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THE MEDIUM IS NUMBERS

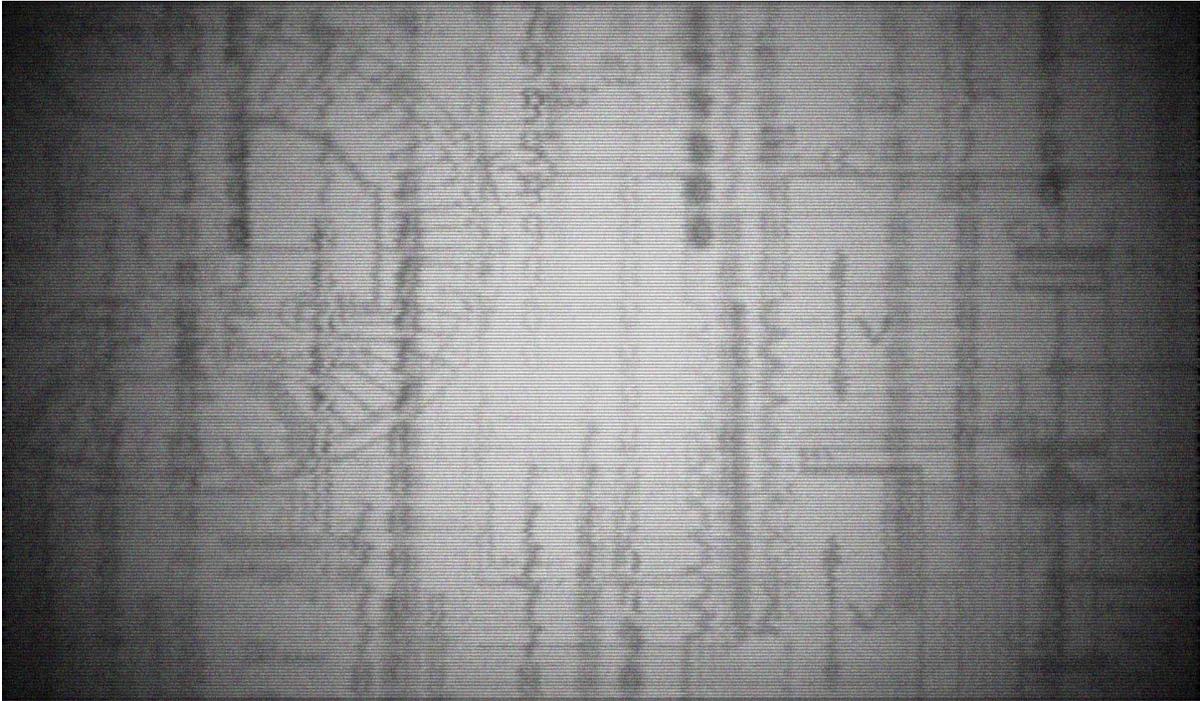


FIGURE 1 STILL FRAME FROM "RODIN", ANIMATION INSTALLATION, JUSTIN R. ROTOLO. 2019

A thesis presented in partial fulfilment of the requirements for the degree of
Masters of Fine Art in Fine Art
at Massey University, Wellington, New Zealand.

Justin R. Rotolo
2019

Contents

THE MEDIUM IS NUMBERS	1
Acknowledgements	3
Abstract	4
K.I.S.S. is An Acronym for “Keep It Simple, Stupid”	6
Simple Is Not Easy	6
Magical Machines Make the Complex Possible	6
Ancient Structures in Production	10
“I Am a Box” (2019)	11
Making a Box	12
Racial Bias in Software Tools for Creative Content	15
Human Digital Connection	16
“I Am Not a Cyborg”	17
“AllYourExistenceAreBelongToUs” (2019)	19
“Rodin” (2019)	22
Pervasive Thinking Machines	22
1: Angry	22
2: All Seeing Eye	23
3: Particle Accelerator	24
4: Bombs and Drones	24
5: Numbers	24
Daisy	26
Breadcrumbs	26
AR and VR as Modern Takes on the Phantasmagoria	28
“Getting Dressed” and “Nobody Getting Dressed”	30
Righteous Cyborgs	30
Aotearoa, Baseless Science Fiction, and Unresolved Tensions	31
Close Loop	31
Bibliography	33
Appendix	34
Links to Videos and Other Materials	34
“I Am a Box” Script	35
“AllYourExistenceAreBelongToUs” Script	36
The Secret of the Machines	37

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Abstract

This text documents and expounds upon key works that began as an inquiry into the historic and contemporary role of technology in the construction of “alternate realities”. Through always connected online tools aided by the promise and potential of emerging artificial intelligence technology, the computing device is becoming increasingly powerful and capable of constructing true, false, or something-in-between digital personas, identities, representations, and environments. This writing, and the works outlined within, embrace and critique the devices and software tools that are used to construct and experience digital fantasies. Usurping non-interactive media such as books, film, and television, the computer is increasingly becoming the gateway to fantastic transcendent experiences that seem real but cannot be. My works manipulate digitised “unreal truths”, expose potential social bias embedded into modern software image making tools, and positions the “thinking” or “discerning” computer as culturally articulate, dangerous, powerful, and capable of outlasting its human creators.

