

https://dspace.org/

Avenues of authenticity a two principled approach to the assessment of authenticity in computer-generative art

Martalas, Chariklia

2022
https://hdl.handle.net/10539/34071

Downloaded from a DSpace repository. https://dspace.org/

Avenues of Authenticity

A Two Principled Approach to the Assessment of Authenticity in Computer-Generative Art

Chariklia Martalas

1387014

Date of Submission: 15/03/2022

A Research Report Submitted to the Faculty of Humanities, University of the Witwatersrand, Johannesburg, in partial fulfilment of the requirements for the degree of **Masters of Arts in Philosophy** (by coursework and research report)

Supervised By Professor Samantha Vice



Figure 1 Harold Cohen "Coming Into a Lighter Place" (1988)

Abstract

We currently do not have a culture surrounding *Computer-Generative Art (AI-art)* that allows us to engage with this new artistic frontier in a way that allows for nuance and sophisticated responses and enriching personal experiences. This means that this artistic practice is continuing with little reflection on what it means. My aim is not to foretell what will come from meaningful engagement with Computer-Generative Art but rather ask what is needed for this kind of engagement in the first place. The answer I believe is that CG-art must be authentic for authenticity is what opens up a space of trust between the audience and the artwork for deeper engagement. Therefore, my question is-*how can Computer-Generative art be authentic?* My answer works on two levels both centred around the concept of the cyborg relation and the artistic-process of Computer-Generative art. On one level Computer-Generative Art can only be authentic with the right kind of artistic-process which is understood as the cyborg relation—an intertwining of human and machine artistic capacities in a unified-artistic-process. On the second level, the artistic-process and cyborg relation must be represented accurately to the audience. Both levels of authenticity come to form the two principles needed for engagement with Computer-Generative Art. They are the principle of method and the principle of representation.

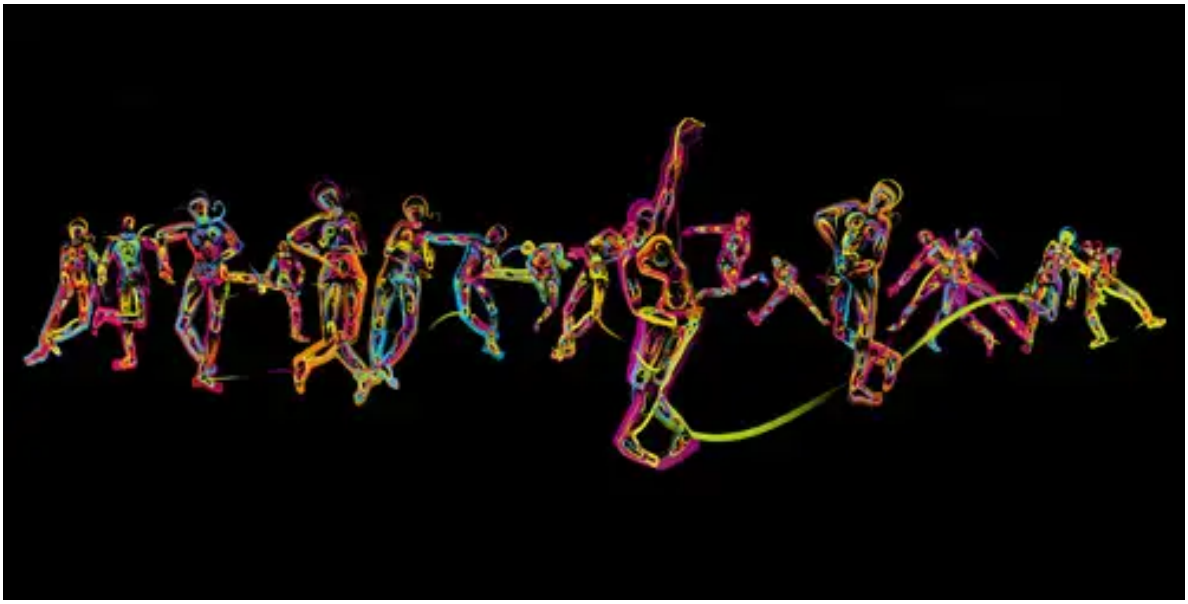


Figure 2 "The Dancing Salesmen Problem" from The Painting Fool's series called "Paint Dances", programmed by Simon Colton

Table of Contents

Introduction *5*

Part I: Preliminaries **8**

(I) Defining CG-art 9

(II) The Standard Artistic Process 12

(III) Conceptualising Authenticity 15

i. Defining Authenticity 15

ii. The Authentic Standard Artistic Process 17

iii. Authenticity and Engagement 19

Part II: The Cyborg Artistic Process **22**

(I) Defining the Cyborg 23

(II) The Cyborg Artistic Process 25

(III) AARON and The Painting Fool 28

Part III: Authentic Cyborg Artistic Process **31**

(I) Considerations for the Three Stages 34
i. The True Reality 34
ii. Randomness 36
iii. Subjective Evaluation 39

(II) Implications for Other Concepts 43
i. Autonomy 43
ii. Originality 46
iii. Authorship 50

Part IV: Authentic Representation **54**

(I) Misrepresentations and the Humanity Gap 55
i. Anthropomorphisation 55
ii. The Humanity Gap 59

(II) Authentic Representation 61
i. Two Diverging Routes 62
ii. Solving the Humanity Gap 66

Conclusion: Two Principles *70*

Reference List-Sources *73*

Reference List-Artworks *76*

Avenues of Authenticity:

A Two Principled Approach to the Assessment of Authenticity in Computer-Generative Art



Figure 3 Harold Cohen and AARON's "040502" (2004)

One aspect of art that makes it remarkable is its capacity to mirror our present and make us think with greater consideration about our future. In this light, knowing how we share our reality with machines of all kinds, it is not surprising to know that technology has entered the realm of our artworld. However, its arrival is not merely as a tool under the firm control of the artist. Instead, it arrives as a participant with its capacities and independence allowing it to make its own genuine contribution. We are in the domain of AI-art, which mirrors the age we live in. We live in a world where technology adds, and in some cases enriches, the workings of our lives. It is because of this that we are becoming intertwined with it. However, there are strong supporters of the view that some areas of our human reality must be preserved for humans only. To include machines as artistic creators would just be wrong. I want to show that the fear of AI-art is based on misunderstandings about the nature of how these artworks are formed. It is largely based on unrealistic ideas about what AI is, rather than grounded in actual AI practices and processes. Let me quickly remark that I will mainly be referring to AI-art by its other name *Computer-Generative Art (CG-art)* , as this name is predominant in the literature and among the artists who practice it.

CG-art can be described as a new artistic frontier, since machines are included in our creation of art in a way that forces us to question what we have always accepted about our artistic practices. CG-art calls us to question our relationship with machines as well as our relationship to the activity that we use to define our humanity—creating art. Furthermore, CG-art is a frontier that is not hypothetical. It is an empirical fact that CG-artworks exist and that they are most of the time aesthetically pleasing. What is also undeniable is that there is distrust and suspicion surrounding CG-art as well as excessive romanticisation. If we think we have answers we would probably find them unclear and unhelpful.

What this points to is the necessity for us to have a way to evaluate CG-art and consider it both fairly and carefully. It is essential that when engaging with CG-art we are vigilant to its falsities but also open to the contribution it can make to art as a whole and to us as the audience. If we are going to tackle these questions we are obligated to engage with CG-art properly. Rather than engaging superficially, our engagement must be nuanced enough for greater understanding. The investigation that will preoccupy this essay, is centred on finding what is needed for us to engage with CG-art in a meaningful way. What is the quality of art that opens up engagement between the artwork and the audience? I believe the key lies in the concept of authenticity. Authenticity, following Charles Guignon, has two levels. It can refer to an "original" as well as to what is "faithful to an original" (Guignon, 2008: 277). Crucially, authenticity is determined by an entity's source and origins. The main condition for authenticity is that it does not involve deceptions, distortions or anything that can be considered false. In terms of art, the significance of authenticity is that it allows us to have strong responses to artworks since we have the assurance that what we are engaging with is not manipulating us. Therefore, it seems that the obvious question is: *Can AI create authentic art?* However, we can make a hypothesis that since AI can create empirically undeniable artworks presently, it is not implausible to think authentic AI-art is realisable. It seems that all we need is to know how to realise it. This is the more interesting question to pursue: *How can a computer create authentic CG-art?* We are now asking for more than a hypothesis, we are asking for a method.

I am concerned with how we can come to engage with CG-art in a way that leads to more nuanced and sophisticated evaluations, which then enables us to have insightful and well-considered understandings. I believe that the key that unlocks this deeper engagement is that the CG-artworks are authentic. To argue for this, I will present a theoretical framework that aims to examine and explore the relationship between authenticity and CG-art. I have decided to construct a conceptual model instead of describing and analysing specific AI-art examples. My conceptual framework works on two levels. The first level is centred on how CG-art is created and so is focused on the CG-

artistic-process. The second level is centred on the representation of CG-artworks and the CG-artistic-process itself. I have used general conceptualisations to create an account that can be applied to all AI-art that adopts the same kind of structure in respect to their artistic-process. My framework then is cross-medium. Unfortunately, due to limited space, I have to treat both the performative arts as well as AI-interactive arts as special cases that I cannot engage with.

Another thing to note is that my conceptual framework is grounded in the present realities of AI-art and what the machine's capacities are at this moment. Nevertheless, my framework also tries to leave room for the inevitable advancement of machine sophistication and complexity that is soon to come. I want my framework to be able to accommodate future developments while still having its foundation as the present circumstances of AI-art. My desire is that my theoretical framework can add to the unprecedented project of considering AI-art carefully, with fair but critical eyes. My aim is that my theory contributes to answering the question of how to determine the significance of CG-art. I believe I will do this by offering the first step— I will show how we as a society can begin to engage with this new artistic frontier in a meaningful way.

I believe that it is useful to map out the road ahead. My preliminary discussion will define and explain CG-art, the general structure of the artistic process and authenticity. It will also explain the importance of authenticity for our engagement with art. At the core of my conceptual framework is my conception of the CG-artistic-process. For me, the CG-artistic-process needs to be known as constituted by a cyborg relation. This is because the process itself is an intertwining of human and machine in respect to their capacities, limitations, and artistic potential. I am committed to a process-orientated outlook throughout my project and move on to define how this cyborg process needs to be enacted in a particular way to be considered authentic. I will be outlining the elements of the authentic CG-artistic-process and will explain in more detail how they work. This includes looking at the implications of this authentic CG-artistic-process when it comes to a broader view of authenticity that incorporates interconnected concepts such as authorship, originality, and autonomy. My last section tackles representations of CG-art. I will argue that CG-art requires its representations to be authentic in order for proper engagement to be possible and that the main representation that is an obstacle to our engagement is anthropomorphisation of CG-art. Finally, I will engage with a formalist objection, which rejects my process-orientated approach of framing CG-art. I will show how formalism can inadvertently lead to inauthentic representations. My aim is that through this exploratory process of looking at both levels of authenticity— *origins as process* and representation— I will have constructed a theoretical framework that acts as a map for a greater engagement with CG-art.

Part I

Preliminaries



Figure 4 A portrait from The Painting Fool's Amelie Progress Project programmed by Simon Colton

Defining CG-Art

When defining CG-art it is helpful to place it within the context of the artistic family it belongs to, which would be the *Generative Art* family. What distinguishes this family of art, according to Philip Galanter, is that generative artworks are not defined by a common style, content or even medium. In other words, you cannot group generative artworks as belonging together by their aesthetic characteristics. Rather, Generative Art is process-orientated and is defined by the way the artworks are created instead of how the artworks have resulted. Generative artworks are defined by the artistic practice that produces them (Galanter, 2016). As McCormack et al. note, the defining feature of the Generative Art artistic-process is that the system that the artist brings into the artistic-process has some degree of independence from the artist herself (McCormack et al, 2014). We can now define CG-art: *as a practice that produces artworks that have been created by an artistic-process where the computer program, for at least some portion of the process, is not under the direct control of the programmer* (Galanter, 2016; McCormack et al, 2014; Boden & Edmonds, 2009).

The machine's independence[1] when engaging with the artistic-process is the defining feature—though how the independence of the machine is characterised is contentious (Boden & Edmonds, 2009). This ensures there is a great variation between different CG-artworks in terms of how much independence the computer possesses when creating. Margaret Boden and Ernest Edmonds take a more general approach for they argue that what is important is simply that "personal control is deliberately diminished" and that "relatively impersonal processes take over" (Boden & Edmonds, 2009: 29-30). McCormack et al. argue that the degree of machine independence is relative to the artist/programmer[2]. In general, the process of CG-art is distinctive compared to other artistic-processes as the programmer does not determine the computer's actions completely as if the

[1] A quick note on how I refer to the AI programs that are programmed to create CG-art. Though possibly controversial I have steered away from using the word software. This is because if I describe CG-art as computers that are purely software then I can only account for CG-art that is solely digital. This would exclude the CG-art that is material like the paintings of the programmer Harold Cohen and his program AARON. I will keep using the terms computer and machine and will be referring to the interchangeably. The term machine could be objected to as it might be considered outdated. Nonetheless, I believe it encompasses the idea that AI is not always entirely software. Physical creation is possible as well. If I am referring to the purely information processes of the AI machine then I will use the term program.

[2] The programmer of the CG-machines is an artist in her own right, both for her role in the CG-artistic process as well as her skill and aesthetic knowledge (Boden, 2011). I have decided for clarity as well as to be fair to the machine, to refer to the artist/programmer only as the programmer. I do not want, through careless language use, to position within my framework that the programmer is the artist and the machine is not and so should be regarded as a tool.

computer was a tool[3]. Instead, with CG-art, the machine has a significant amount of control, allowing it to be more than a direct extension of the programmer (McCormack et al, 2014).

There are two fundamental features of CG-art. The first, as mentioned in the definition, is that the artist relinquishes control by allowing the computer to take over some actions within the artistic-process. The other feature is that CG-art is a result of generative rules. It is important to clarify that even though the computer is left to run by itself with no interference from the programmer, the computer is still rule bound (Boden & Edmonds, 2009). This means that the program is created by the programmer who codes artistic rules governing elements of the computer's behaviour. When understanding the rules of CG-art, Boden and Edmonds explain that they are rules of a specific kind. The artworks are generated through rules of constraint instead of instructions that come from step-by-step algorithms. Step-by-step algorithms would specifically say, for instance, paint A this exact colour and then paint B this exact colour. There is no deviation possible from the specificity of the instruction. CG-art, on the other hand, is created by generalised rules instead of explicit instructions (ibid). As Freider Nake explains, "Each rule is constructed as a pair of a condition and an action." (Nake, 2012: 83). One rule could be that A cannot be darker than B and lighter than C when painting shape D[4].

These rules of constraint guide the machine's aesthetic decisions through rules of artistic form such as style and technique as well as rules of expressivity such as colour brightness. These rules set the parameters of what the computer creates and should be understood as defining a conceptual space that the computer will navigate when producing the artwork[5]. What must be emphasised is that the computer can produce unpredictable results when it is left on its own. It can do this just by using the programmed rules in inventive and interesting ways, which shows how the computer has the capacity to go beyond the expectations of the programmer (Boden & Edmonds, 2009). The more complex the

[3] An example of these artistic tools would be software like Photoshop or music programs like Logic.

[4] Frieder Nake is a CG-artist. He argues that all the coding of CG-art computers must be rule based and that these rules are programmed to be highly interactive (Nake, 2012). Harold Cohen, another CG-artist explains his program AARON as being a production system or simply a list of rules. Like Nake he describes the rules as "if some condition holds true, do this, otherwise if something else is the case, do that, otherwise... in which the program simply cycles through the list until it finds and activates an appropriate rule" (Cohen, 1982:88). Nake further explains that since CG-art uses human concepts these notions when used as part of the rules must be described in computational terms or they will not be usable by a computer (Nake, 2012). I will later call these computational descriptions of rules translations. They are translations of the expression in order to form a computational conceptual space.

[5] Terry Dartnell can elaborate for us the nature of a conceptual space:

> A conceptual space is a space of structures generable, that is, defined, by the rules of a generative system. We map it and explore it by combining its elements according to the rules-thereby discovering structures in the space.(Dartnell, 1997: 48)

system and the more powerful its processing capacities, the greater the possibility for unpredictability.[6] Nevertheless, just because the computer can create unpredictably does not mean the rules that form the conceptual space are vague, random and coded without deliberate care. Edmonds calls to attention the fact that the rules must be constructive:

> That is to say, they must provide or imply a specific process that can lead to the desired outcome. That is the defining feature of generative art as I came to see it. Only if the rules are constructive does the artist hand over to the computer a significant element of the decision-making that is at the core of art-making. (Boden & Edmonds, 2009: 26)

Therefore, when it comes to step-by-step algorithms we have the programmer explicitly determining what the next action of the machine will be. When the machine is coded with rules, instead of instructions, there is room for greater independence with regards to what the machine will finally create, after the programmer relinquishes control to it. For, as Boden and Edmonds assert, even though the programmer knows the system in its entirety, there would still be no possible way to predict how a machine will interpret the rules and navigate the constraints that the rules bring (Boden & Edmonds, 2009). This implies that the rules are what allow the machine to act independently while still being incorporated into a greater artistic-process.

[6] McCormack et al. explains why we must not underestimate the complexity of the machines and why they can create unpredictably:

> There are two common objections to the criticism that a computer program is unable to originate anything it was not expressly programmed to do. The first concerns human ability to know or predict the complete behaviour of any program (created by the programmer), typically has a large sometimes vast, number of executable pathways. This makes it impossible for the programmer to completely understand and predict the outcome of all but the most trivial programs-- one reason why the software has "bugs." The second objection arises from the ability of a program to be modify itself. Computer programs can be adaptive; they can learn and so initiate new and potentially creative behaviours. (McCormack et al, 2014:136)

The Standard Artistic Process

Before I define authenticity more carefully and explain why it is essential for us to properly engage with CG-art, I wish to first define and explain what authenticity is in relation to, within my investigation. I believe this will allow me to explain what the nature of authenticity is in a more focused way.

When we usually use the word authenticity, we use it to describe a particular entity. However, instead of conceiving of authenticity as being inherent to something's nature, I want to argue that authenticity is an emergent characteristic. Therefore, I believe we should understand authenticity in light of how it comes to be present. Essentially, authenticity comes from doing things in a particular kind of way (Guignon, 2008). This, for me, is a more expansive version of the idea that authenticity comes from a particular way of living one's life, which Guignon traces back to existentialist writings[7]. It is only the appropriate process that can guarantee whether authenticity is present or not. Therefore, when we are thinking of authenticity as being connected to the origins of something we are referring to the process that forms something.

