research has shown clear performance deficits in short-term switch tasking (driving while texting for example), raising questions about the influence of longer-term activity oscillation (Monsel, 2003),

An initial study involving the brains of those learning braille while blindfolded illustrated "...the potential for the human brain to rapidly and dynamically reorganize itself," (How the Brain Compensates for Vision Loss, Pascual-Leone, 2008), and showed that "even in an adult, the normally developed visual system quickly becomes engaged to process touch in response

to complete loss of sight" (Ibid). This same researcher contributed to a more recent and cautionary editorial, addressed to those experimenting with Transcranial Direct Current Stimulation. In this publication, Wurzman et al. note that "Enhancement of some cognitive abilities may come at the cost of others... [and that] Cognition involves functional networks, with different components (or combinations thereof) responsible for different functions" (p.1).

While this second example is admittedly confounded by the electrical stimulus, the underlying idea that "enhancement of some cognitive abilities may come at the cost of others" is worth considering (ibid). The observation here is that the switching of mental sets and tasks and the oscillation between disciplines, may be an especially important methodological consideration in Research-Creation — a discipline with an exceptionally broad range of methods.

Learning Roadblocks: Physical vs. Digital

I have recently observed key differences between learning physical and digital processes, especially in regarding roadblocks and possibilities for alternate routes. Physical methods are often more flexible and intuitive, and there are many places one can go to seek help from others — a store or a workshop at school etc. Even when working alone, workarounds to a problem can be found relatively easily. It might mean results produced are a little disappointing, but a second attempt is often much better. With physical processes, one can learn iteratively by trial and error — if this glue doesn't work, purchase a different kind of glue, if the finish of sculpture is rough, sand it again.

On the other hand, roadblocks in the digital domain can be paralyzing — hurdles that cannot be overcome without expert help and information. Even knowing how to approach a task is intimidating. The variety and complexity of

digital software packages, means there are often few people know them well enough to help troubleshoot problems.

The emphasis on the digital/virtual, emerging from my research, has meant working in extensively with digital tools. I have found that learning them can be excruciatingly slow, even when having access to video tutorials and excellent equipment. Unlike physical work, where I can go and ask for help in person, if I get stuck while learning software, there are very few people to turn to. I will post screenshots and question in online forums, for example, but these questions often yield only one or two brief responses — if any. This likely has to do with a combination, of scarcity of time and the distractions/anonymity of the internet. For all the power and flexibility software packages offer, they also present unique challenges in the context of learning.

**Appendix C: Authenticity: Pen, Ball, Bottle, Belief**

> ...any object has something of the gizmo about it, for in proportion as its practical instrumentality fades it becomes susceptible of cathexis by a libidinal instrumentality. This is already true of the child's toy, or of any stone or piece of wood as perceived by 'primitives'; as we have seen, 'uncivilized' people can fetishize a simple pen, and 'civilized' ones can do the same with absolutely any abandoned mechanical object or ancient artefact. (Baudrillard, p.117)

This section takes a step away from art, to present examples that more clearly demonstrate the 'provenance' component of aura. The examples in this section are *not* produced by the hand of a great artist — they are often generic, mass produced objects, that are somehow imbued with tremendous value by human beings.

The first example is the curious tradition of American presidents, signing legislative bills with multiple pens. Barack Obama signed the ('Obamacare') health bill with 22 pens, and Lyndon Johnson with 75 pens when signing the Civil Rights Act in 1964 — with one of the first of these going to Martin Luther King Jr. (Suddath, 2010). The practice is an "obscure Washington tradition", in which the pen used to "sign historic legislation itself becomes a historical artifact" (Ibid. Third. par). Suddath notes that, once given away, some of the pens "wind up in museums; others are displayed proudly in recipients' offices or homes…. [and points to how]... John McCain vowed to use the same pen given to him by President Reagan to cut pork from the federal budget"(Ibid, para 5). As already mentioned, a pen is a mass-produced object but is imbued with certain value based on the symbolic/historical association. As a mental exercise, imagine that pen was dropped on the floor, with other pens from the same series or

manufacturer. In this case, devoid of any markings, it would be indistinguishable from the rest. Similarly, imagine the pen was lost. What would stop an individual from merely replacing it and lying about its provenance? This is a powerful test of the psychological metric of aura and authenticity.

A similar example is the 'crown jewel' of sports memorability — Mark McGwire's 70th home run ball, purchased in 1998 at auction by Todd McFarlane for 3 *million* dollars (Grunwald, 1999). The ball bears no signature, and except for a few scuff marks, would appear identical to every other ball. A decade later however McFarlane describes how the purchase was worth it, if only for the doors it has opened in industry (Grunwald, 2007). People are fascinated by the ball, and fascinated by the man who purchased it.

A final example is Bill Koch (the third and less well-known billionaire of the infamous Koch brothers), a collector of many things, including very expensive rare wines. When he saw that Kip Forbes (son of Malcolm Forbes) had purchased a bottle of wine at a Christie's auction for $150 000 that had been bottled by Thomas Jefferson, Koch felt he had to have one in his collection, too. He tracked down a rare seller who had four Thomas Jefferson bottles, and bought them all for $400 000 (Alfonsi, 2017). For a long time, he was happy with his purchase, and took pride in the authenticity of the bottles — bottles he had no intention of ever opening. At some point however, he contacted the Jefferson estate, and found out the bottles were fakes. Jefferson had not signed his own bottles and additionally the signatures on the bottles labels did not match Jeffersons. On further inspection, Koch found that hundreds of bottles in his collection were fake, including one bottle supposedly bottled in 1870. They discovered the bottle was fake after a chemical analysis revealed Elmer's glue on

the bottle's label — a product that hadn't even been invented at the supposed time of bottling.

In all three of the preceding examples, provenance, or the back story, played a significant role in an individual's perception of the 'aura' of an object. It had to have been provenance/psychological perception, as in all three cases the objects were either forgeries or identical to others in a series. One would assume that high ranking politicians and billionaires are rational people. How else would they achieve power, and make or keep wealth? These examples hint at the tremendous power of belief in an object, regardless of any measurable authenticity or visceral/physiological experience.

**End of Appendices, End of Document**