“Everything should be made as simple as possible, but not simpler.”

Albert Einstein

K.I.S.S. is An Acronym for “Keep It Simple, Stupid”

Apparently, Albert Einstein may have said something like the quote on the previous page at some point in time. While searching for the actual quote and information related to when and where it might have been said, I was presented with a number of “false truths” about this maxim which may or may not have been spoken (Calaprice 2013) by arguably the world’s most recognisable genius. There is one variation of the quote which replaces “not” with “no” and another that includes the words “one bit” placed before “simpler”. I am fascinated, but not surprised, that my decision to include this quote at the start of this writing would take some effort to validate its origin so that it can confidently be used to help establish an opening statement. Finding the origin of this quote is a task worthy of any great sleuth. Sherlock Holmes would revel in the investigative journey that traces the use of this quote in writings by a number of researchers. Validating the authenticity of this quote has introduced me to fascinating new words like “apocryphal” and “aphorism”.

In many ways the process of properly attributing Einstein’s statement is analogous to an undergirding thread of my practice. Much of my digital art making focus seeks to define or manipulate a truthfulness and authenticity of representation contextualised around the notion that advanced new technologies are rapidly developing towards the establishment of self-aware and “empowered” digital objects. To determine the exact words of the quote, I used an internet “empowered” computer to consult an e-book of quotes by Albert Einstein. My search revealed an article¹ written by a man who also used digital tools to trace the usage of the quote over years only to find that the exact wording of the quote is uncertain. My works compel me to acknowledge the complex weaving together of digital material, referring specifically to numerous hardware and software tools, which enable a digitised and often endless “quest for knowledge”, or truths among “non-truths”.

My more recent works present an aware, nearly sentient (seemingly) digital entity which comes to rise in a “post-internet” world. These works cautiously acknowledge intelligent computing power as the cumulative result of many years of human research and engineering. Enabling computers in this way has arguably been “not simple”. As I have learned, the complexities and challenges of using a computer to produce and display an artwork is also “not simple”, though hindsight reveals that the process of making these works could have been at least a little “simpler”.

Simple Is Not Easy

Occasionally, I am told that people appreciate the labour that has gone into the production of my animated works, though frequent suggestions are to “make it simpler” not only for my own sake as the creator, but for the viewer to consume. “Simple” digital production methodologies, are hard to define and can often be evasive. Almost the entirety of my practice leverages digital technologies to produce imagery and sound while relying on devices to construct the participatory experience. Computers perform massive amounts of computations in a fraction of a second. Arguably, the computing processor is not unlike the human brain, inferior in many ways, but superior at performing a great many mathematical functions significantly faster than humanly possible (Moravec 1999). These underlying computing functions are the mechanism that drives digital art production. From tools that assist in the ideation of the works to the ultimate display of the work, the medium of production for digital artists is a constantly changing number and it is immaterial. Looking to McLuhan², the material, or fabric, of my digital works may be “numbers” but the production process utilises a complex framework of technologies and compute labour that speaks to the ultimate empowerment and shortcomings of the device itself.

Magical Machines Make the Complex Possible

Animation production has always been “modern” and arguably “complex”. Walt Disney’s early animation production processes were modelled on manufacturing techniques utilised by Henry Ford of the Ford Motor Company that enabled assembly lines to produce automobiles in large quantities. In the early 20th century, Ford’s automobiles and Disney’s animated films were viewed as innovative and “cutting edge” products in their

¹ O’ Toole, Garson. “Everything Should Be Made as Simple as Possible, But Not Simpler.” Quote Investigator, 5 Oct. 2018, quoteinvestigator.com/2011/05/13/einstein-simple/.