When we speak of the origins of an artwork, we mean the artistic-process that was responsible for the artwork. This implies that if the authenticity of the artwork is determined by its origins, then if we are to assess whether an artwork is authentic, we have to look carefully at the artistic-process. The artistic-process will crucially show that authenticity emerges from the method of creation rather than being innately built into the process or the artworks that result. I think it will be instructive to continue by describing a human artistic-process, which I call the *Standard Artistic Process (SAP).* This is because CG-art has largely been modelled on human artistic-processes as well as the fact that as humans it would be very difficult to conceive and evaluate artistic practices that were not based to some degree on what we know as human creators[8]. SAP describes the core structural framework of

[7] Guignon argues that when authenticity is used in existentialist writings it is in terms of an ideal way of living that is governed by qualities such as integrity and honesty (Guignon, 2008). Authenticity comes from a specific practice of living. This is echoed by Bruce Baugh, who argues that authenticity for the existentialists was centred on the idea of realising oneself through one's own actions and choices. Baugh argues that our actions when we are authentic show a way of being in the world that is distinctive (Baugh, 1988). Guignon makes another point which connects to this--authenticity is associated with acting exactly as you are, a way of acting that is true to yourself as an original being. This connects to my conception of authenticity as being determined by the right kind of actions rather than anything innate to an entity (Guignon, 2008).

[8] CG-art exists within the filed of AI called Computational Creativity. Simon Colton who is the programmer of The Painting Fool explains that it is much easier to build AI systems if there is a model of human intelligence to work with.

all artistic-processes by mapping out the foundational stages of artistic creation. These are three stages of *intention, creation* and *evaluation*. Ultimately, SAP can be elaborated on and adapted. However, the dynamic nature of the artistic-process is possible as long as the mandatory elements of SAP are firmly in place.

SAP[9] begins with setting an artistic intention that is grounded in the artist's individual or cultural realities or simply the urge to create. The intention is deeply connected to what the artist wishes to express and sets the direction of the artwork in terms of the artwork's desired meaning and aesthetic character. Therefore, the intention forms the artistic blueprint to be purposefully acted out in the next stage of creation. The stage of creation is the part of the process that puts the intention into practice through a medium of art. Once an artistic creation has been produced it is then evaluated. The stage of evaluation assesses whether the artwork that is generated is satisfactory for the artist by meeting her standards. If the answer is no, then the artist needs to determine what part of the artistic process needs altering. Cycles of evaluation are an expected part of the artistic-process, with the purpose of gradually refining the quality of the artwork until the artist is satisfied.

Let us return to my use of the word intention. What is crucial is that we must abstract from my use of the word intention within the artistic-process from debates about whether artistic intentions matter when interpreting an artwork, such as with debates around the *Intentional Fallacy*[10] or arguments by poststructuralists like Roland Barthes[11]. This is because my concern when defining the nature of the

---

He describes that the unwritten rule that governs Computational Creativity as a discipline is that the programmers should always be referring to research about human creativity when constructing their machines (Colton, 2012). Unfortunately, I will not be able to engage with Computational Creativity as a field of AI in more detail. However, suffice to say, all programs spoken about will fall within the field of Computational Creativity.

[9] My understanding of the Standard Artistic Process is both intuitive and practical. It is based on my own process as a creative writer, in-depth discussions with my friends who are artists as well as Ernest Edmonds' description of his process as involving *conception, action and perception* and *reconceptualization* (Boden & Edmonds, 2009: 26). All of our processes seemed different at first glance but ultimately followed the same structure, which I have identified as the three core elements of intention, creation and evaluation.

[10] The *Intentional Fallacy* is the argument put forward by Monroe Beardsley and William Wimsatt. The crux of the argument is to deny the relevance of any reference to the author's intention when interpreting a literary work. It is a deliberate denial of the importance of what the author planned for her work (Lyas & Stecker, 2009). As Colin Lyas and Robert Stecker argue, the Intentional Fallacy also has the general claim that any literary studies investigation that is concerned with the personal experience of the author is separate from proper literary engagement. The conclusion of the Intentional Fallacy is that the artwork and its creator must be treated as different entities (ibid). The importance of this will be revealed in the last part of my exploration when we focus on engagement. For now, I assert that all artists have artistic intentions and this has no bearing to whether one refers to these intentions when interpreting an artwork.

[11] Roland Barthes seminal "Death of the Author" essay is also concerned with interpreting artworks without inferring authorial intention (As referenced and expanded on in Pease et al, 2008). The claim is that artworks should be independent from their authors. The reason is that if the audience is presented with both the author's intention and the

artistic-process is not about how to interpret an artwork. My concern is solely to describe the mechanisms of it. If we conflate the idea of not interpreting the artwork in light of the artist's intentions to the notion that the artist has no intentions when creating, then we run the risk of incoherence (Walton, 1970). In a broad sense, the whole of the artistic-process is intentional. Practically, the artistic-process has to be enacted deliberately or nothing will be created because the artistic process requires a great deal of time and effort.

The stage of intention itself is a foundational stage because it sets up the artistic-process so that the effort of the artist can be used in a constructive way. Intention has two roles. The intention is the bridge between what needs to be expressed and the medium that will express it, it is able to start the process of transforming expression. This leads to the second role: the intention provides the artistic direction towards which the whole process will aim to move towards. The intention is simply the translation of what the artist wishes to express into a language and description that is compatible with artistic form[12]. Intention within the artistic process is dynamic as it is not indicative of only being compatible with strict artistic control but can still incorporate randomness and chance. I will elaborate on this further on with the concept of intentional randomness.

Therefore, intention cannot be removed from the artistic process on two accounts— first, one can only create a work of art deliberately since it requires so much effort. It means that authenticity, just like the artistic-process, will not be a characteristic that comes without effort or arrives by accident. This should make us hopeful for the possibility of a deeper engagement with CG-art. It means if we can find what the right kind of process is for authenticity and know what the right kind of effort is needed, then it seems there is no reason to say we cannot have authentic CG-art. Furthermore, since

---

artwork their interpretation will be constrained by the author. Interpretation becomes limited by the audience buying into the artificial interpretive framework that champions the author's voice as being primary. The question I ask is whether this is feasible when CG-art is process-orientated.

[12] It is difficult to describe the relationship between my conceptual framework and the arguments put forward by Anthony O'Hear. The reason is that there is a fundamental disagreement on how we conceive of the CG-artistic-process. O'Hear firmly believe that computers cannot create art because computers are the wrong kind of entity as they are not human. In contrast I believe that computers can create since they can be participants when positioned in the right kind of artistic-process. However, I share with O'Hear much of the way I have conceptualised key notions. We share similar ideas about the nature of artistic intention, the importance of how an artwork is made and audience engagement. For now, I believe that O'Hear is right about how intention works within the artistic-process. He argues that an artist begins with the intention of what the audience should experience when engaging with the artwork-- we can see this as being what the artist wishes to express with her true reality. O'Hear also argues that this intention is drawn from the artist's reality such as memories, beliefs, emotions and other judgements. He explains that the intention guides the process of creation since it orientates the artist to how she should refine what needs to be expressed in order for the audience to have the desired experience (O'Hear 1995).

the artistic-process has the capacity to change and evolve, it means that inauthentic art is simply art that has not transformed itself to be authentic by changing the process of its creation. Again, this means that even if CG-art is inauthentic it still does not mean it cannot ever become authentic.

Conceptualising Authenticity

Defining Authenticity

There are three parts to our conception of authenticity that needs to be brought together. The first is that authenticity is not innate or inherent in an entity but instead emerges from the right kind of process or set of actions. The second is that authenticity requires that there be no deceptions, distortions, or falsity. Authenticity is fundamentally connected to what is true (Lindholm, 2013). The third is that authenticity can be split into two connected levels— the level of the "original" and the level that is "faithful to the original." Firstly, Guignon argues that existentialist writings connect authenticity to an ideal way of life. What this context shows us, is that authenticity is a practice since authenticity can only emerge from the manner of our actions (Guignon, 2008). Consequently, authentic art must then come from the practice of creating art in the right kind of way for authenticity to emerge. Therefore, when we speak of authentic artworks, we are recognising the quality of authenticity only because authenticity was present in the process that produced them. Secondly, authenticity can be defined as what is true, honest, genuine and trustworthy and inauthenticity is what is false. We can then infer that inauthenticity emerges from a false practice of creating art.

The third conception of authenticity of the "original" and what is "faithful to the original" is central to how I have conceptualised my theoretical framework. Firstly, clarification is needed for the word *original* in respect to art. This is because I do not define the artwork itself as the original. Instead, the original is constituted by the series of artistic actions that ensured authenticity emerged. The process responsible for the emergence of authenticity is also the origins of the artwork. Therefore, I believe we can define the original as the *origins as process.* The original is not the artwork but rather the artistic-process that creates it. Dennis Dutton provides a helpful way to understand the two levels of authenticity through how he distinguishes between *nominal authenticity* and *expressive authenticity*

(Dutton, 2005). Nominal authenticity corresponds to the level of representation, the "faithful to the original" and expressive authenticity corresponds to the level of the original[13].

Dutton defines expressive authenticity as:

> …having to do with an object's character as a true expression of an individual or a society's values and beliefs (Dutton, 2005:325).

We can bring expressive authenticity back to the idea of the *origins as process.* The concept of expressive authenticity is that the character of an art object comes from a truthful expression of an artist. Here, expressive authenticity can be understood as only being possible when the right kind of artistic-process preserves a true expression, as it transforms into being expressed within artistic form. What matters is not the content of the true expression just that the artistic-process does not distort it when it expresses it through an artistic medium. The authentic artwork that has been sourced from the *origins as process,* is only true when every action is honest throughout the process. There is no action that distorts. This allows us to describe the artwork as being exactly what it is supposed to be because it realised the expression that was intended to be expressed.

Dutton then defines nominal authenticity as:

> …the correct identification of the origins, authorship or provenance of an object, ensuring, as the term implies, that an object of aesthetic experience is properly named (Dutton, 2005:325)..

Nominal authenticity is about the right kind of representation, where the representation is truthful about what it is portraying. It is a way of representing artworks in a way that is accurate and is transparent about their exact nature. This ensures that excluded from this picture is a representation of an artwork that is untrue or deceives and distorts. In order to be faithful to the artwork, nominal authenticity dictates that we have to represent the actions that resulted in an artwork because that is

[13] Both Dennis Dutton and Charles Guignon argue for two modes of authenticity . For Guignon it is the original and what is faithful to the original (Guignon, 2008). For Dutton it is expressive authenticity and nominal authenticity (Dutton, 2005). Charles Lindholm also makes the observation that there are two distinct modes of understanding authenticity that are overlapping. The first, for Lindholm, is the origins of an entity and the other is the identity of the entity as "expressive content." The two modes for Lindholm means we can define an authentic entity as being original in how it expresses its nature and that the authorship of this entity is legitimate and verified (Lindholm, 2013). This is why it is essential for my conceptual framework to take into account these two modes-- or what I call the two levels of authenticity.

how we account for its origins. What is notable about nominal authenticity is that it is solely concerned with correctly naming an artwork and representing the process of its formation accurately. What this means is that we can have nominal authenticity regardless of whether expressive authenticity is present. Faithful to the original is about being faithful to exactly how the artistic-process has been conducted even if it has been conducted inauthentically.

The Authentic Standard Artistic Process (ASAP)

We can conclude that authenticity emerges out of a particular artistic process. This would mean that authenticity is only present if the stages of intention, creation and evaluation have been conducted in the appropriate way. Whether or not an artwork is authentic, then is determined by how the artist enacts the process as a whole. This means that every part of the process is its own determining factor of whether authenticity will emerge. However, we must first look more closely at the notion of expression and what exactly must be expressed. To do this I need to introduce a new concept which I call the *true reality* of an artist[14].

The true reality is what the artist wishes to express in the artwork. It is what the artist wants to be translated into artistic form. By using the word reality I am hoping to imply how infinitely broad the scope of possibility is when it comes to what can count as a reality to be expressed. Even though authenticity, as Guignon argues, is traditionally connected to self-expression, we cannot limit the true reality to merely what is personal (Guignon, 2008). The possibilities of expression are expansive[15]. The true reality is both about the nature of personal experience as well as the collective experience of humanity's present, past and imagined future. What is crucial is that what can be expressed will always belong to the context of human experience (O'Hear, 1995). The true reality must be true

[14] Baugh speaks of how the existentialists believe that authenticity is about acting within the world in a way that is true and distinctive to oneself. Part of this involves the idea that an authentic life is only chosen with awareness. It is an awareness that one has to decide how to live in a way that allows one to truthfully be in the world. I drew from the existentialists when conceiving of how to describe the true reality. The true reality of the artist is a perspective of her social and individual context that she deliberately brings into the artistic process. The true reality is when the artist has chosen to express something truthful rather than a distorted expression of her "being in the world" (Baugh, 1988: 4). The artist must deliberately choose her true reality in a similar way to how the existentialists believe our actions must be deliberately chosen to reveal who we are.

[15] The true reality can be anything from a memory, to a mood, a sensory experience and even a mathematical formula and artistic technique. The true reality can encompass a wide range of thematic concerns as well as scientific facts, social commentary, personal desires and beliefs as well as philosophical theories and historical narratives.

because for authenticity to be possible what is expressed in the artwork has to be exactly what was intended.

The true reality as the artist's expression may initiate the artistic-process, but the true reality is not a series of actions or way of doing things. Accordingly, it would be incorrect to judge the true reality as authentic or inauthentic. The true reality is simply an aspect of human experience that is true. There is the potential for confusion because one part of the conception of authenticity is that it is true as well. The reason I am making this distinction is because authenticity does not just involve what is true but is centred on what is true being handled in a particular way through the course of a series of actions. I may have something to express that is a true reality by being true to my experience yet my artistic process deliberately distorts this expression to try make it more impressive. This implies that even though I have started with a true reality we cannot say that I intended, created and evaluated honestly. So, despite having a true reality, authenticity was not able to emerge from my artistic-process. Therefore, when we say authenticity in the artistic-process has to be true, we are saying that the process that forms the artwork must remain true throughout each stage of the artistic-process. Notably, when it comes to art what matters is less about the nature of the content of what the artist desires to express. Conversely what is only important is that whatever the content of the expression is, it must be true and that the way the expression has been taken through the process has to preserve this[16].

I will now describe the *Authentic Standard Artistic Process (ASAP)* in order to faithfully represent what our "original" looks like. Before doing so, let me reiterate that even though the true reality is not in itself authentic, the true reality is still necessary for authenticity to emerge. If there is no true expression at the start no matter what happens the process will be false because the expression is false. The true reality is what grants the certainty that what is being preserved in the process is

[16] Tolstoy believes, according to David Whewhell that the purest function of art is to bond human beings through connections of feeling (Whewhell, 2009). Gary Jahn argues that the feeling Tolstoy argues must be "infectious" between artist and audience can be understood as any aspect of human experience (Jahn, 1975). Therefore, we can say that the feeling Tolstoy believes should be shared between audience and artist when engaging with an artwork is the true reality. Tolstoy claims that how infectious the artwork is depends on how it was created. The artist should feel an imperative to express a feeling, which is referred to as the artist's sincerity. The expression also must be both unique to the artist as well as clearly expressed. Tolstoy's conception of sincerity connects with the idea of the true reality, however, Tolstoy takes the artistic-process one step further than I do. Unlike my conceptual framework, Tolstoy explains why the artist wants her true reality to be expressed-- it is to infect the audience with it (Whewhell, 2009; Jahn, 1975). I do not make a claim for what is the exact reason that any artist wishes to express. I believe that what matters is simply that the true reality has been preserved through the artistic-process for authenticity to emerge.

truthful. The role of intention is to make sure that the true reality is carried through the artistic-process. It does this by setting the direction that the process should move towards. The intention takes the true reality as the point of reference. This is so the intention can properly guide the process so that the truth of the true reality is preserved as it is transformed into an artistic form. The creation stage allows for authenticity to emerge only if it follows the intention and forms a creation the expresses the true reality. The evaluation stage ensures the emergence of authenticity when it can honestly evaluate the artworks produced and judge whether the true reality has been expressed or not. The evaluation stage must honestly assess whether the intentions were properly followed or whether the intentions adequately translated the true reality into artistic aims. Therefore, the ASAP is defined not by the content of the true reality but how the process handles this content in order to make room for authenticity to emerge and a true reality to be expressed.

Authenticity and Engagement

We have the ASAP explained and so now we know what is required to ensure that an artwork is authentic. We have also articulated the method needed for authenticity to emerge. Now, we must look at the two reasons for authenticity's importance. The first is our need for an artwork to be true and the second is our need for an artwork to have been created purposefully. It seems quite obvious that we have genuine emotions, thoughts and other triggered associations when we respond to art. When we engage properly with art our engagement impacts our inner landscape (Baugh, 1988). Accordingly, it makes sense that we would want what we are engaging with neither to be a deception nor that our responses are being manipulated by false representations. This suggests that if art is honest, which means it has been formed from an authentic artistic-process and this origin has been represented accurately and transparently, we can then trust ourselves to have genuine experiences in response[17].

[17] William Bossart argues that when we engage with art we know that are not engaging with real life. Despite this, what enables our abilities to engage with art and have genuine responses to it is that we know the artworks are honest and so have "aesthetic authenticity." Bossart argues that when we know that the artwork is truthful in what it expresses, it gives us the opportunity to engage and experience the artworks "as art rather than as sheets of canvas streaked with pigment" (Bossart, 1961: 149). Bossart states that this applies to both abstract and representational art. What this means is that as soon as we believe a painting is deceptive we cannot engage with it in any way other than it being an object. It is only when we trust that an artwork expresses honestly that we can begin to access its meaning or understand its nature beyond its basic form.. Therefore, when an artwork is honest it opens up richer engagement because we can have visceral responses to the artwork even while still knowing it is not real life. Bossart's conclusion is then that the honesty of the artwork is what gives us the trust not to be hesitant to experience the artwork.

Representing an artwork accurately, cultivates the ability to make distinctions between artworks in terms of how trustworthy they are (Boden, 2011). This is because the audience can see the original as the *origins as process* clearly and so can judge which artworks are worth engaging with more deeply and so with which artworks we can enter into a relation of trust. This is instead of just engaging from a generalised sense of suspicion and doubt. Trust is vital when it comes to our engagement with art because when we engage with art we are unlikely to be consistently indifferent. Trust allows us a deeper, more open interaction between ourselves, the artwork and the artist. This is because it allows us to suspend our disbelief and let ourselves properly experience the artwork (Bossart, 1961). This experience is vital to our capacity to understand the significance of the art we are interacting with. The reason is that a vital part of our engagement with art comes from experiencing why it is significant for us on a personal level.

The second reason for why authenticity is important for engagement is that we are encouraged to be deliberate in our responses to an artwork when we know that the artwork was created purposefully[18]. When we know this, we can then know that the artist intentionally expressed something meaningful in the artwork. We can also infer that the whole artistic-process worked for the preservation of the truth of that expression. This encourages our engagement because we recognise that what we are responding to was deliberately created to have a true meaning and in order to understand it we must purposefully engage with the artwork. Moreover, there is less insecurity in the audience to engage and less worry over inferring in the artwork meaning that is not there (O'Hear, 1995). If we know the artwork was created purposefully through recognising intention in the *origins as process*, we open ourselves up to greater communication with the artwork and expression of the artist.

Trust and the knowledge of purposeful creation work together to open up deeper engagement with an artwork. Trust gives the audience the security needed to be open to the artwork and allow them to be invested in engaging with the artwork without suspicion or doubt. Once they do this and recognise that the artwork is purposefully created then they will feel that in order to understand they must

[18] O'Hear argues that the audience does not take a work of art to be a natural phenomenon. Rather the audience sees the artwork has having been created by an intelligent human and is expressive of human emotion. O'Hear's claim is the same as mine-- when we know that the artwork was purposefully created we can engage deliberately because that is what the artwork requires of us. He argues:

> In doing so, the audience is confident that it is not indulging the exercise of pathetic fallacy, that is, it is not imputing to unplanned and unintended phenomena characteristics which are properly attributed only to planned and intended things. A work of art is produced by a human being in order to express some vision and set of intentions its creature has in making it. (O'Hear, 1995: 147)

respond deliberately as well. Therefore, if authenticity can nurture trustworthiness and purposefulness in the artwork, it means it can create a space for the audience to interact in a more fulfilling way.

Part II:

The Cyborg Artistic Process



Figure 5 Adam and Eve drawn by AARON and programmed by Harold Cohen (1986)

Defining the Cyborg.

So far, we have established our definition of CG-art and know that the core aim of this project is to show why authenticity is invaluable for our engagement with CG-art. We have also defined authenticity in relation to both the *Standard Artistic Process (SAP)* and the *Authentic Standard Artistic Process (ASAP)* for greater clarity. Since we have already defined the human artistic-processes we now have a helpful springboard from which we can define the CG-artistic-process and its authentic manifestation. Therefore, I can now begin to set out my theoretical framework.

The CG-artistic-process is best conceived of as a *Cyborg Artistic Process (CAP).* I believe that by portraying the CG-artistic-process as the CAP, we can achieve greater accuracy about the machine's capacities and limitations. I want to argue that the demands of the artistic-process forces a cyborg relation to develop. I am using the cyborg relation primarily as a conceptual tool. As a conceptual tool, the cyborg relation frames the partnership between the machine and the human programmer that is necessitated by the desire to generate CG-art. When we understand the partnership between machine and programmer, we will then grasp the nature of the dynamic between the artistic roles that belong to each of them and how this dynamic plays out within the structure of the artistic-process. It is a conceptualisation that aims to clearly show the unique process that involves a specific kind of interweaving of human and machine capacities and potentials[19].

First, I must define what I mean by a cyborg and put my conception into context since it is different to how cyborgs are usually defined in the literature. To do this, I must start with Donna Haraway, considering that the term is immediately associated with her work. Haraway defines the cyborg as a "cybernetic organism" which is a hybrid of an organism and a machine (Haraway, 1991:65). However, what distinguishes Haraway's conceptualisation of cyborgs is that she conceives of a cyborg as an entity of social reality and fiction, which she then connects with political social constructions. The thread that inherently runs through Haraway's use of the cyborg is that it is a

[19] The cyborg relation is fundamentally a partnership between machine and programmer. AI-art cannot be divorced from the human, instead it can only be realised by being intertwined with it. Cohen illustrates perfectly this cyborg relation:

> The man-machine relationship I am describing here is a very curious one, and not quite like any other I can think of. Nor is it possible to deal meaningfully with questions relating to what the machine can do except in terms of that relationship. It is true that the machine can do nothing not determined by the user's program; that the program literally gives the machine its identity. But it is true also that once it has been given that identity, it functions as independently and as autonomously as if it had been built to perform that task and no other. Whatever is being done, it is being done by the machine. (Cohen, 1974: 14)

conceptual framework that has both an epistemic and political purpose. These cyborgs are entities that are simultaneously animal and machine and are conceptually ambiguous for they are both natural and constructed (Haraway, 1991). Critically, this is *not* how I define the cyborg at all. For me, the cyborg is not about the merging of human and machine into a single entity. The cyborg is not political. *I define the cyborg relation as being an intertwining of machine and human participation within a unified-artistic-process.* For me, a new entity has not been formed because the machine and the human are still distinct.

Even though how I have conceived of the cyborg in the CG-artistic-process is radically different to Haraway's account, I still am indebted to Haraway. The reason is that she uses the idea of the cyborg as a conceptual tool to draw out new understandings, just as I have tried to do. The CG-artistic program is not traditionally cyborg, since both machine and programmer are separate entities having their own distinct artistic roles. How I conceive of the cyborg relation is that it is the process itself which is cyborg. The unified-artistic-process is the intertwining of machine and human capacities in one series of actions, for one outcome— the creation of an artwork. My conception of the cyborg is not a new entity of machine and programmer but rather a specific relationship between machine and programmer. I am viewing the nature of the cyborg as a conceptual tool that explains the nature of the CG-artistic-process in a way that enables us to recognise how an artistic-process can be authentically realised with a machine included and how authenticity is possible in respect to CG-art.

Another thinker that has been vital for how I conceptualise cyborgs is Peter-Paul Verbeek[20]. Verbeek defines a cyborg as a "border-blurring entity" that unites both the human and the non-human (Verbeek, 2008:387). For me, the CAP is only "border-blurring" in a particular way. The artistic-

[20] Verbeek's conceptualisation of the cyborg is through the concept of intentionality. Verbeek argues that the cyborg can manifest in three different ways depending on how the machine and the human are intentional, as in how they are directed towards the world. Whether a machine has intentionality in Verbeek's sense I cannot answer. However, even if intentionality is not only a human phenomenon what is certain is that a machine cannot intend in the specific way that the artistic process requires. That is why I judge whether the cyborg relation can be entered into based on the capacity to participate rather than the conception of intentionality. Despite this, Verbeek's account of the different kinds of cyborgs illuminated for me the potential for different relationships between machines and humans. His first kind of relation is what he calls mediated intentionality. This is where the cyborg is constructed because human engagement with the world is mediated through interacting with a machine. The second is hybrid intentionality where humans and technology merge rather than intend. What this means is that the human and machine have created a new entity. This is significant for debates surrounding posthumanism. Hybrid intentionality is completely separate to my conception of the cyborg as a merged human and machine defeats the purpose of CG-art because CG-art requires the computer to have a degree of independence from the programmer. The last of Verbeek's relationship is the closest to our cyborg relation, which is called composite intentionality. This is Verbeek's conception of cyborg intentionality where both the machine and human are intentional and are seen as actors in collaboration (Verbeek, 2008).

process breaks down the borders of machine and programmer enough to have a partnership form, although notably, each still has to keep their distinctiveness. I agree with Verbeek's argument which says that we need a radical re-evaluation of our conceptions of human and machine (Verbeek, 2008). We cannot see humans as actors and machines as passive, because then we automatically exclude any possibilities of machine's being sophisticated enough to enter into artistic partnerships with their programmers. Yet, what is fundamental is that even though a machine is active not passive, it does not mean a machine has the same capacities as us humans. The fact that machines have limitations means that if a machine is to fulfil what capacities for creation it does possess, it is critical that it enters into a cyborg relation with the programmer so that a human can complete the roles of the artistic process that the machine cannot complete itself.

The Cyborg Artistic Process

Let me now describe the Cyborg Artistic Process (CAP). It begins with the programmer having something she wishes to express and the desire that this be expressed through a CG-artistic-process specifically. She then formulates an intention that has enough clarity to guide the construction of a conceptual space out of interacting rules. As the CG-artist Jon McCormack articulates: "A primary consideration in developing a generative software is in the formulation of process and how this formulation transcends itself into machine instructions"(McCormack 2003:9) Intention then is both the deliberate construction of CAP as much as it also guides the construction of the rules that aid the expression of the programmer. Once the rules are in place as a conceptual structure, the computer is given control over the artistic-process to create a material artwork (Boden & Edmonds, 2009). Because the rules leave open multiple possibilities for different combinations, restructurings, associations and connections based on various patterns, the computer can create an artwork that is unpredictable. The unpredictability of these computers lies with their capacity to interpret the interacting rules to such a varying degree that it would be too demanding to try map it out (McCormack et al, 2014). However, the machine's complexity does not include evaluative mechanisms (Cohen et al, 2012). In order to evaluate the machine's creation the programmer has to step back in control.

The strength of the CAP is that it acknowledges that the machine does have serious limitations when it comes to the creation of art. The machine, even with its advanced mechanisms, still cannot fulfil the entirety of an artistic process. This is because the machine can neither intend nor evaluate. The machine's extensive aesthetic skills must first be positioned by the programmer's intention in the process in order to be effective. One of the reasons is that the machine simply has nothing to express, as it is unmoored from any personal or social context[21]. The machine can only create when the programmer's intention has translated her expression into aesthetic rules that are in computational form. The machine also cannot evaluate since it cannot have aesthetic judgements in reference to an intention it does not possess (Nake, 2012). What this means is that the machine cannot evaluate whether the artwork is successful or whether it is finished if it has no expression as a reference point[22]. This then necessitates that the programmer needs to take on a key role in CAP and still retain a degree of artistic control.

However, what we must keep in mind is that the programmer will enter into the artistic-process but still preserve the independence of the machine as much as possible. This is because the programmer wants to create CG-art and so enters into a cyborg relation The programmer desires for the machine to be a creator of the artwork but recognises the necessity of her entering into the artistic-process as well (Boden, 2011). This is because the stages of intention and evaluation are critically needed for the completion of the artistic-process. The cyborg relation is a partnership between a machine and a programmer that forms because of the constraints of the artistic-process and the requirements for the artwork to be considered CG-art simultaneously. I hope to best illustrate the CAP through referencing an actual CG-artistic-process. Boden's case study provides for us a clear view of the CG-artistic-process of the music program *Emmy*, which was programmed by the composer David Cope. Emmy was a sophisticated program in that the compositions it generated were stylistically parallel to the particular composer Cope had selected, with no blatant mimicry or copying involved (ibid).

[21] When it comes to social contexts the debate around machine consciousness comes to the fore. McCormack et al. argue that if we take art as requiring a social context for expression to be possible then it means that art requires conscious intention on the part of the artist. McCormack et al. argue that computers do not currently engage in our socio-cultural world with any awareness and so they have insufficient capacities to express (McCormack et al, 2014). AI creators, as Boden argues, are sceptical that machines are close to consciousness, which means that for the foreseeable future the cyborg relation will be necessary for CG-art (Boden, 2011).

[22] Nake explains that the stage of evaluation cannot be easily formalised or categorised neatly. This is because he considers that aesthetic evaluation is a complex human value judgement that requires living experience. Nake argues that human values and judgements surrounding questions of meaning, expressiveness and sensory experience, are different from instrumental measures and binaristic code. He argues that when humans judge aesthetically it is subjective with many competing considerations. Furthermore, aesthetic evaluation is precarious-- one day a judgement can be justified and the next day it could be in doubt (Cohen et al, 2012).

To begin, Cope's intention was that Emmy would create artworks that express the style of a particular composer— say Chopin or Beethoven. Cope then needed to translate this intention into rules that could guide the computer to achieve this aim. Emmy would be programmed with sets of note patterns that were formed by two factors (Boden, 2011). The first was the constraints of the medium such as formal rules of music like harmony rhythm, key signature etc. The second was the constraints of Cope's intention, which led to sets of constructed note patterns that produced a conceptual space for the computer to create within (ibid). Cope, after his initial programming, did not interfere with Emmy as it composed . Emmy's complex mechanisms interpreted the programmer's rules by using statistical techniques to identify distinguishing features of the composer's style within the patterns of notes. From this point Emmy would then recombine, rearrange and reconstruct the patterns to create new compositions (ibid). Boden argues that Cope would not give further input of what re-combinations. Emmy should produce and so Emmy was left to interpret the rules independently. Nevertheless, the reconfiguring of the patterns identified were still highly constrained musically and were not in any way random. This was because Cope would evaluate what Emmy generated and altered the rules of what he did not find musically acceptable and so refined the rules that defined the computer's style (ibid).

The significance of the CAP will be unravelled further as we continue in our investigation. However, what is essential for this moment, is that we must recognise that with the cyborg relation there is an interplay of artistic control and artistic activity between the programmer and the machine. Cope hands over artistic control to Emmy while still having controlled the construction of the rules that Emmy used to compose.

AARON and The Painting Fool

I want to provide another two examples of CAP. I am hoping that with more reference points there will be greater clarity in respect to the CG-artistic-process. These examples are focused on the processes of the artists Harold Cohen and Simon Colton and their programs AARON and The Painting Fool.

AARON developed by Cohen has produced figurative art paintings that have grown in sophistication for over 40 years. AARON's paintings have grown from their beginnings as simple line drawings to figures of people and plants and now to more abstract images (Colton, 2012). Included in the artistic growth of the program is a move from Cohen painting in the colour of AARON's line drawings to AARON being able to colour the paintings itself[23]. AARON then has a great number of complex rules governing its behaviour both in terms of how to choose colours based on brightness and the spatial positioning of figures in the canvas (Cohen, 1995). The rules of the representational figures themselves are drawn from a conceptual space based on a prototype figure[24].

The Painting Fool is our other example[25]. A notable project of The Painting Fool is the *Amelie Progress Project* which is a project that was focused on emotional modelling and was inspired by the

[23] The transition between Cohen painting in the colours of AARON's line drawings and AARON colouring its drawings on its own coincided with the transition of AARON as purely software to AARON becoming a mechanical machine that made art on a canvas. The rationale for this transition was that Cohen believed that it was beginning "to seem inappropriate that a program smart enough to generate an endless stream of original drawings was incapable of doing its own colouring" and that he could "see no alternative but to build a machine that would allow the production of large, coloured images in the real world" (Cohen, 1995: 118, 124).

[24] To elaborate on AARON's prototype figure: Cohen began specifying rules to how figures should be painted in order to build AARON's artistic knowledge. For example, Cohen would create multiple rules governing the possible structures and appearances of faces. Interestingly, Cohen says that by the time AARON's knowledge based was built up, AARON's expansive data-base only represented a single prototype figure. From this figure AARON could generate a large number of figures that varied widely in terms of their appearance. This was possible because of the nature of Cohen's programming, which ensured the intricacy and extensiveness of AARON's constructed knowledge (Cohen, 1995). Nake makes a comment that towards the end of AARON's programming, AARON consisted of so many rules that Cohen "was no longer sure if he was still capable of understanding well enough their mutual dependencies" (Cohen et al, 2012: 104).

[25] Let me quickly note that Colton is the head artist of The Painting Fool but other people also contribute to the manual coding of the computer (Colton, 2012). Nonetheless since Colton is considered the artist of The Painting Fool, I will for the remainder of my discussion see him as the programmer within our cyborg relation. In terms of the question of teams. As Boden notes in many scenarios of CG-art there is the artist who might not do all the manual labour of coding in the rules herself but still can be considered the programmer who determines the process (Boden, 2011). I do not have the scope to investigate the implication of this kind of authorship. So let me say, in brief, that there are two scenarios which I believe still fit into the framework of the Cyborg Artistic Process. In the first case, like with Colton, the process has a head artist who takes on the role of the programmer in our artistic-process. This is because it is their vision which is

field of affective computing, where a program can both detect and simulate human emotions (Colton, 2012). Colton describes the aim of the project:

> We first asked the question of whether we can train the software to paint in different styles so that it can choose a particular style in order to heighten the emotional content of the painting. (Colton, 2012:21)

The project began with images that were modelled on stills of the character Amelie from the film *Le Fabuleux Destin d'Amelie Poulain*. By producing 222 portraits along a spectrum of emotions, the program produced a gallery of paintings that aimed to prove how the aesthetic effects of the painting can dampen or heighten emotions (Colton, 2012).

The Amelie Progress Project needs to be understood as involving multiple CG-artistic-processes. This is because each artwork that constitutes the project had its own particular artistic process that went into its creation. For the project each artwork was based on the true reality of a set of possible emotions that Colton hoped to express. Then Colton intended that the program create an artwork based on choosing an emotion and so constructed rules that defined a conceptual space in order for this to be possible. The main rule was that the specific targeted emotion to be expressed in the artwork must be based on a film still that would show the corresponding facial expression of the character Amelie (Colton, 2012). Then there were rules of artistic form, for instance, specifying individual colour palettes. All these rules interacted to create aesthetic patterns that were each associated with heightening a particular emotion (ibid). The computer would then use these patterned rules to create. Colton then evaluated the artworks that the computer produced and refined the appropriate rules according to whether the artwork created did show emotions and whether these emotions were heightened (ibid).

The workings of Emmy, AARON and The Painting Fool and other programs are the foundation of my theoretical underpinning. My aim is to present a theoretical framework that is realistically grounded in the present moment in respect to CG-art, but also can be taken into the future. Hence, my account doesn't deal explicitly with any specifics of a particular example of the CG-artistic-process. CG-art is a growing field and I am sure these programs will become more sophisticated with

carried through. The second scenario is where the team as a whole takes up the role of the programmer. This will be if they put forward a united true reality to express, form a single intention and evaluate as a team. In either case the cyborg relation still applies.

even more complicated processes. However, I do believe that the basic structure of my framework will be flexible enough to grow with these processes as they evolve.

Part III

The Authentic Cyborg Artistic Process

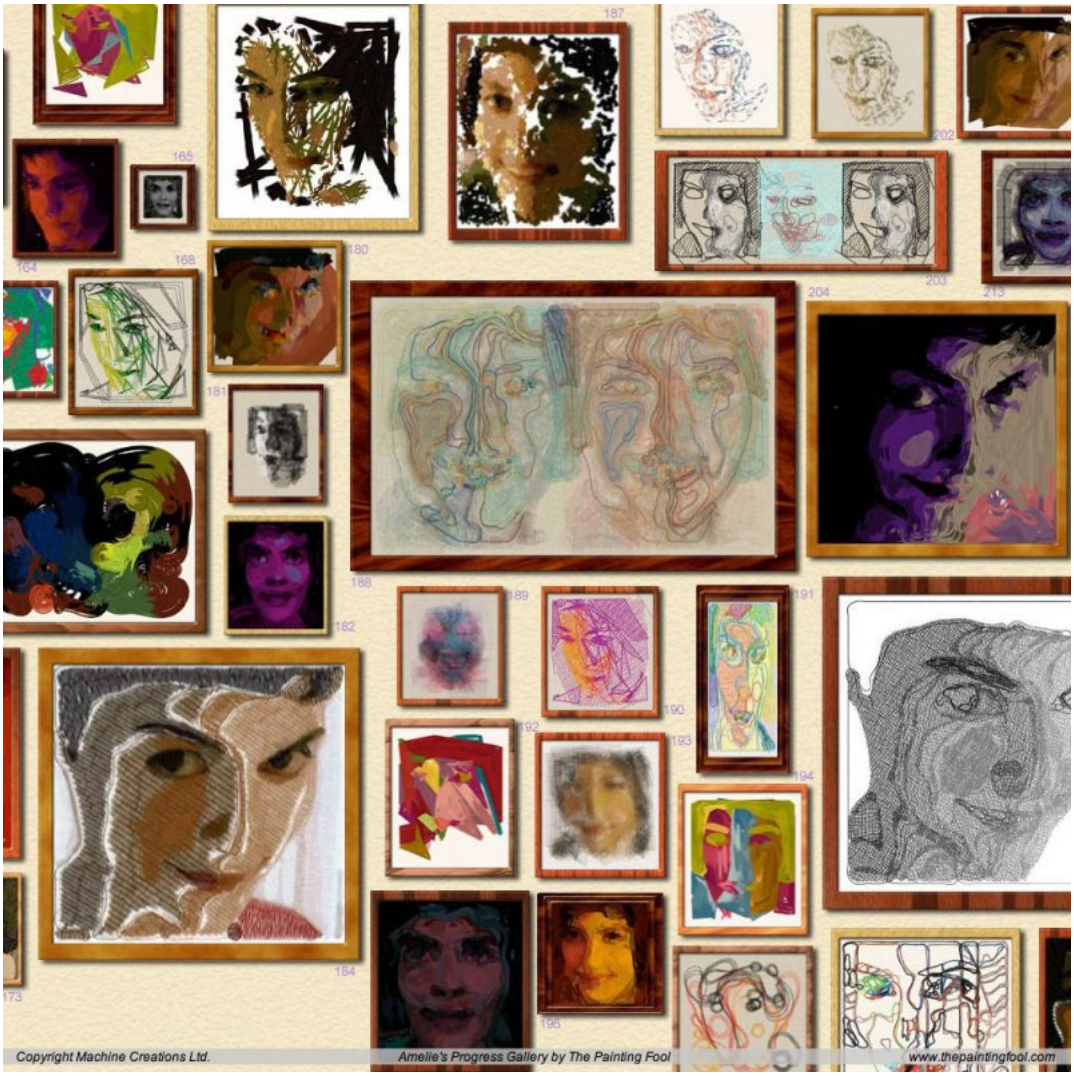


Figure 6 Gallery of Paintings from The Painting Fool's Amelie Progress Project

We have arrived at the *Authentic Cyborg Artistic Process. (ACAP)* and so the first level of authenticity known as the *origins as process*. Earlier on I asked the question— can CG-art be authentic? To work towards an answer, I have had to frame my investigation. I have defined three artistic processes so far— the *Standard Artistic Process (SAP), the Authentic Standard Artistic Process (ASAP)* and the *Cyborg Artistic Process (CAP).* Let me remind us of two claims. The first claim defines authenticity as not being inherent or innate but simply the right way of enacting a series of actions. The second claim is that the CG-artistic process is built upon a cyborg relation in order to account for the capacities of both the machine and the programmer as well as the dynamics of their interrelation. This leads us to the conclusion that if the CG-artistic process is authentic it must be through the cyborg relation enacted in the right kind of way. When I describe the ACAP I will effectively be answering the question of how CG-art can be authentic.

Asking the question of what is needed for the CG-artistic process to be authentic, is not merely to ask about how authenticity emerges through the right kind of artistic actions. It is also to ask whether CG-art can be art at all. O'Hear argues, for instance, that CG-art cannot be art because it is created by a computer and computers by nature are incapable of creating art, since art is solely a human activity (O'Hear, 1995). What I desire to establish is that since authenticity is about how an artwork is created not who or what created it, then authenticity is about the right kind of methodology rather than being tied to the idea that the agent who creates must be the right kind of entity. The cyborg relation must just be able to accommodate the requirements of a methodology that enables authenticity to emerge. This can only come through the preservation of a true expression within the process.

The CAP becomes the Authentic Cyborg Artistic Process (ACAP) when the programmer possesses a true reality to express. This true reality becomes translated into an intention, which is then the guiding principle for the programmer when she constructs the rules that ultimately define the conceptual space of the process. Importantly the intention allows for the emergence of authenticity if it has translated the true reality of the programmer accurately. This is so the conceptual space can provide clearly defined parameters that exclude what does not correspond to the true reality. The intention must be translated properly so the truth of the true reality is preserved in the rules. This is critical as this is what allows authenticity to emerge even when artistic control exchanges from the programmer to the computer. The computer will then interpret the rules and form a material artwork that is unpredictable. This will then be evaluated by the programmer.

Evaluation is the stage in the process, undertaken by the programmer, that assesses whether the truth of the true reality has been preserved and is focused on three transition points. The programmer at the first transition point has to ask whether the true reality has been properly translated into an intention, at the second point she has to ask whether the intention has adequately constructed the rules and conceptual space and at the last transition point she must evaluate the machine's interpretation of the rules and whether they were followed appropriately. If at all three transition points the truth of the true reality has not been distorted, then it means that authenticity has emerged from the process. The stage of evaluation is critical in that if authenticity has not emerged yet in the process, it might still emerge later. This is because the programmer evaluates the performance of the machine and herself in their respective artistic roles and so opens up the process to adjustment and alteration according to what is needed for authenticity to emerge.

My theoretical framework is centred on the idea that authenticity is integral to having more nuanced and intricate responses when we engage with CG-art. However, I believe this project would be significantly impoverished if my theoretical framework didn't explore what was required for authenticity to emerge in the first place. I believe that in order for my theory to be of use to CG-artists it has to explore questions surrounding the dynamics of authenticity within the three stages of ACAP itself. These dynamics include questions surrounding the beginning of the process in terms of the true reality, the potential break down of the rules and what it means to evaluate subjectively. By looking at the process in this light I hope to provide a conceptual map of the ACAP by means that unpack the process as a method.

Considerations for the Three Stages

The True Reality

There are two notable points when it comes to including the true reality in the ACAP. The first, is that misunderstanding the true reality can lead to misconceptions surrounding CG-art's relation to authenticity. This happens when the process is not placed in the framework of a cyborg relation. The reason for the misunderstanding is that one of the defining features of a true reality is that it always belongs to some form of human context. This is a view of art that sees art as embedded in our social and individual worlds. McCormack et al. argue that we should remember that since art belongs to our human cultures it is ultimately drawn from our collective reality as well as our tradition of expressing this reality through art. They argue that individual artistic expression would be impoverished without a socio-cultural and historical context of meaning (McCormack et al, 2014). I believe this is what the cyborg relation can give us— it shows us that this consideration of our human context is not only possible with CG-art but is required by the ACAP itself.

However, O'Hear objects that a machine cannot have a true reality. O'Hear argues that a computer at a fundamental level cannot create art because it is an entity devoid of any personal experience or capacities to engage in a social context[26]. Without this a computer is unable to enter into the spaces where art originates (O'Hear, 1995 see also Pease et al, 2018). A computer has none of the human characteristics and experiences that are essential for the initiation of the CG-artistic process. The cyborg relation frees CG-art from this objection precisely by acknowledging O'Hear is right—the machine does not have the capacity to have a true reality. However, the cyborg relation shows us how ACAP can accommodate both human experience and the machine's abilities of creation. It

[26] Pease et al. argue that one of the main reasons CG-art is deemed inauthentic is because the audience is experiencing an artwork whose content is based on human experience such as falling in love. This is what Pease et al. call the *uncanny valley effect* (Pease et al, 2018: 273). If a CG-art program presented an artwork about being a depressed teenager that was filled with pathos the audience automatically would question whether there is anything meaningful in the artwork as the program cannot ever know that human experience or even approximate an experience like it. My response to the issue of the need for human experience to express has been to emphasise the inclusion of the programmer in the artistic-process. Instead Pease et al believe that the computer has its own life experience albeit one that is different to humans. They argue it is the experience of the machine's specific artistic actions and the general workings of its processing that should be incorporated into the artwork as the machine's life experience. O'Hear on the other end of the spectrum, is vehemently against the idea of a machine having an inner life.. This is because the computer has no inner consciousness that responds to its own awareness of the outside world. O'Hear argues that even if a computer did have an inner life it would not be a human inner life and so could not express itself in art (O'Hear, 1995).

achieves this because there is an acknowledgement of the limitations of the machine. The machine may lack human experience, but it would be a mistake to assume that it cannot create with the human experience that it is given by the programmer.

The second notable point is that there is a relationship between the computer's capacities and the true reality of the programmer. If the programmer has a true reality and wishes to express it through engaging with a machine and producing a CG-artwork, she then must be aware of her program's capacity when formulating her intention (Colton, 2012). If she is not aware when she gives artistic control to the computer, it would be unable to follow through with her intention when it creates. Accordingly, the process has lost its potential to be authentic. The true reality cannot be expressed if what the machine can realistically do has not been accommodated. If the machine cannot express her true reality, the programmer must decide to either alter her true reality or express a different true reality. This then implies that the programmer has to craft her intention by keeping the machine's limitations and abilities in focus (Cohen, 1974). Therefore, it is important to recognise the degree of knowledge and skill the programmer has to have over her true reality in order to enter into a cyborg relation. Firstly, she needs to know exactly what she wants to express in relation to the computer that she will enter into partnership with. Secondly, she must have enough artistic skill to translate this true reality into an intention in a form that is compatible with the computer's mechanisms. We mustn't underestimate that the rules that have been constructed based on the programmer's intentions are not easy translations. This is because what is being translated is not step-by-step algorithmic instructions but rather rules as guiding principles of a conceptual space.

Now, why would the programmer want to express her true reality as a CG-artwork? The answer is that the ACAP is an artistic-process where human expression can be extended beyond the present limits of how the programmer conceives of all the possible ways to express her true reality. It is inevitable that any artist will be limited in terms of the possibilities of expression that are immediately perceptible to them. This applies also to the programmer. Through its intricate mechanism, the computer is able to transform the expression of the programmer in a way that can allow her to see her own true reality from a different vantage point (Cohen, 1982). For Edmonds, what is significant about this new perspective is how it allows him greater awareness of both his own artworks, his artistic-process and the nature of visual art as a medium. He explains:

> The work allows me to reflect on the implications of the organising principles and the compositional elements that comprise the structure underlying my artworks.... The point is that the computer enables me to express my ideas for the artworks in a way that gave me access to general strategies for constructing and evaluating the outcomes. I can specify rules and relationships between objects in a computer program which then generates visual sequences. From this I can see how this realisation reveals the effects of the underlying structure. (Edmonds, 2018: 56)

The programmer chooses an artistic medium to express in, and it is significant that by engaging with the CG-artistic process the programmer can view her medium through a different lens. This is how the ACAP is unique. Authenticity is compatible with surprise and novelty as the computer is able to offer different manifestations of the programmer's true reality. This can be done as the intention points to possibilities of expression while constraining what is off-the-table. This gives the programmer an authentic artwork, which expresses her true reality while also being shown alternative perspectives to the way this very reality can be expressed.

Randomness

We know what it means to initiate the CG-artistic process in terms of the true reality and the intentions. We also have the description of the ACAP, so we know what needs to happen in order for authenticity to emerge. Since we know that authenticity can only emerge with the right kind of actions, we have to account for how a CG-artistic process can potentially fail to meet the requirements for authenticity. This is to show that if CG-art is inauthentic it is not due to something inherent to it, but rather because it was created by a deficient process. In order to do this, I am introducing the problem of randomness. However, it is a particular kind of randomness, which I am calling *unintentional randomness,* and this must be distinguished from *intentional randomness* and *unpredictability*.

Intentional randomness is when randomness has been purposefully incorporated into the artistic process. Intentional randomness must be grasped as being more like "pseudo-randomness" (McCormack et al, 2014:138) . The reason is that randomness is intended and is incorporated into the process in a way that is meaningful or strategic. The surrealists are a good example of this in terms of

solely human created art[27]. In reference to CG-art, intentional randomness is exemplified by the sub-class of CG-art called *Evolutionary Art*[28]. Intentional randomness in CG-art can be authentic if the true reality needs the computer to create randomly in order to be expressed. The intention must translate this need by setting up the conceptual space so the consequences of randomness can be used appropriately. Finally, the stage of evaluation must then interpret the randomised outcome and select what has captured the artist's true reality. Evaluation also assesses whether the ACAP requires more or less constraint over the extent of the computer's randomisation. Unintentional randomness, on the other hand, is when the programmer has not deliberately intended randomness to be present. Instead, randomness is introduced into the process through a breakdown of the process itself.

Randomness and unpredictability are not equivalent to each other and if they are portrayed as being equivalent, we miss how the machine is incorporated into a unified-artistic-process. Unpredictability in the ACAP comes from the cultivation of the machine's capacity to interpret and follow the rules of a defined conceptual space. McCormack et al. describe that because of the complexity of CG-art machines, there is extreme difficulty mapping out their exact functioning. Following from this, we can say that unpredictability occurs within the parameters of the conceptual framework due to the complexity of the machine and the programmer's inability to account for every part of its processing (McCormack et al, 2014). Therefore, how unpredictable the artistic creation happens to be is dependent on the scope of the machine's interpretive potential. Unpredictability is about the way that the machine has used the rules to create, rather than the rules being altered, discarded or even

[27] Robert Wicks argues that the Surrealists saw rationality as an obstacle to the expression of deeper psychological truths and so intentionally used randomness within their artistic process for more truthful expressions (Wicks, 2009). Kathleen Marie Higgins explains that the Surrealist poets would use a particular form of free association, which they called automatic writing. The free association was deliberately random and was used for the effect of provoking "their audience into an altered state of consciousness" (Higgins, 2009: 488).

[28] Evolutionary artworks originate from a Cyborg Artistic Process that generates artworks over multiple generations of the artistic-process. The CAP of Evolutionary Art combines both genetic algorithms that uses random variation as well as selective decision making on the part of the programmer known as the *fitness function* (Galanter, 2016; Boden, 2011). This means that randomness is introduced to create a conceptual space with a greater scope of expression. Simultaneously, the next generation of artworks are determined by the current generation that have been chosen by the programmer because they have been deemed successful. Boden and Edmonds argue that even with the randomness introduced "what ensues is a gradual evolutionary progress towards they type of structure favoured by the artist" (Boden & Edmonds, 2009: 33). Therefore, intentional randomness can be authentic if the true reality needs randomness to be part of the process in order to be expressed. Evolutionary art programmers want their true reality to be expanded through randomness. This means that embedded in the true reality is the idea that it must be radically transformed. Furthermore, due to the stage of evaluation the consequences of randomness can be incorporated appropriately in the process. This is because the programmer will choose the artworks that point to the direction of her true reality and use these artworks for the next generation.

collapsed. Therefore, we can say that when the artwork is being created with coded rules and is unpredictable it is still authentic, because it is following the direction of the programmer's intention.

Unintentional randomness is a breakdown of the CG-artistic process because the machine creates artistic creations that have no relevance to what the programmer wished to express. Unintentional randomness then occurs because the process ceases to be given direction by the intention or does not work within a properly defined conceptual space. Let us recall Edmonds— if we want the computer to create as a participant, then the rules have to be constructive and clear (Boden & Edmonds, 2009). Without the rules being suitably composed the computer cannot create in a way that properly expresses the true reality of the programmer. The guidance of the intention is necessary in the process, so that the machine's potential for unpredictability is always within the borders of what would express the programmer's true reality. Unintentional randomness is then simply the computer creating based on weak rules that leave the conceptual space vague, formless and excessively open. This is when the possibilities of creation is so broad and inconclusive that the expression is then non-existent (Boden, 1997).

With a breakdown between the intention and the rules constructed, we have the situation where the computer is not expressing the programmer's true reality, and so is denied entry into a cyborg relation. Ultimately, the computer is not properly connected to the programmer as the computer cannot generate any expression other than the expression of randomness. This means that the consequence of unintentional randomness and the lack of preservation of the truth of the true reality is that there is no unified-artistic-process. Unintentional randomness disrupts and disintegrates the cyborg relation because there is discontinuity between the different stages of the process. The preservation of what is true within the artistic process, shows us how the emergence of authenticity is connected to the rules being formed properly. The preservation of purpose means that not only is what expressed true, but it was purposefully true. Where it is not by chance that the true reality was transformed into an artwork that expressed it, but rather that the whole process worked towards this very expression.

This places a great deal of responsibility in the hands of the programmer because it is the programmer's constructed rules and conceptual space that prevents the machine's actions from sliding into unintentional randomness. There has to be a well-defined conceptual space that is not based on step-by-step algorithmic instructions that compromise the machine's independence. However, the rules also cannot be vague and all-encompassing either. There, cannot be a situation

where the machine creates in a way that has no relevance to what the programmer wishes to express. When the programmer is at the stage of evaluation, and is faced with unintentional randomness, she has to look carefully at the rules to assess where her intention has failed to form the rules effectively. The rules must be well-defined guiding principles that are as systematic as they are flexible (Dartnell, 1997). This is because the computer is given the chance to participate only when its potential ability to create in a manner that allows authenticity to be present in the process, is strengthened by its relation to the programmer (Cohen et al, 2012). The computer's actions can serve the artistic process as a whole, by producing inventive and surprising artworks that are meaningful in that they were meant to be expressed.

I believe that this shows us why the programmer is so instrumental in ACAP-- it is the responsibility of the programmer to have the process avoid unintentional randomness. Unintentional randomness occurs when the computer hasn't been incorporated into the artistic-process properly because it is disconnected from the true reality due to deficient rules. The computer then will be a vehicle for inauthentic artistic creations but not because of an inability to create in the right kind of way for authenticity to be present. Instead, it is because its potential as a participant has not been realised. The responsibility of the programmer then is to respect that the computer is dependent on her fulfilling her artistic role in order for the computer to do the same.

Subjective Evaluation

The last stage of the Authentic Cyborg Artistic Process (ACAP) is the stage of evaluation. I want to make two points of clarification before I examine the stage of evaluation in more detail. The first is that the stage of evaluation is only concerned with evaluation within the CG-artistic-process. Therefore, how the audience evaluates when engaging properly with CG-art is not being addressed here. The second is that the stage of evaluation is not the part of the process, from which authenticity emerges from. Instead, the stage of evaluation acts as a critical reflection of whether authenticity has become present in the rest of the process. What this means is that the stages of intention and creation are the stages responsible for the correct conditions needed for the presence of authenticity. Evaluation, instead, is about whether those conditions have been met and if they have not, how best to meet them.

However, that being said, within the CG-art community, there is no complete agreement on whether the machine has the capabilities to evaluate itself. For instance, Colton has a specific vision in mind for The Painting Fool in the future:

> Not only do we plan for The Painting Fool to use critical judgement to guide its processing, we also plan for it to invent and defend its own aesthetic criteria to use within these judgements. For instance, it will be difficult but not impossible to use machine vision techniques to put its own work into art-historical context and appraise its pieces in terms of references (or lack thereof) to existing works of art. (Colton, 2012: 8)

I have argued that evaluation is one of the parts of the process that can only be fulfilled by the programmer and so because of this have argued that CAP demands a cyborg relation. However, this comes into tension with Colton's vision and the presence of deep learning techniques in AI (Hutchings et al, 2019). Nevertheless, I still believe that if authenticity is desired, then the evaluation stage of the CG-artistic process needs to be realised through the programmer engaging with subjective evaluation. To explain why I wish to contrast *subjective evaluation* with *objective evaluation* since it is crucial that we do not conflate them.

I think it is plausible to credit the computer as being capable of objective evaluation. Objective evaluation is concerned with the assessment of the quality of an artwork in terms of its formal patterns of aesthetic features in relation to other artworks. If capable of objective evaluation, the machine would be able to judge the quality of the artwork it created (Cohen et al, 2012). This is because this form of evaluation is not obligating the computer to have a depth of understanding that would be beyond its abilities. As Colton imagines it, this evaluation would be generated by the computer comparing the artwork it created against artworks that are closely related in terms of its formal characteristics. The computer can then evaluate by analysing its own artwork to see how it can better fit with the other artworks it corresponds to, as a means to determine aesthetic quality (Colton, 2012). Objective evaluation does not require human experience or human qualities that aid artistic responses such as emotions or thoughts.

Objective evaluation is linked to authenticity in that it assesses whether the artwork can be said to be formally authentic. We can define *formal authenticity as being present when the formal features of the artwork manifest in a way that is true to the defining characteristics of the style, genre,*

movement or period etc. that the artwork identifies with[29]. An argument for the importance of formal authenticity is mentioned by William Bossart.

> To experience a work of art aesthetically means to enter the tradition in which the artistic values of the work become significant; and the degree to which the work itself makes this tradition accessible to us is the extent to which it is internally coherent and, consequently, successful as a work of art. (Bossart, 1961: 152)

I believe that whether CG-art can be formally authentic does not matter for our engagement with it. This is because it is difficult to assess formal authenticity with CG-art. Do we assess formal authenticity according to the style of human art that the CG-artistic process is adopting? Or is formal authenticity assessed by standards of CG-art as its own movement? If a CG-artwork is intended to be in an impressionist style we can say that the computer could evaluate whether the artwork's formal features ensured it was identifiable as an impressionistic artwork. The problem we have is that this is not evaluating CG-art per se because CG-art has no identifiable formal characteristics as it is. Instead, CG-art is a practice of creating art (Galanter, 2016). This shows us two things. The first is that whether it is the computer or a human evaluating, formal authenticity is not helpful when it comes to CG-art. The reason is that CG-art is not defined by formal features but rather by a methodology. The second is that objective evaluation doesn't require the computer to have an intention or a true reality. This means that the computer cannot evaluate in the way necessary to ensure the emergence of authenticity if there is no intention or true reality to guide it. Therefore, even though the computer can plausibly assess the quality of the artwork it created, for authenticity we have to return to the cyborg relation again.

[29] Kendall Walton offers us a rich framework in terms of how formal authenticity can be determined.. He argues that when we categorise artworks based on their aesthetic properties it is important to distinguish between *standard, variable* and *contra-standard* properties in relation to "perceptually distinguishable categories of art" (Walton, 1970: 336). Perceptually distinguishable categories of art are categories that a recognised based on our sensory experience of particular kinds of art, such as with our sight and paintings. We can ascertain whether an artwork is a member of a perceptually distinguishable category through how the different features of the artwork presents itself to us. A standard property is a feature of an artwork where if it is not present in an artwork it means that this artwork cannot belong to a particular category. Without the feature the artwork is disqualified. A variable property is a feature that when present in an artwork it has nothing to do with the category of art that the artwork belongs to and so can neither disqualify or qualify the artwork. Lastly. a contra-standard feature where instead of there being a lack of a feature to disqualify the artwork it is because there is a feature present that disqualifies the artwork. We can then infer that if the computer is engaging with objective evaluation it would have to be able to remove variable features from its consideration and be able to distinguish between standard and contra-standard properties. This implies that if objective evaluation is possible in practice the computer would require the programming of a vast amount of aesthetic knowledge to be able to make these distinctions.

I want to argue that the ACAP requires that the programmer conducts the more complex subjective evaluation. Nake argues that the machine is incapable of the evaluation that requires the "subjective character of a value judgement." Instead, machine evaluation can only be based on strict criteria that are both "formal and computable" (Cohen et al, 2012: 101,102). The evaluation of the ACAP encompasses a sense of perspective of how the other parts of the process relate to each other. Evaluation brings with it critical judgement, with the purpose to determine whether authenticity has emerged from the artistic process and if it hasn't, where the process has broken down. This means that subjective evaluation is beyond the capacities of the computer as what is required is an intimate knowledge of the true reality, since the true reality becomes the means of assessing whether authenticity is present or not.

Significantly, subjective evaluation in its focus on realising authenticity also ensures other qualities of value. The programmer when at the stage of evaluation, not only assess whether her true reality has been carried through the process to be expressed by the artwork, she also assesses whether there has been a preservation of purpose within the artwork. This means that the programmer has to assess whether both herself and the computer have performed their role appropriately for their respective stages of the process. Essentially, the programmer evaluates whether both the machine and herself transformed and preserved the truth of the true reality into artistic form. To assess whether the preservation of purpose has been extended to the machine as a partner, the programmer has to evaluate whether she has constructed a strong foundation of rules. Authenticity also demands that there be no deception and so demands that every element of the process preserves what is true. It is to guarantee that the intention has not manipulated or deceived the nature of the true reality and that the rules of the conceptual space do not distort what is true when the computer creates.

At each stage of ACAP the programmer must consider the best way to proceed in order to ensure that authenticity will emerge as the process unfolds. At the centre of these considerations is how best to form the partnership with the machine, showing us the necessary thread of interdependency that runs through the process. There is the consideration of the machine's limitations and capacities when choosing which true reality to express. There is the consideration of the machine's dependency on well-constructed rules in order to avoid unintentional randomness. And then there is the consideration that the programmer has to have of the process in its entirety in order to evaluate whether authenticity has emerged. The next part of my examination of ACAP is by looking at in detail at the implications of ACAP for concepts that are interconnected with the CG-artistic process.

These concepts can be seen as naturally extending from both the nature of CG-art and authenticity. We all look at autonomy which is bound to the definition of CG-art and originality and authorship which are concepts that are natural extensions of authenticity. All three concepts can be connected to authenticity as they also occur only because of the right kind of actions. Autonomy ensures an artwork can count as CG-art through the right way of creating independently. Authorship is creating in the right kind of way to be recognised as engendering an artwork oneself and originality is creating in the right kind of way for the resulting artwork to be individuated and unique. Since we are taking authenticity as our primary goal and orientating our approach to CG-art around it, it means we have to understand how these concepts relate to authenticity since we cannot do without them.

Implications for Other Concepts

Autonomy

The quest for the emergence of authenticity within the Authentic Cyborg Artistic Process (ACAP) has wider implications than just the workings of the process itself. It has implications for how we conceive of the independence of the computer. We have to look at the relation of the machine's autonomy and authenticity because if the machine has no independence, then there is no CG-artistic process at all. I want to argue that when the ACAP is achieved it is because the autonomy of the machine has ultimately served the emergence of authenticity in the CG-artistic-process (Cohen et al, 2012). Fundamentally, the autonomy of the machine has to be aligned with what is required for the truth of the true reality be preserved through each stage of the ACAP. The cyborg relation is by nature a relationship between machine and programmer; therefore, the autonomy of the machine will ultimately be relative to the programmer. However, given its capacities, the machine cannot be autonomous in a way that is anywhere close to human autonomy (Hutchings et al, 2019).

A useful place to start with the concept of autonomy is Boden's distinction between two kinds of autonomy. The first is physical autonomy which is categorised by an organism being able to self-organise and whose actions are independent, as in they are not determined by an external force. The second kind of autonomy is associated with consciousness and freedom (Boden. 2011). For humans to be autonomous one must be self-governing. It is the capacity to consciously choose how to act independently (Buss & Westlund, 2018). Autonomy involves having one's actions originate not from an external source (Boden. 2011). The machine certainly does not have the capacity to consciously

act and its actions can be traced back to the external source of the programmer because of the rules. However, the machine can act independently without being directly controlled (ibid). This means that the machine does have autonomy for it has the particular kind of autonomy called *relative autonomy*.

Relative autonomy is present in an entity when that entity has the capacity to act without being directly controlled but with the condition that this capacity is relative. It is relative as autonomy only occurs after the entity has first been placed in the position to act by another[30]. This is what Galanter calls a "weak form of autonomy" that is "simple and modest" in that it is basically the machine not requiring "moment to moment" decisions by the programmer in order to operate (Galanter, 2016: 152). Nevertheless, this autonomy is relative because the computer has to be placed in a position to create first. This is done by the rules that give the machine the foundation for its actions. The machine's autonomy is then relative to the programmer's decisions about how the machine must be positioned in order to fulfil its capacities to act independently. However, the programmer is in a relative position of autonomy as well because without the machine acting independently her intentions to have a machine create with her true reality will be a failure. Therefore, CG-art is a product of the cyborg relation between the autonomy of the machine and the autonomy of the programmer.

What this relative autonomy signifies is that the process has to be balanced in a way that enables authenticity to emerge. Significantly, the degree of independence that the programmer gives the machine, can be a determining factor when assessing whether authenticity is present in the process or

[30] Relative autonomy is closely connected to the feminist concept of *relational autonomy.* Traditional concepts of autonomy define an autonomous agent as self-governing and self-determining. According to Natalie Stoljar, the feminist critique saw these definitions as being "atomistic" and unrealistically self-sufficient. These critiques are useful for CG-art. This is because it answer objectors who would not recognise that the machine is autonomous despite not being entirely self-determining or self-sufficient. Stoljar explains that feminists argue, instead, for a new conception of autonomy called relational autonomy. Relational autonomy does not require complete self-sufficiency because it is compatible with agents being in relationships with others including situations of interdependence (Stoljar, 2018). The reason I have called the autonomy of CG-art relative autonomy instead of relational autonomy is because of the level of dependence of the machine on the programmer and the somewhat less dependency of the programmer to the machine. If the programmer does not explicitly program autonomous behaviour into the machine's code and only codes step-by-step algorithms then the machine will not have any autonomy. The machine's autonomy is relative to the programmer's decisions. To a lesser extent, the programmer's capacity to fully enact her decision to create CG-at is relative to whether the machine can successfully be independent. This relative dependency is not equal. While the programmer has autonomy in her own right, the machine only has autonomy in virtue of the programmer. In this sense it cannot be relational autonomy as it does not involve two autonomous agents embedded in a social relationship but one entity dependent on the other for its autonomy to be possible.

not. If the programmer does not grant enough autonomy in reference to relinquishing her artistic control, then the ACAP cannot be reached. The independence of the machine is required for the cyborg relation because the relation is about a partnership between machine and programmer that is constituted by an exchange of artistic control. The machine needs to be able to act on its own to have enough artistic control to fulfil its role in ACAP. Notably, the machine does not just require a slight degree of independence to act beyond the programmer's control; it needs enough independence to allow room for unpredictability to occur, leading to innovative artworks. The machine has to be able to contribute to the process through its own artistic activity for authenticity to emerge.

On the other hand, if the desire of the programmer is for autonomy to be a primary focus and for the machine's independence to be maximised it seems that the machine will have to create with no constraints (Boden, 1997). If we accept this, then we must be comfortable with unintentional randomness which cannot be authentic. This is because the machine's independence has not been constrained in a way that guides it to fit the purpose of ACAP as a whole. Autonomy ultimately has to serve the preservation of what is true about the true reality in order to express it in an artwork. The problem with a machine acting with no predetermined rules is that the outcome can only be that the connection between the programmer and the machine is severed. The machine may act unpredictably but in the ACAP it still creates based on a predetermined framework of rules. When the degree of autonomy that is given to the machine is excessive then there is little to no chance of the machine being a participant. The reason is that the machine cannot be connected to the wider CG-artistic process as a contributor if it has not been constrained by what the whole process needs for authenticity to be present[31].

If the machine's autonomy is excessively restrained it obstructs the realisation of the CG-artistic process and if excessively unrestrained, autonomy obstructs the realisation of authenticity. This means that autonomy of the machine is a careful balancing act for autonomy both needs to be present but at the same time needs to be bound according to the intention of the programmer. Just as the capacities of the machine are considered when the programmer intends, so must the degree of autonomous behaviour that the programmer will code into the machine. The programmer will have coded within the machine's initial programming mechanisms that allow it to act independently, according to the kind of conceptual space that is constructed. A complex conceptual space will

[31] Boden argues that "to throw away all constraints would be to destroy the capacity for creative thinking" (Boden, 1997: 6). This, I believe, applies equally to a machine's potential to create.

require greater machine independence to fully respond to it. Nevertheless, the machine cannot go beyond this conceptual space or there is the risk of unintentional randomness. The rules then facilitate the machine's autonomy and dictate how the autonomy is to be followed through. This is always in relation to the demands of the ACAP.

Originality

We have been looking at the Authentic Cyborg Artistic Process (ACAP) in depth by focusing on the level of authenticity defined as *origins as process*. However, when it comes to art, authenticity is also interconnected with other concepts that are commonly treated as conceptual extensions of authenticity such as originality and authorship (Boden, 2011). Now, turning to originality, we find that part of the concept of authenticity is that what is authentic is individuated and unique for it expresses its true nature. Therefore, an authentic artwork is original in the sense of having its own distinctive identity rather than being a copy[32]. A copy is automatically considered inauthentic for two reasons, the first is that it does not have its own unique identity for it has taken the identity of another artwork and another artistic-process. The second is that when a copy pretends not to be a copy it is manipulative in that it claims an identity that did not create itself (Stalnaker, 2013 see also Dutton, 2005). I will argue that the ACAP guarantees original CG-artworks, which proves that there is a connection between authenticity and originality. However, this has implications for the fabric of ACAP in terms of the relationship between authenticity and generic rules.

ACAP does not have to deliberately set out to create a unique artwork but rather it is a natural result of the process. Therefore, if CG-art is authentic, we can then know we are engaging with an artwork that is unique. If the expression of the programmer is a true reality it will be specific to the individual programmer and her context. When entering into ACAP the programmer has to accurately translate this specific true reality into an intention. If this occurs, then the foundational rules of ACAP are individuated in a way that creates a conceptual space with clear parameters. Within these parameters the unpredictability of the machine opens greater potential for new means of expression and so

[32] O'Hear argues for what he called the *Singularity Thesis* which claims that for art to be of worth it is a necessity that it is individuated and unique. When the audience can see the artwork as an expression of the artist's skill and judgement there is a reassurance that the artwork created is distinctly her own (O'Hear, 1995). Bossart echoes this arguing that authenticity refers to a work of art that is "born of the personal vision of an artist not of mere imitation. It is this elusive quality of originality which distinguishes the work of the artist from that of the technically proficient and gifted craftsman" (Bossart, 1961: 145). Originality then comes from the right kind of process where the artist expresses herself truthfully and so individuates the artwork.

greater potential for unique CG-art. When the programmer evaluates, she contributes to the artwork's originality. This is because as she judges whether her translation captured the true reality, she is simultaneously assessing whether what is particular about the true reality has been appropriately accounted for in how the intention guided the rules. Therefore, an accurate translation that is needed for authenticity preserves both the truth of the true reality and protects the individuality of what needs to be expressed. Furthermore, the uniqueness of the true reality is enriched by the computer's interpretive possibilities of the rules.

I have used a particular definition of originality, which is that what is original is something individuated, particular and unique. However, Nan Stalnaker asks us to think of the other meanings of originality.

> In calling a work “original” we should also distinguish between the claim that a work was invented by the maker and not copied from another work, and the claim that a work is original in being groundbreaking or innovative. (Stalnaker, 2013: 464)

It would seem that the ideal of an original artwork would be that the artwork is innovative and novel while also not being a copy (Boden, 2011). However, what if the requirement for an original artwork is that the programmer draws from other sources? I am concerned here with the issue of genericism. Hutchings et al describe genericism as being when programmers come to use rules within their process that have been programmed by others for their own Cyborg Artistic Process (CAP) (Hutchings et al, 2019). I have been describing the ideal situation— the rules that the programmer codes into the computer are rules that she constructed herself based on how her intention translated her true reality. Presently many programmers rely on rules that have originated from a common source of exchanged code (Galanter, 2016; McCormack et al, 2014). This inevitably leads to questions of whether this makes CG-art created through generally sourced rules automatically unoriginal in terms of uniqueness and whether generics are the right way to conduct a process for authenticity to emerge.

Hutchings et al argue that what is considered inauthentic by many objectors of CG-art is the fact “that works made with the same or similar algorithms--even by different artists--possess a certain generic and repetitive character (Hutchings et al, 2019: 44)." However, since authenticity is judged as the origins as process we cannot know whether this disqualifies CG-art programmed with generic rules unless we look at the artistic-process and how it was conducted. Hutchings et al echo this:

> Algorithmically generated art systems emphasise process as the primary mechanism of artistic-responsibility. A generic or copied process will produce generic work. In considering generative systems in an artistic context, the "Art" is in the construction of process. If that process is derivative or memetic then the work itself will likely share similar properties to others, making any claims to artistic integrity minimal. (Hutchings et al, 2019: 45)

I will depart from Hutchings et al by claiming that there is an important distinction between a copy and a generic in terms of CAP. My argument does not assume that generics are derivative automatically. Instead, generics can still be incorporated into ACAP and fulfil the demands needed for authenticity to emerge. My claim is that generics are not instantaneously an obstacle to the creation of authentic CG-art. Conversely, I presume that like all authentic artistic-processes it is the manner that the generics are introduced into the process that matters.

Our general understanding of copies of art is that they are exact or close replicas of other artworks and can even pass for the artwork that they are replicating. For our purposes, what defines a copy is that it is an artwork that originates from an individual who does not go through the artistic-process herself, as we have described it, but instead replicates the result of another's artistic-process (Dutton, 2005). The copycat's process is essentially parasitic. The generic can be defined as a certain rule that addresses the part of an artistic-process that is concerned with the workings of the medium itself. Generics can be incorporated into a wider framework of rules of the programmer who adopts it.

We have to consider the practicalities that CG-artists will face. The practicality that is most obvious is that building a program from scratch might not be feasible for many programmers (McCormack et al, 2014). It might simply be pragmatic to out-source some rules instead of going through the time-consuming coding process[33]. In order to accommodate this practicality, we must separate our notions of the rules the programmer has to construct and the rules that belong to the medium of art that the artwork will belong to. Let us recall the process of David Cope and his two sets of note patterns. One

[33] Dorin et al. argue that code-based approaches may offer expansive flexibility with regards to the process of creation. However, this has not been reflected in the current practice as much. A great amount of CG-art is based on established readymade systems and conceptual spaces. Dorin et al. are worried that this common code becomes fuel for imitations and copies rather than stay as generics. They are worried that by adopting the code these shared systems could be used without any understanding of the shared systems by the programmers who adopt them into their Cyborg Artistic Process. This worry I believe can be answered if generics are understood as being rules that belong to artistic mediums instead of being rules constructed by programmers (Dorin et al, 2012).

kind of note pattern would be the rules based on his intention that the computer create in the style of a particular composer. The other, would be the rules of the medium. Perhaps you want as a part of a rule for your composition, the modulation of your key signature to G minor. In order to do this you would have to ensure that all B notes were a B flat and all E notes were an E flat. No matter what programmer and what CAP focused on music composition will be adopted, if G minor needs to be present then that rule will have to be in place. Furthermore, it would have to be in place before the programmer creates her own interacting rules involving G minor (Boden, 2011).

McCormack et al argue for the purpose of generics:

> It should be noted that a substantial amount of human effort has gone into understanding and modelling these processes. It would be unrealistic to require individual artists to devise equivalent processes independently. (McCormack et al, 2014:139)

So there is a difference between the rules of the medium and the rules of the programmer's interpretation of the medium based on what she intends to express. What this means for us is that there can be some rules present in the programming that are not directly programmed by the programmer but are rather out-sourced from a general model of the artistic medium. The out-sourced rules help to translate the true reality, for it is the rules of the medium that are used to make the programmer's constructed rules. McCormack et al continue:

> The same canonical processes can shift from sublimity to parody depending on artistic interpretation, which requires a degree of technical comprehension. (McCormack et al, 2014:139)

This is essential because there can be use of rules originating from a basic generic model. This model is the elements of the medium that form the foundation of how the programmer's rules will be built and connected. It is the "technical comprehension" of the programmer who will use these generic rules to form a conceptual space so that the computer can express her true reality.

The rules of the medium correspond to the generics within the CG-artistic process for they are rules that are formed based on models of artistic mediums in forms that are compatible with computers. The generics do not include the rules that the programmer has to build so that she can express her true reality. Generics are basic foundational rules. This means that if a generic is used within the ACAP, there is no threat of it being a copy because the programmer's rules that are a product of her

intention and true reality are not out-sourced rules. This suggests that a copy of a CG-artwork will simply be the replica of the rules that another programmer has formed based on her true reality. There is no ACAP involved with copying because the individual copying is not constructing the rules based on her particular true reality but of another's. This means that it is not necessary for the programmer to start the process completely from scratch. The generic models of the artistic medium offer a foundation of rules that can be collectively drawn upon. The generics are not enough to create an authentic artwork because they cannot express a true reality just as they are. Therefore, the programmer has to develop the generic rules into a specific conceptual space of interacting rules that enable an expression of the programmer's true reality.

What is the significance of the distinction between generics and copies for our engagement with CG-art? I believe that it is important to clarify for audiences that for authenticity to emerge, the programmer does not have to construct the whole of the program without any help from collective resources pooled by CG-artists (Galanter, 2016). The generics are not the specific rules of expression but just foundational rules coming from models of the medium. If generics were actually the rules of particular expressions and they were collectively used, then we are more likely to be in the domain of copies. It is not about having to program everything with one's own hand, instead, it is about using the generics that are chosen in the right kind of way when constructing a conceptual space.

Authorship

The concept of authorship cannot be removed from authenticity because authenticity within an artistic-process can only emerge if there is something creating in the right kind of way. With respect to CG-art, we do not have to choose between the machine and the programmer as the sole author of the CG-artwork. However there are two notions of authorship that fall into that either/or trap: one that privileges the conceptual work of the artistic-process and the other that privileges the acts of material creation. These assumptions are because of a failure to recognise the possibilities afforded by the cyborg relation.

O'Hear puts forward an argument that connects the artist's intention and authorship. Authorship results in the potential of the artist to intend to express her lived and social experience and her ability to create artistically with that expression. When this potential is realised, the artwork created belongs

to her (O'Hear, 1995). If O'Hear is correct the machine cannot be an author because the machine has no capacity to intend and has no experience with which to express. This means that the programmer is solely responsible for the identity of the artwork, implying that authorship is determined by the conceptual labour of creating the artwork. However, we generally assume that ideas are not enough to create art, or everyone would be artists. Most people accept the notion that it is the actual acts of creation that matter because it is these actions that determine the existence and character of the artworks. In terms of CG-art the machine's actions contribute to the identity of the tangible artwork because the result is more than the programmer's idea since the computer can create unpredictably (Cohen, 1982). If this notion is true, then the machine is the sole author and efforts of creation is what determines authorship since ideas are treated as merely suggestions[34]. These notions can cloud the fact that authorship in ACAP does not have to be an either/or. With a cyborg relation both the machine and the programmer can be authors because of their respective artistic roles within the process.

The programmer and the machine are responsible for the creation of the artwork as both of their efforts determine the resulting artwork. These efforts are substantially different in character as they depend on what the artistic role demands. The effort of the programmer comes in two forms— it is the effort of judgement and the effort of guidance. The programmer judges how to translate the true reality into an intention and judges the outcome of evaluation and provides guidance to the computer' creation through the constructed rules. The machine in contrast is the part of the process that engages with the efforts of creation through creating a material artistic product whether physical or digital. These efforts are constituted by the unpredictable processing of the rules. If ACAP has been realised it necessitates that the machine and programmer can be considered as authentic authors because it is their combined efforts which have allowed authenticity to emerge. In the case of ACAP,

[34] Dominic Lopes has articulated two different notions of authorship. His first states that what is fundamental is that authorship is rooted in the activity of art-making. This connects to the idea of effort and labour within the artistic process. The notion of physical creation as authorship states that authorship comes from the actions that form the artwork where if those actions did not occur the artwork would not have its character. What gives an artwork its identifiable properties according to the first notion of authorship, is the actual act of creating a tangible and material artwork. However, the second notion of authorship argues that it is the conceptual work of intending a particular expression that determines the nature of an artwork. Fundamentally, the actions that determine authorship are intentional choices of which properties the artwork will contain even before the artwork is materially created. Authorship then, according to the second notion, is about intending to express rather than actually creating the artwork. Lopes then argues that it means an artistic activity can be anything from writing code to screaming in a room as long as there is the appropriate artistic intention. The act of creating a tangible artwork is not considered necessary for authorship. Instead, I believe that each notion is empty without the other. Authorship is both about intention and having an expression that is one's own as well as the act of creating an artwork. The cyborg relation can capture this synthesis (Lopes, 2010).

the machine and programmer have to be true to what their artistic roles require for authentic authorship to be conferred.

Hutchings et al speak about Romantic notions of authorship, where there is a hierarchy between art that results from "true imagination" and art that is just an applied physical creation (Hutchings et al, 2019:42). This recognition should also be understood as a hierarchy of authorship— the author that conceives and expresses is higher in the hierarchy than the author who just creates a material aesthetic product. This could lead to an objection that may grant that both the programmer and machine are authors, but still object to them being equal authors a there is a hierarchy of authorship. The programmer has the true reality and so the programmer must be considered the author. Since the true reality forms the intention that guides the process, it means the identity of the artwork is credited to the programmer only. I will argue that this is wrong and authorship is a matter of machine/programmer interdependency. Accordingly, there are two ways to argue that a hierarchy of authorship is misguided.

The first understands that this hierarchy is based on a fact of ACAP— there is an unequal extent of participation between the programmer and the machine. This difference is that ACAP has to give the programmer greater artistic control because it is necessary that the programmer has a perspective of the whole of the artistic-process, not only the parts of the process she acts in. Nevertheless, what is crucial for authorship, is that it is not about who contributes the most as this would be prejudiced against the machine whose capacities means it cannot contribute more. Instead, we need to think of allocating authorship based on the value of the contribution. What the ACAP guarantees is that the authorship of the machine and the programmer are of equal value because they are dependent on each other, and both require each other to realise the process as a whole. This is because the programmer as author initiates ACAP and the machine as author allows us to define the resulting artwork as CG-art.

This connects to the second point. Isolation of the parts of the process from each other is the only way hierarchy can be effectively formed. Consequently, creating a hierarchy of authorship misses the point that evaluation would have to immediately dismiss any hierarchy within the process. This is because evaluation concerns interconnection between the different elements of ACAP. These interconnections must be taken as equally important for every stage is a determining factor to whether authenticity emerges or not. We have to recognise that the artistic-process is an inevitably

interconnected process where the programmer and the machine are seen as authentic when fulfilling their roles and working towards the realisation of authenticity as partners.

Authentic authorship is not the phenomenon of the programmer and the machine as a merged single author. Instead, it is their distinctive roles that make them authors in different respects. However, importantly, the best way to understand authorship with ACAP is to see it through the lens of the cyborg relation. Both the machine and the programmer are authors, but it is their relation as co-authors that is the true origins of the artwork. It is the partnership between machine and programmer as they conduct their different artistic roles that is solely responsible for ACAP and the emergence of authenticity. It is this understanding of authorship that is crucial for our engagement with CG-art. The reason is that acknowledging both the machine and the programmer as authentic authors is fundamental to recognising them as partners in the process. This opens up a recognition of the value of both of their contribution.

Part IV

Authentic Representation

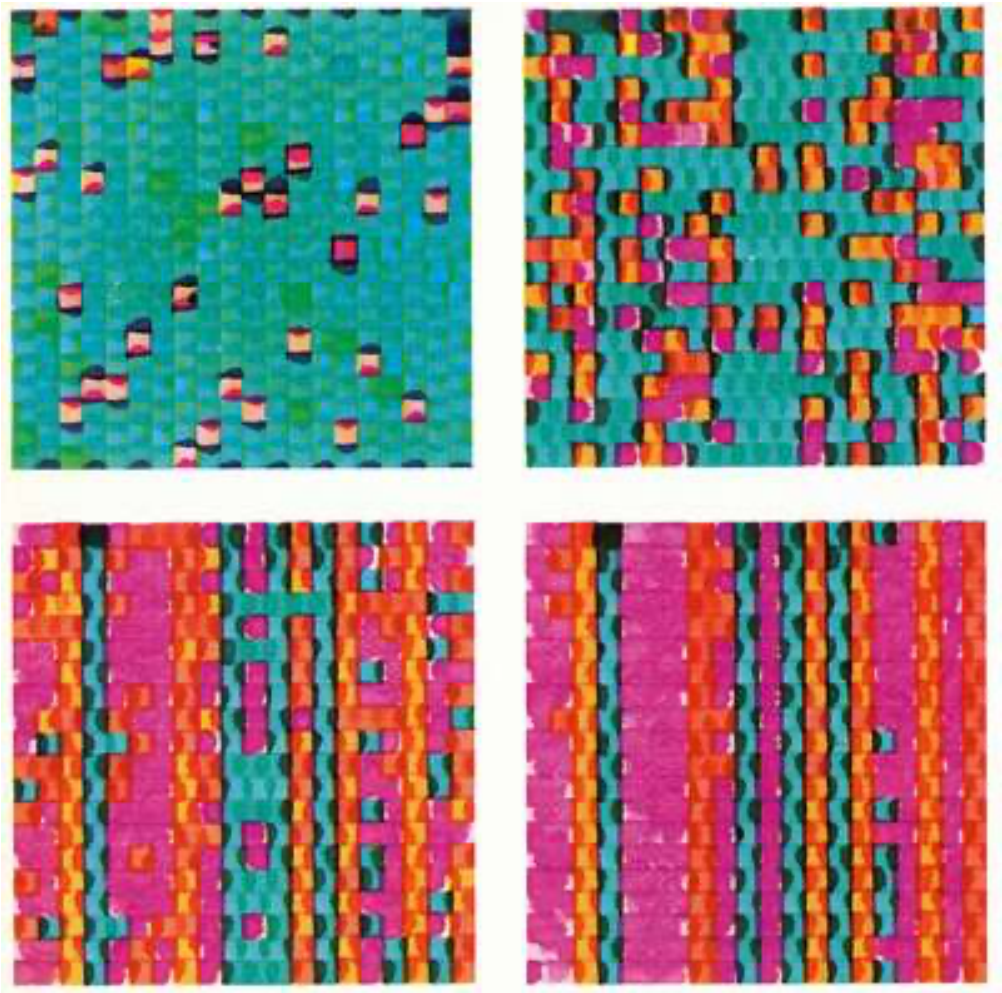


Figure 7 Frieder Nake Matrizenmultiplikation, Serie 40 1968

We started our exploration of CG-art and authenticity by first looking at the level of authenticity understood as the origins as process. Yet, as my examination unfolded, the question of engagement was not directly focused on. Since I claimed that authenticity is needed for greater engagement with CG-art it was necessary that I first show how CG-art can be authentic. To do this I had to focus on the methodology of the Authentic Cyborg Artistic Process (ACAP) and its implications for other closely related concepts like originality. The purpose of this is to demonstrate that the barrier to our engagement with CG-art is not that it can never be authentic art. This leads us to the question of why we would still have barriers to meaningful engagement and what those barriers would look like.

The barriers to the engagement of CG-art can be largely found in the misperceptions surrounding CG-art. These misperceptions are usually based either in fear, scepticism, or excessive romanticisation. The consequence of this is that it results in us not engaging with CG-art appropriately and so we leave it unexamined. Moreover, we risk having the development of a new artistic practice continuing with no reflection on its meaning. The difficulty is that these misperceptions grow in strength when CG-art is inauthentically represented. Therefore, the level of authenticity that represents the origins of the CG-artwork truthfully is just as important as the level that determines whether authenticity emerges in the first place. Inauthentic representation is when any artwork that is produced by Cyborg Artistic Process (CAP) is represented in a way that has distorted or deceived its nature. When we have inauthentic representations, it does not matter if the audience is confronted with an artwork that has been produced by ACAP. This is because inauthentic representations are a barrier to the recognition of ACAP and so a barrier to desirable engagement.

Misrepresentations and the Humanity Gap

Anthropomorphisation

We should acknowledge and respect the reasons why CG-art is different from other practices of art. However, the difference in the process of CG-art, can be easily dismissed and overridden by misrepresentations. One of the greatest challenges to fully engaging with CG-art is that the finished artwork can be indistinguishable from art created solely by a human artist. Cohen’s AARON produces paintings that look like paintings and if put next to a human artist we would not say they were inherently different (O'Hear, 1995). This is why CG-art is empirically undeniable as art but it is

also the reason why it is so crucial to represent it accurately. This brings us to the great obstacle of anthropomorphisation[35] and the narrative of the machine as the sole-autonomous-creator.

The notion of the machine as the sole-autonomous-creator is that CG-art is produced by a computer who can enact the whole artistic-process by itself with no human interference, besides initial programming. Behind this idea is the false belief that the computer can perform the same roles as human artists in the artistic-process (Colton, 2012; Pease et al, 2018; Hutchings et al, 2019). This is a prime example of anthropomorphism. What is interesting about this is that the false belief provokes three different kinds of audience responses to CG-art, which inhibit proper engagement. Cohen describes two of these responses:

> The public seemed to be divided pretty evenly between un-sceptical believers and unbelieving sceptics. The believers were happy to believe that computers could do anything and consequently accepted the idea, with neither difficulty nor understanding, that mine was making art. The sceptics thought computers were just complicated adding machines and, consequently, experienced insurmountable difficulty and equally little understanding, in believing that mine was doing what I said it was doing.(Cohen, 2018:44)

The first two responses are fear and scepticism and both of them lead to a similar outcome. Fear is a response of paranoia that CG-art will take over what is human about art since the computer doesn't require human input[36]. While scepticism is the disbelief that computers could ever create authentic

[35] Both Hutchings et al. and Pease et al. refer to how CG-art has largely been represented in anthropomorphic or personified manner. Hutchings et al argue that anthropomorphisation of machines is reinforced through commonplace descriptions of AI in our culture (Hutchings et al, 2019). We can see this in how AI is made completely human-like in most movies. Pease et al. argue that in some ways anthropomorphisation has seemed beneficial for the Computational Creativity community because by using human artistic-processes as a reference, it provided a language to aid understanding when explaining the programs' nature. However, they argue that this has led to the problem of giving a "false impression of humanity where there is none" (Pease et al, 2018: 276). The cyborg relation on the other hand is able to describe the CG-artistic process in terms of human artistic processes such as with the stage of intention and the true reality. However, it can do this without representing CG-art anthropomorphically. The cyborg relation can include successfully human elements because the machine is never described has having artistic capacities that only the programmer possesses.

[36] Colton speaks of the "public's perceived fear over the automation of human abilities, particularly in the creative domains" (Colton, 2012: 20). This establishes the belief that the human artist is threatened. These fears stem from the worry that art will lose its value if CG-art is considered authentic art since art is seen as valuable only as an activity that is distinctively human. Stroud Cornock and Ernest Edmonds have argued that as our machines have grown more sophisticated we are seeing the characteristics and functions that we can still define as being solely human diminishing. They argue that it is natural that as a society we would be highly protective over actions such as creating art because it is one of the "remaining characteristics by which we identify ourselves." (Cornock & Edmonds, 1973: 11) Cornock and Edmonds argue that the machine and the anticipation of its advanced cognition has created "an underlying note of fear."

art because art is a human activity (Cornock & Edmonds, 1973). The problem with fear and scepticism is that they provoke an immediate rejection of CG-art that stops all engagement. The polar opposite response, which is based on the notion of the sole-autonomous-creator as well, is grounded in the general romanticisation of AI. People will naively assign AI capacities that researchers would be very cautious to assign. As Hutchings et al state—people see the word "intelligence" and automatically assume it means human intelligence (Hutchings et al, 2019). The romanticisation stops deeper engagement because in its desire to see AI in a way that exceeds its actual abilities, it does not acknowledge both the limitations of the machine as creator and that the programmer has a substantial role in the process. Implicit in these three responses is that the sole-autonomous-creator is the only way to imagine a computer creating and so alternative avenues like the cyborg relation are not taken into consideration. These responses flourish because of a misunderstanding of what is involved in all artistic processes not just CAP. If you recognise that the stages of intention and evaluation are part of every artistic process it means that it is harder to accept the notion of the sole-autonomous-creator. The reason is that it is harder to overlook the machine's limitations and because of this it is harder to ignore the significant role of the programmer.

A practice that fosters anthropomorphisation and is a great threat to audience engagement with CG-art is the Turing test. The Turing test aims to determine whether a CG-artwork could fool an audience into believing that it is human art, in order to prove that CG-art is worth engaging with (Pease et al, 2018). The claim is that if CG-art appears to be like human art, we should accept it and engage with it as we can consider it to have reached human level artistic achievement. The Turing test can be easily met by CG-art because when we judge CG-art only by its aesthetic appearance, we will find no discernible difference from solely human created art. Colton argues against Turing tests as a way to measure the worth of CG-art:

> Turing-test style experiments may seem attractive because it shows some level of success if the artefacts being generated by a creative system are vaguely comparable to those produced by people. However, computers are not humans and this fact should be celebrated rather than hidden through Turing tests. In the visual arts in particular, Turing-style tests ignore process and promote pastiche, both of which are done at great peril... (Colton, 2012:14)

It is not the finished artwork of CG-art that is radically different from solely human created art. Instead, it is the process that created the CG-artwork that is unique. Turing tests cannot accommodate this fact as they solely judge based on the appearance of CG-art and misrepresent it by

arguing it is in essence the same as human art when compared. By placing emphasis on the resulting artwork, the Turing test encourages the notion of the sole-autonomous-creator. It does this by enforcing the misconception that if CG-art is indistinguishable from human art it means that CG-art must have been made in a human-like way (Pease et al, 2018). This anthropomorphic reasoning claims that if humans are sole-autonomous-creators and if CG-art looks human-like then computers must have created as sole-autonomous-creators as well.

The danger of Turing tests for CG-art is due to the fact that they are the wrong metric for determining what is worth our engagement. Turing tests do not require that the artwork was produced by Authentic Cyborg Artistic Process (ACAP), in order to deem an artwork to be worth our engagement. Turing tests only require that the appearance of the artwork has a significant human-likeness regardless of how it was created. Human-likeness can include inauthentic artistic-processes. The Turing test cannot assure us that the artwork we are responding to is trustworthy because it has preserved the truth in the expression or that an artwork was created purposefully. The criteria of Turing tests are too weak because it only judges CG-art as worth engaging with based on its appearance without looking at the process of creation in any way (Colton, 2012).

Anthropomorphism leads to two influential and interconnected misrepresentations of how CG-art is created. Anthropomorphism inflates the capacities of the machine by assigning the machine human capabilities while simultaneously dismissing the role of the programmer. Both misrepresentations ensure that CG-art could never be seen as a product of ACAP. Many audience members will not realise that they are engaging with an inauthentic representation and so will not be able to overcome those barriers. However, some of the audience will become aware of these inauthentic representations and feel deceived and manipulated. Once this awareness comes into focus for the audience, the *Humanity Gap* has been triggered.

The Humanity Gap

Pease et al are highly critical of Turing tests as they argue that these tests inevitably lead to the Humanity Gap. Their argument is that:

> …rather than levelling the playing field as hoped-- such tests can actually serve to emphasise a humanity gap i.e. people like an anonymised artefact because they make a human connection, but this is disappointingly removed on revealing that an artefact was made by a computer, leading people to realise the implicit expectation of human creativity in making certain forms of art… (Pease et al, 2018,5)

According to Pease et al the reaction to this revelation that the artwork is CG-art is the Humanity Gap[37]. It is the audience feeling a discomfort and disappointment that they were deceived and manipulated to have responses to artworks that originated from what is not human. Therefore, the Humanity Gap is when the audience's feelings of human connection are disrupted. For me, I conceive of the Humanity Gap differently to Pease et al as I do not see it only as the feeling of disrupted connection between artist and audience. I believe that it is a disrupted connection between the audience, the CG-artworks and the CG-artistic-process that is a consequence of the main problem the Humanity Gap presents—*the audience being aware of the lack of accessibility to the true nature of CG-art.* We do not have to limit it to only CG-artworks that were anonymised before being later revealed as CG-art. The Humanity Gap can even happen when an audience knows that it is CG-art that is immediate to them. This is because the Humanity Gap is present whenever CG-art has been misrepresented and the cyborg relation has not been recognised.

[37] To understand the Humanity Gap as set out by Pease et al it is helpful to imagine a scenario. In a museum there are some paintings with no indication that they are CG-artworks. They are hanging on the walls amidst all the human generated paintings and are represented in the exact same manner. The audience comes to engage with these paintings and experience genuine responses to them in terms of emotions, thoughts and other associations. Then the curator of the gallery tells the audience that these paintings are CG-artworks and are not created solely by humans. Pease et al argue that the audience will feel deceived as they felt they were making a connection with a human artist. Furthermore if CG-art is not explained they cannot reorientate their understanding of their own responses (Pease et al, 2018). Boden points to a similar problem that critics have had with music composition programs like Emmy. If the audience is not aware that the music that triggers an emotional experience in them is a CG-art composition and then find out afterwards, they are likely to feel manipulated in having those emotions. For Douglas Hofstadter this is because a computer is not an emotional agent and so has no way to express emotions it does not have (Boden, 2011). Connecting this to Pease et al. we can then define the Humanity Gap as being about a missed connection with a human artist.

The Humanity Gap is the audience's experience of doubting the genuineness of their interaction with CG-art. It is triggered when the audience is aware that the representation of CG-art does not accurately depict the nature of the artwork they are engaging with while simultaneously having no access to an honest depiction of what CG-art is. This implies that since there is no proper way for CG-art to be understood the audience will feel a gap between their sense of familiarity with human art and the now apparent foreignness of CAP. The Humanity Gap can vary depending on how much the audience knows about the CG-artwork they are interacting with (Colton, 2012; Pease et al, 2018). If the audience is aware, it is CG-art but there is no explanation to what that means they will feel the Humanity Gap because there is no authentic representation to guide their understanding. If the audience is aware that they are engaging with inauthentic representations and so are being deceived, then they will feel the Humanity Gap acutely since there is no authentic representation to correct the distortion. Ultimately, the Humanity Gap is triggered with the audience's awareness of being denied a knowledgeable position when they engage with CG-art and how this is not the case with their experience of human art.

If we did represent the true capacities of the machine authentically, as well as the role of the programmer, we would find that it is less likely that the audience would reject CG-art. If we represent the machine's capacities accurately, we give the audience access to how the machine can fulfil its artistic role. This includes recognising the machine's limitations in order to know why it is a participant that is still dependent on the artistic role of the programmer being fulfilled and why a cyborg relation needs to be entered into. When the audience has access to the programmer's role in CAP they can then see how CG-art can incorporate elements of human experience such as emotions or can communicate a message. When engaging with ACAP in particular, there is now a way to see how the artwork is purposeful in that the programmer ensures that the process is deliberate both in respect of her intention, her mitigation of unintentional randomness and through a rigorous stage of evaluation. There is also a nurturing of trust because the audience can see how the true reality has been preserved through the process. What I have described is the level of authenticity that is called *Authentic Representation (AR).* In contrast, anthropomorphisation doesn't give access to the CG-artistic process in this kind of way. This implies that we have inauthentic representations concurrent with the audience lacking any means to know the real nature of CG-art and so the Humanity Gap cannot close.

Authentic Representation

The only way to combat these misrepresentations is through authentically representing the Cyborg Artistic Process (CAP). Therefore, authenticity is not merely the right kind of way of conducting an artistic process, but also the right kind of way of representing that artistic process and the resulting artwork. *Authentic Representation (AR) can be defined as the act of representing a CG-artwork in a way that preserves the truth of the nature of the artwork through an accurate and transparent picture of its artistic-process.* This means that the machine's limitations and abilities are accurately depicted, that the cyborg relation is recognised and explained appropriately, and that the role of the programmer is acknowledged. The machine cannot be represented as taking on human roles in the process encouraging anthropomorphism and it has to be explicitly stated that the audience is engaging with CG-art.

AR is critical for our engagement with CG-art in a more intensified way than solely human created art. This because of the Humanity Gap, which results in the fact that with human art we have a sense of familiarity to how the artworks are created while with CG-art we have a greater risk of inaccessibility The risk of there being no AR is that the audience only engages with misrepresentations and so is alienated from any possibility of becoming familiar with CAP. The alienness and unfamiliarity of CG-art is not because its process is unintelligible. It is alien precisely because there is no way for CAP to be understood without AR. However, AR cannot specifically apply to the Authentic Cyborg Artistic Process (ACAP) only. Instead, it applies to all forms and manifestations of CAP. The reason for AR being broader than only representing ACAP is because it is a necessity for our engagement with CG-art to know what CG-art is not worth our engagement. What this demands is a means to clearly distinguish and demarcate what CG-art is created by ACAP and what is not.

AR is then concerned with representing the origins as process of the CG-artwork. It is about being faithful to the process that created the CG-artwork in order for the audience to be in a position of knowledge when they evaluate the artwork they will be engaging with (Colton, 2012). However, I am arguing for a particular kind of engagement as well. In order to engage with an artwork, one has to engage with the context that the artwork arose from. This, in the case of ACAP, will be an engagement with the context of the true reality, the true reality itself and how the process has expressed that true reality through the cyborg relation. Therefore, part of my exploration of AR is to

show the importance of understanding the CG-artistic process. I have two main objectives. The first is that I want to examine how best to formulate AR by looking at two contrasting approaches to the engagement of art. Once we know how we want to engage we can determine how best to represent. The second is that I want to show how we can resolve the issue of the Humanity Gap by expanding in more detail the scope of AR.

Two Diverging Routes

A way to think of Authentic Representation (AR) is that it is concerned with how an artwork is presented to an audience in order for them to engage with it. Therefore a way to formulate AR is by asking what kind of approach is most likely to recognise the *origins as process* of CG-art. There are two contrasting families of approaches in respect to appropriate ways to engage and interpret art—those that concentrate on the artwork exclusively and those that focus on the context surrounding the artwork since it is believed to be integral to understanding the artwork itself. These would be the family of formalist approaches and the family of "anti-formalist" approaches, as Nick Zangwill refers to them (Zangwill, 2009). Each of these approaches will require that the artworks themselves be represented differently to the audience depending on what they focus on as the most important element for engagement. For instance, if one believes that the process of how an artwork is created is irrelevant when engaging with the artwork, one will not purposefully represent the artistic-process when presenting the artwork to an audience.

Formalists believe that only the formal aesthetic features of artworks are relevant when engaging with an artwork. It is our aesthetic experience of the formal composition of the artwork, or what Clive Bell calls "Significant Form" that matters (Bossart 1961; Caroll, 2013). Colin Lyas and Robert Stecker explain that for the formalist approach, the artist's intentions and context are seen as irrelevant when experiencing the artwork and our task is only to focus on the work itself (Lyas & Stecker, 2009). According to Zangwill, those that belong to the anti-formalist family, instead, believe that the "historical production" of the artwork should be what is concentrated on. It is the context surrounding the artwork including the artistic process that plays a part in how the artwork is interpreted (Zangwill, 2009). If one belongs to the formalist family of approaches, authenticity requires only that the artwork be represented accurately. To do this is to accurately represent its formal features. For instance, if an orchestra performs a symphony all that is required is that the composition when presented to an audience is true to its form by being performed in tune.

An argument for why CG-art should be represented by a formalist approach could be that placing too much consideration on how CG-art is made alienates the audience. What occurs is that since CG-art is created in a radically different way from human art, CG-art is automatically unfamiliar. This is despite CG-artworks looking indistinguishable from human art. What follows is that the audience is inhibited from truly engaging with the artworks. Instead of judging whether CG-artworks are formally up to standards of a good piece of art and have an aesthetic experience of their Significant Form, the audience is instead hyper-focused on the fact that the machine is included in the process. The consequence of this is that the awareness of CAP establishes the Humanity Gap. The formalist would claim that the only way the Humanity Gap will be solved is if we do not engage with how the CG-artwork was formed but rather we must only engage with the material manifestation of the artwork in front of us (Caroll, 2013). This is because the formal features of CG-art are shared with all human artworks so there is then no gap between CG-art and human art[38]. Therefore, to allow for deeper and richer engagement with CG-art, the fact that a machine is a participant in the CG-artistic process must be treated as irrelevant.

Colton can explain the concern for us:

> …people tend to take into account how a piece of art was produced when assessing the finished product. If no information pertaining to the production of an artwork is available, then people can fall back on general knowledge... These fallbacks are not available for software generated artefacts, as most people have little idea about how software works. (14)

I do not believe that CG-artists can represent CG-art formalistically without significant risks to the audience's capacity to properly engage and understand CG-art. This is because, as Colton notes, there is little general understanding or common knowledge of how CG-artistic programs work. Despite the formalist argument that an awareness of this difference distracts us from engaging with the artwork, the difference between CG-art and human art is not the threat to deeper engagement. The dynamic of

[38] Bossart explains that formalism was focused on Significant Form as they believed it was a universal aesthetic quality that belongs to all art objects (Bossart, 1961). Noel Caroll claims that for the formalists, artworks can only be conferred with the status of being art if they possess Significant Form. This means it is the composition of formal features of an artwork that is the only relevant determining factor when engaging with art. The reason it is Significant Form rather than another aesthetic quality is because it is the only quality is that it is common to all artworks across all mediums. The Formalist would argue that it does not matter that CG-art is made by a computer as long as its Significant Form has been authentically represented, then it is an artwork that can be engaged with (Caroll, 2013).

CAP can be understood if represented properly. The real threat to the CG-artistic process is inaccessibility. What this suggests is that when considering how to represent CG-art authentically, we must start with the question of how to guarantee full accessibility to the nature of CG-art for the audience. To do this we must start with the presumption that most audience members are ignorant about the nature of CG-art[39]. Therefore, AR has to include the context of the practice of CG-art for audience members as well as representing the process of the particular artworks the audience is engaging with. The audience has to have access to the general structure of CAP and the nature of the cyborg relation so that when they are engaging with the particular artwork immediate to them, the artwork's process of creation can be more easily understood (Colton, 2012). This would give the audience enough knowledge to equip them to engage with a particular artwork more sophisticatedly as they can understand the method of its creation. AR must be focused and specific when it represents the nature of a CG-artwork while simultaneously it must be concerned with the project of familiarising the audience with the practice of CG-art as a whole (ibid).

AR is vital for audience members because it enables them to evaluate which CG-artworks are worth engaging with for themselves. This is possible since the audience will know if authenticity emerged or failed to emerge in the CAP that they are presented with. I believe that giving the audience the agency to choose will enhance the potential for deeper engagement because they will have a greater investment in their interaction with CG-art. When they engage more deeply with an artwork it was because they have made an educated decision to engage based on their own consideration of the artworks trustworthiness and whether it was created purposefully. This is critical for opening up the potential for dialogue, understanding and proper conversations.

[39] Bossart reminds us that there is no member of the audience that will be a perfect critic when engaging with art. For some of us there will be particular artworks that will remain inaccessible because we not adjusted to the context of their origin or have an understanding of how they are aesthetically valuable. Bossart argues that if we wish to appreciate a work of art whose expression is not easily understandable then an individual must be able to learn the context from which the work is significant. I believe that Bossart's argument is true, there will probably still need to be work done on the part of the audience to understand CG-art even with an Authentic Representation. The problem is not that the individual might still have to work to engage when it comes to engaging with CG-art. The problem is that if there is no Authentic Representation, all audience members lack access because they are ignorant of the nature of CG-art. The inaccessibility of CG-art has generated the circumstance where the knowledge needed for the audience to learn to recognise its significance is out of their reach. It is once we have this presumption of ignorance and acknowledgement of inaccessibility that we can think more carefully about what accessibility means and so how to implement Authentic Representation (Bossart, 1961).

Consequently, there is no other option for CG-art other than to represent its artistic process[40]. The justification for this is that the audience cannot engage with only the formal features of CG-art and be said to know what they are engaging with. The formal features can offer no process-orientated explanation of what CG-art is and how it works, exacerbating the general inaccessibility to the CG-artistic process (Galanter, 2016). What amplifies this is that formalist approaches to both engagement and representation are inadequate because of their close connection to anthropomorphisation. My claim is that if CAP is irrelevant to our engagement with CG-art then it must mean that the nature of CG-art is irrelevant. The reason is that it is the artistic practice of CG-art and the cyborg relation that defines CG-art and not the way the resulting artwork has turned out. Moreover, if we can present CG-art without acknowledging it is CG-art then we have anthropomorphised the artworks because we are presenting them as if they are the same as human made art. The tactic to shift focus to the CG-artwork in isolation means that the audience is delivered straight to the experience of the Humanity Gap. The anthropomorphisation creates doubt and suspicion towards CG-art because it is incongruous to what we know of machine abilities. The formal features alone cannot explain the nature of CG-art ensuring that the narrative of the alien, unfamiliar process becomes unnecessarily fostered.

Directly related to this is that if a formalist approach encourages anthropomorphism, then it means that it cannot offer us any solution to misrepresentations that foster fear, distrust, and excessive romanticisation. The reason is that because there is no way to determine whether CG-art is authentic we find that we do not have the means to establish the artworks trustworthiness and purposefulness for engagement. On the other hand, the formal characteristics of CG-art are still essential for AR only insofar as they are presented as the result of the dynamic relationship between machine and programmer within a unified-artistic-process. Therefore, formalism cannot concede and acknowledge that the artwork is CG-art and then proceed to still see the CG-artistic process as being irrelevant to the engagement of the artwork. This is because the misrepresentations will not be

[40] Walton argues that if we are confronted with an artwork and we know nothing about its origins, we would not be able to position it within our context of human experience to judge it aesthetically. Without knowing how the artwork was created and from which context it originated from we cannot understand what it is expressing. Walton states that "it should be emphasised that the relevant historical facts are not merely useful aids to aesthetic judgement; they do not simply provide hints concerning what might be found in the work. Rather they help to determine what aesthetic properties a work has" (Walton, 1970: 364). With respect to CG-art, since it is defined as a practice of creating art, our experience of the CG-artworks aesthetic character will be in relation to its process. Therefore, when we interpret we must look at the cyborg relation between the programmer and the machine to judge it aesthetically. For instance we would ask what rules we can identify that the programmer constructed and then we would ask how the computer has interpreted those rules.

dismantled if CG-art is acknowledged but not explained. The audience then is made to recognise CG-art without understanding it, generating further mistrust and romanticisation when the artworks are indistinguishable from human art.

Therefore, formulating AR is about representing CG-artistic processes in the right kind of way and ACAP is about conducting the artistic-process in the right kind of way. ACAP lays the foundation for the audience to trust that the artwork preserves the truth of the true reality and that it was created purposefully. AR is about providing access to this foundation and equipping the audience with the knowledge they need to recognise ACAP. Where ACAP is about whether an artwork itself can be engaged with in a more meaningful way, AR is about the conditions needed for that engagement in the first place. AR can be seen as the wider perspective of CG-art as a practice and the relationship between realising our potential capacity to engage as an audience and our knowledge and access to the nature of what we are engaging with.

Solving the Humanity Gap

The essential nature of AR for engagement with CG-art is that it is the only means we have to solve the Humanity Gap. Before I argue for this claim I first want to emphasise that not every engagement with inauthentic representations results in the Humanity Gap. As a reminder, the Humanity Gap is when the audience doubts the genuineness of their responses to CG-art while also lacking access to the true nature of CG-art. The gap then forms between the familiarity of human art and feeling alienated from CG-art. What is notable about the Humanity Gap is that the doubt the audience has over their responses is only because of an awareness of misrepresentations. If the audience was unaware, it would be unlikely that doubt would occur. This suggests that the sceptics, the fearful and those that romanticise CG-art will not actually experience the Humanity Gap. The reason is that they have accepted the inauthentic representation that the machine is a sole-autonomous-creator and so believe that they know the nature of the CG-art they are engaging with and have accurately judged it accordingly.

The Humanity Gap on one hand is not ideal. The breakdown of any accessibility to the true character of CAP and ACAP is a problem for our engagement with CG-art. Therefore, the Humanity Gap must be solved. However, on the other hand, the Humanity Gap means we are closer to achieving deeper and more fulfilling engagement with CG-art than what might be presumed. We can infer this because

the audience is at least aware that the inauthentic representations are themselves inauthentic. It means that if the audience has access to CG-art through AR then the barriers to their engagement can be dismantled. The best-case scenario would be to strip away the expectations of the audience that is convinced by inauthentic representations without passing through the Humanity Gap, since the Humanity Gap dismantles expectations through doubt and unfamiliarity. This can be done if AR is prioritised. Only AR can dismantle our false expectations and make certain that there is accessibility to the true nature of CAP.

AR provides the audience access to CAP and ACAP and the means to create greater familiarisation with CG-art as a whole. Familiarisation is essential in that it is the only means to close the Humanity Gap so that both human art and CG-art can be recognisable to an audience (Colton, 2012; Pease et al, 2018). Familiarisation then is about the audience having enough knowledge of CG-art to feel more confident when they engage and not perpetuate misunderstandings in their responses. However, what the project of familiarisation cannot underestimate is that when people engage with art they bring with them the expectations of having their needs met (Pease et al, 2018). It is these expectations that O'Hear argues for as proof that CG-art cannot be art because it fails the requirements from what we need from art:

> A large part of what interests us in a work of art is an encounter not with a machine or an algorithm but with another human mind, at once expressing itself freely, but also in control of what it is doing. (O'Hear, 1995:152)

Audiences expect a connection with the meaning of the artwork and an understanding of the human reality the artist is trying to express. This desire for communication between artist and audience cannot be underestimated. Much of our reason for engaging with art is the need to relate and understand another's experiences. The Humanity Gap includes the feeling of disrupted connection as what one expects and needs from art in terms of human communication cannot be met by an artwork because it is CG-art.

However, the Authentic Cyborg Artistic Process (ACAP) can accommodate these expectations due to the cyborg relation but not in the exact way human art can. The recognition of this fact is obviously blocked by anthropomorphisation because there is no way to connect with the programmer's true reality if the programmer is not acknowledged. The Humanity Gap presents a

different challenge and calls for AR to be a much broader educative project surrounding CG-art[41]. The educative project must explain that because CAP is a different process compared to human artistic-processes our traditional expectations of art can be met only after they have adapted. When AR encourages familiarisation, it is not to prove that CG-art can meet audiences needs of communication and connection when engaging with artworks just like human art can. Rather, familiarisation is about building a culture surrounding CG-art where the engagement is nuanced and sophisticated and most importantly, appropriate to what CG-art actually is (Colton, 2012; Pease et al, 2018).

The other part of this educative project is that CG-art must be celebrated as being different and coming from a unique artistic-process[42]. Human connection with another human may not be formed in predictable or traditional ways but this does not mean any connection is ruled out. This is because the connection to the programmer will be in the appreciation and acknowledgement of the skills and artistic knowledge of the programmer that allow for the construction of a machine with such advanced mechanisms. It will also be a connection to a sense of awe that a machine can extend

[41] Walton believes engaging with art is an educated skill. Therefore, we must train ourselves to engage with art properly. An essential component of training oneself to engage with an artwork that is unfamiliar is to expose oneself to many other artworks of a similar origin. Walton argues that when we approach works that are unfamiliar to us, such as art from different cultures or in the case of CG-art different artistic-processes, in order to judge them aesthetically we have to immerse ourselves in the context of the artwork to gain the knowledge of how to correctly perceive it. We can only engage with art appropriately when we have educated ourselves with how they are created (Walton, 1970). We can see how this relates to CG-art. Without Authentic Representation there is no way to educate the audience so they are able to engage properly. However, we can ask--why is human art familiar and taken as known automatically, which then leads us to the Humanity Gap? Walton has an answer for us. He argues that when we are engaging with art that is more familiar to us i.e has a familiar artistic process, then we do not need to deliberately train ourselves to engage properly with these artworks. The reason is that we have been trained without realising it because of previous exposure and general cultural interaction to art. The educative project of CG-art can then resolve the Humanity Gap because when it makes CG-art familiar the audience has the knowledge to engage with it. This removes experiences of alienation since the human artistic-process is not the only artistic-process recognisable and potentially understood.

[42] Colton, Pease et al and Hutchings et al all advocate for accurate and transparent representations of CG-art, that CG-art be celebrated instead of falling into traps of anthropomorphism and most importantly, for the need of responsibility on behalf of the creators of CG-art to represent CG-art authentically. Colton advocates that when CG-art is presented that "full disclosure of the processes behind the production of each piece is given" (Colton, 2012: 15). Hutchings et al argue that "any full disclosure of artistic process in AI art needs to appreciate the authenticity of the generative process as fundamental to the artwork." (Hutchings et al, 2019: 45). Pease et al advocate "managing people's expectations of forming human connections when present computer generated material for cultural consumption...by eschewing Turing-style tests...and being clear about the computational origins of generated artefacts." (Pease et al, 2018: 5) All of them place the responsibility of Authentic Representation onto all those involved in CG-art from the programmers to the researchers, from the critics to the curators. All those who create, present or critique CG-art must enact, maintain and constantly strive for Authentic Representation.. As Hutchings et al state: "artists and researchers who work with [CG-art] techniques have a responsibility to acknowledge [the techniques] when their work is presented and to correct any misunderstandings when possible" (Hutchings et al, 2019: 45).

human expression in a way that allows both the programmer and the audience to see another way to express a true reality and reflect on the possibilities of expression in general. This would involve there being explicit mention of the true reality of the programmer when CG-art is presented. This is so the audience can see the significance of the machine's creation. The audience must understand that they are connecting with the experience of the programmer's partnership with the machine and the cyborg relation. This means the cyborg relation can be the beginning of a much wider reflection on the relation between human experience and technology. We live in a culture where most of our everyday experiences are mediated through machines. An open engagement with CG-art can make us connect to our socio-cultural worlds by asking us to reflect on what it means to be in partnership with machines.

As anthropomorphisation is dismantled and the cyborg relation becomes more visible and accessible, the culture that understands CG-art will grow and will be nurtured by meaningful interactions and responses. This will open up trust between the audience and ACAP. The hope is that with a connection to the programmer and the call for fresh open-mindedness when it comes to the machine as a participant, that the audience can see that their responses are part of the cyborg relation. This is due to there being a new relation formed with the programmer, the machine and the process. Our responses become imbued with significance when we know what we are responding to. The essence of AR is to guide the audience to come to this knowledge and its wider implications and to trust that it is true. Essentially, AR allows the authenticity of ACAP to do its work.

Conclusion

Two Principles of Authenticity



Figure 8 Ernest Edmonds' "Nineteen" (1968-1969)

I believe that authenticity is essential for the practice of CG-art. When an audience can trust that the artwork, they are responding to preserves the truth of the true reality throughout its process and was created purposefully, there can be a more fulfilling interaction with that artwork and a richer way of responding to it. The need for trust is heightened when it comes to engaging with CG-art because it has been misrepresented and there has been a lack of accessibility to the true nature of its artistic-process. CG-art as a practice is only going to grow and flourish but with the risk of always being outside our art-world and cultural conversation because of misperceptions. If we wish to create a culture surrounding CG-art as a new artistic frontier that is part of our exploration of our relation to technology, then we need to be able to engage with it in a way the nurtures strong understandings and nuanced responses. Authenticity is the key that unlocks this dynamic engagement. It is authenticity that will open a connection between the audience, the CG-artworks, and the cyborg relation.

My argument is that the question was never whether CG-art can be authentic. Instead, the question was how can CG-art be authentic. We know that there are two levels of response that this question asks us to give. The first is the right way of enacting the artistic-process for authenticity to emerge. This means the audience can know the artwork was created purposefully because the process was deliberately acted out in order to transform the true reality into an artwork for the audience to experience it. The audience also can know that they can trust the artwork since authenticity has emerged it means that the truth of the true reality has been preserved throughout the process. What the Authentic Cyborg Artistic Process gives us is a methodology of what is needed for a CG-artistic-process to be authentic. The second is the right way of representing CG-artworks called Authentic Representation. In the face of misrepresentations and the lack of accessibility to the true nature of CG-art we find that there is a barrier to engaging with it properly. Authentic Representation gives the audience access to CG-art by representing its artistic-process accurately and transparently. Authentic Representation places the audience in a knowledgeable position both in respect to the practice of CG-art as well as particular artwork immediate to them. This not only enables a more fulfilling engagement but also enables the audience to judge for themselves what CG-art they wish to engage with. Authentic Representation gives the audience knowledge on how to properly respond to authentic CG-artworks and the Authentic Cyborg Artistic Process provides the authentic CG-artworks to respond to.

The two levels create two principles that define the right kind of way of acting out the processes of CG-art-- both in its creation and its representation. These two principles must govern our approach to CG-art for valuable and worthwhile engagement. CG-artists must act by the principle that the method required for the creation of CG-art is the Authentic Cyborg Artistic Process and must possess a commitment to the principle Authentic Representation. This opens the audience's engagement to greater possibilities so it can be constituted by nuanced and sophisticated responses as well as personal and enriching experiences. The hope is that if authenticity becomes integral to the practice of CG-art we can grow a culture of trust, openness and acceptance of it. My desire is that the significance of CG-art can be recognised and that as a practice it will come to be respected. As these CG-art machines grow more sophisticated, I hope we also recognise that what is the most incredible aspect of them is the sheer power of human invention. Let us not forget who created the machine creative partners of the cyborg relation in the first place and who let their expression move beyond the human and become inherently cyborg. This is the radical artistic actions of the programmer. I hope that authenticity is taken seriously as being integral to CG-artistic practices. This is so the cyborg relation continues not only to flourish but be recognised in how it is forging a space of unpredictable possibilities, much like the machine does to our true human realities.

Words 22 292

Acknowledgements:

I would like to thank my supervisor Professor Samantha Vice for her careful consideration of my work, for nurturing my thoughts and teaching me how to form a work that I can be proud of. I am also immensely grateful for my family. Thank you for listening to me speak about this topic for a year and always being happy to listen and encourage. I wouldn't have been able to do this without you.

Reference List-Sources

Guignon, C., 2008. On Authenticity. *Philosophy Compass ,* 3(2), pp. 277-290.

Galanter, P., 2016. Generative Art Theory. In: C. Paul, ed. *A Companion to Digital Art* . First Edition ed. New York : John Wiley & Sons Inc..

McCormack, J. et al., 2014. Ten Questions Concerning Generative Computer Art. *LEONARDO ,* 47(2), pp. 135-141.

Boden, M. & Edmonds, E., 2009 . What is Generative Art?. *Digital Creativity ,* 20(1-2), pp. 21-46.

Pease, A., Colton, S. & Saunders, R., 25-29 June 2018. *Issues of Authenticity in Autonomously Creative Systems.* Salamanca, Spain , ICCC 2018 , pp. 272-279.

Verbeek, P.-P., 2008 . Cyborg Intentionality: Rethinking the Phe. *Phenomenology Cognitive Sciences ,* Volume 7, pp. 387-395.

Hutchings, P., McCormack, J. & Gifford, T., 2019. *Autonomy, Authenticity, Authorship and Intention in Computer Generated Art.* s.l., Springer Nature Switzerland AG 2019 , pp. 35-50.

Haraway, D., 1991. A Manifesto for Cyborgs: Science, Technology and Socialist Feminism in the 1980s. In: *Simians, Cyborgs and Women: The Reinvention of Nature.* New York: Routledge, pp. 65-101.

Dorin, A. et al., 2012. A Framework For Understanding Generative Art. *Digital Creativity ,* 23(3-4), pp. 239-259.

Cornock, S. & Edmonds, E., 1973. The Creative Process Where the Artist is Amplified or Superseded by the Computer. *LEONARDO ,* Winter, 6(1), pp. 11-16.

O'Hear, A., 1995. Art and Technology: An Old Tension . In: R. Fellows, ed. *Philosophy and Technology.* Cambridge : Cambridge University Press , pp. 143-158.

Boden, M., 2011. *Creativity and Art: Three Roads to Surprise.* Oxford : Oxford University Press .

Dutton, D., 2005 . Authenticity in Art. In: J. Levinson, ed. *The Oxford Handbook of Aesthetics* . Oxford : Oxford University press , pp. 325-343.

Stoljar, N., 2018. *Feminist Perspectives on Autonomy.* [Online]
Available at: <https://plato.stanford.edu/archives/win2018/entries/feminism-autonomy/>
[Accessed 13 March 2022].

Colton, S., 2012 . The Painting Fool: Stories from Building an Automated Painter. In: J. McCormack & M. d'Inverno, eds. *Computers and Creativity.* New York : Springer , pp. 3-38.

Nake, F., 2012. Construction and Intuition: Creativity in Early Computer Art. In: J. McCormack & M. d'Inverno, eds. *Computers and Creativtiy.* New York: Springer , pp. 61-94.

Cohen, H. et al., 2012. Evaluation of Creative Aesthetics. In: J. McCormack & M. d'Inverno, eds. New York : Springer , pp. 95-111.

Cohen, H., 2018 . A Million Millenial Medicis. In: L. Candy, E. Edmonds & F. Poltronieri, eds. *Explorations in Art and Technology* . Second Edition ed. New York : Springer , pp. 31-50.

Edmonds, E., 2018. Structure in Art Practice. In: L. Candy, E. Edmonds & F. Poltronieri, eds. *Explorations in Art and Technology* . Second Edition ed. New York : Springer , pp. 51-57.

McCormack, J., 2003. Art and the Mirror of Nature. *Digitial Creativity ,* 14(1), pp. 3-22.

Cohen, H., 1974. On Purpose: An Enquiry Into the Possible Roles of the Computer in Art. *Studio International,* January , 187(962), pp. 11-16.

Cohen, H., 1995. The Further Exploits of AARON, painter. *Stanford Humanities Review ,* July , 4(2), pp. 141-158.

Cohen, H., 17 December 1982. *How to Make a Drawing.* Washington DC, National Bureau of Standards, pp. 1-15.

Boden, M., 1994. Creativity and Computers . In: T. Dartnell, ed. *Artifiical Intelliegnce and Creative an Interdisciplinary Approach* . New York : Springer , pp. 3-28.

Dartnell, T., 1994. Introduction: On Having A Mind of Your Own. In: T. Dartnell, ed. *Artificial Intelligence and Creativity an Interdisciplinary Approach.* New York: Springer, pp. 29-42.
Lindholm, C., 2013. The Rise of Expressive Authenticity. *Anthropological Quarterly ,* Spring, 86(2), pp. 361-395.

Baugh, B., 1988. Authenticity Revisited. *The Journal of Aesthetics and Art Criticism ,* Summer , 46(4), pp. 477-487.

Bossart, W., 1961. Authenticity and Aesthetic Value in the Visual Arts. *British Journal of Aesthetics ,* 1(3), pp. 144-159.

Walton, K., 1970. Categories of Art. *The Philosophical Review ,* July , 79(3), pp. 334-367.

Jahn, G., 1975. The Aesthetic Theory of Leo Tolstoy's What is Art?. *The Journal of Aesthetics and Art Criticism ,* Autumn , 32(1), pp. 59-65.

Caroll, N., 2013. Formalism . In: B. Gaut & D. M. Lopes, eds. *The Routledge Companion to Aesthetcis* . Third Edition ed. New York : Routledge , pp. 87-95.

Stalnaker, N., 2013 . Fakes and Forgeries. In: B. Gaut & D. M. Lopes, eds. *The Routledge Companion to Aesthetics* . Third Edition ed. New York : Routledge , pp. 462-472.

Lopes, D. M., 2010. *A Philosophy of Computer Art.* New York : Routledge .

Wicks, R., 2009 . Nineteenth and Twentieth Century Continental Aesthetics . In: S. Davies, et al. eds. *A Companion to Aesthetics* . Second Edition ed. Oxford : Blackwell Publishing , pp. 51-60.

Higgins, K. M., 2009. Psychoanalysis and Art . In: S. Davies, et al. eds. *A Companion to Aesthetics* . Second Edition ed. Oxford : Blackwell Publishing , pp. 484-488.

Zangwill, N., 2009. Formalism . In: S. Davies, et al. eds. *A Companion to Aesthetics* . Second Edition ed. Oxford : Blackwell Publishing , pp. 290-292.

Lyas, C. & Stecker, R., 2009. Intention and Interpretation and Intentional Fallacy . In: S. Davies, et al. eds. *A Companion to Aesthetics* . Second Edition ed. Oxford : Blackwell Publishing , pp. 366-370.

Whewhell, D., 2009 . Leo Tolstoy . In: S. Davies, et al. eds. *A Companion to Aesthetics* . Second Edition ed. Oxford : Blackwell Publishing , pp. 570-572.

Buss, S. & Westlund, A., 2018. *Personal Autonomy.* [Online]
Available at: <https://plato.stanford.edu/archives/spr2018/entries/personal-autonomy/>
[Accessed 13 March 2022].

Artwork Sources

Figure 1:

Anon., n.d. *Harold Cohen "Coming Into a Lighter Place".* [Online] Available at: http://dada.compart-bremen.de/item/artwork/359 [Accessed 13 March 2022].

Figure 2:

Anon., 2012. *Painting Fool's portfolio reveals artificial artist.* [Online] Available at: https://www.newscientist.com/gallery/painting-fool/ [Accessed 13 March 2022].

Figure 3:

Anon., n.d. *Harold Cohen 040502.* [Online] Available at: http://dada.compart-bremen.de/item/artwork/1479 [Accessed 13 March 2022].

Figure 4:

Moss, R., 2015. *Creative AI: The robots that would be painters.* [Online] Available at: https://newatlas.com/creative-ai-algorithmic-art-painting-fool-aaron/36106/ [Accessed 13 March 2022].

Figure 5:

Anon., n.d. *Adam and Eve Harold Cohen.* [Online] Available at: http://dada.compart-bremen.de/item/artwork/683 [Accessed 13 March 2022].

Figure 6:

Waugh, R., 2012. *The Monet machine? 'Artificial' painter improvises all its works - and often surprises its creator.* [Online] Available at: https://www.dailymail.co.uk/sciencetech/article-2092286/The-Monet-machine-Art-ificial-painter-improvises-works--surprises-creator.html [Accessed 13 March 2022].

Figure 7:

Anon., n.d. *Frieder Nake Matrizenmultiplikation, Serie 40.* [Online] Available at: http://dada.compart-bremen.de/item/artwork/1073 [Accessed 13 March 2022].

Figure 8:

Bright, R., 2019. *Ernest Edmonds, Nineteen, 1968-69.* [Online] Available at: https://www.interaliamag.org/interviews/ernest-a-edmonds/attachment/nineteen1968-9/ [Accessed 13 March 2022].

Plagiarism Declaration:

I CHARIKLIA MARTALAS (Student number: 1387014) am a student registered for MASTERS OF PHILOSOPHY BY COURSEWORK AND RESEARCH REPORT in the year 2021-2022. I hereby declare the following:

I am aware that plagiarism (the use of someone else's work without their permission and/or without acknowledging the original source) is wrong.

I confirm that ALL the work submitted for assessment for the above course is my own unaided work except where I have explicitly indicated otherwise.

I have followed the required conventions in referencing the thoughts and ideas of others.

I understand that the University of the Witwatersrand may take disciplinary action against me if there is a belief that this in not my own unaided work or that I have failed to acknowledge the source of the ideas or words in my writing.

Signature: _____ ***Date: 15/03/2022***