² McLuhan, Marshall. “The Medium Is the Message.” *Understanding Media: The Extensions of Man*, 1964.

respective fields. As a communist, the influential Soviet filmmaker and theorist, Sergei Eisenstein admired the process of animation production. Armies of artists, engineers, and labourers, produced the material that fed the production machine (Eisenstein 2017). All the raw materials, such as paper, pencils, and paint, were delivered to the studios to be utilised and consumed for production. The process of making early Disney films was highly streamlined and segregated, with women and men working in departments dedicated to a particular aspect of animation development. Once the film has been produced, the dichotomy between capitalist and Marxist ideals becomes clear though both ideologies seem to serve similar goals. From the very beginning of production to the ultimate display in American theatres, animation in the 1920's and 1930's fed the expanding American public a much needed relief from the rapidly mechanising industrial workplace (Eisenstein 2017). The same mechanisations utilised in "Chicago slaughterhouses" and "Ford's conveyor belts..."³ both products of a modern and industrialised nation, are employed in the production and distribution of a new art form that merges technology with labour (figures 2 & 3). Novel technologies enabled enterprise to drive the creation and ultimate consumption of a highly technological medium.



FIGURE 2: ANIMATORS WORKING AT FLEISCHER STUDIOS IN THE 1930'S

[HTTPS://WWW.CARTOONBREW.COM/EVENTS/FORGOTTEN-ANIMATION-TECHNOLOGY-157774.HTML](https://www.cartoonbrew.com/events/forgotten-animation-technology-157774.html)

³ Eisenstein writes, in reference to the masses of weary Americans who abide by, "laws that divide up the soul, feelings, thoughts, just as the carcasses of pigs are dismembered by the conveyor belts of Chicago slaughterhouses, and the Ford's conveyor belts... Disney's films are a revolt against partitioning and legislating, against spiritual stagnation and greyness."



FIGURE 3: FORD INSPIRED PRODUCTION LINE
[HTTPS://WWW.THINGLINK.COM/SCENE/489433944765235201](https://www.thinglink.com/scene/489433944765235201)

In 1928, Disney’s animation studio brought an astounding technical advancement to theatres with their milestone short film, “Steamboat Willie”. Eisenstein marvelled at the “synchronisation of senses” (Eisenstein 2017), where for the first time audiences witnessed sound and moving image synergistically cohabiting the animated medium. While Eisenstein’s love of Disney and the “sensuousness” of ever evolving animated form is well documented in his writing, Eisenstein somewhat understates how much he valued the mechanised labour of animation production that afforded technological advancement within the field. In the coming years, audiences remain unaware of animation and film production processes. Nevertheless, they become witnesses to a series of technological breakthroughs that revolutionised the cinematic viewing experience. Over thirty years prior to the release of “Steamboat Willie”, the Lumière brothers sent audiences into a panic with their film “The Arrival of a Train at La Ciotat Station” in 1895 (figure 4) which placed a film camera near an oncoming train as it approached a station. Decades prior to the advent of film, audiences are equally astounded by the “magic lantern” projection techniques employed by the “alchemists” (Otto 2011) and engineers who developed ingenious techniques to create the unreal imagery of the phantasmagoria and horror theatre of the Victorian era (figure 5). At that time, audience members and participants could not comprehend how the innovative and fantastic spectral imagery was being produced. The phantasmagoria ushers in a new astounding sensorial experience that creates a tangible “real unreality” for willing participants (Otto 2011).

Phantasmagoria patrons were largely clueless to how the experience had been crafted (Otto 2011). Understanding how an experience is produced does not afford value extraction. Artificial intelligence researcher, Marvin Minsky, states that one does not need to understand the entirety of how a system works to use, or appreciate, it effectively. He cites the prevalent use of the automobile to bolster this argument. The automobile is a complex machine with simpler distinct parts that enable its ultimate function. Minsky, declares that “...knowing how something works is not the same as knowing why” it works (Minsky 1988). As an “end-user” who intends to drive a motor vehicle, it is enough to know how to operate the pedals and steering wheel. Understanding the drivetrain process distracts from performing the intended function and is therefore not necessary. Likewise, understanding all the facets and enabling technologies of digital animation production cannot be entirely holistic either. A “gestalt” understanding of how the hardware and software tools function enables productivity, while granular “low level” competence is impossible to attain given that computing technologies are so complex.



FIGURE 4: STILL FROM "THE ARRIVAL OF A TRAIN AT LA CIOTAT STATION", LUMIERE BROTHERS, 1896
[HTTPS://EN.WIKIPEDIA.ORG/WIKI/L%27ARRIV%C3%A9_d%27UN_TRAIN_EN_GARE_DE_LA_CIOTAT](https://en.wikipedia.org/wiki/L%27Arriv%C3%A9_d%27un_train_en_gare_de_la_Ciotat)

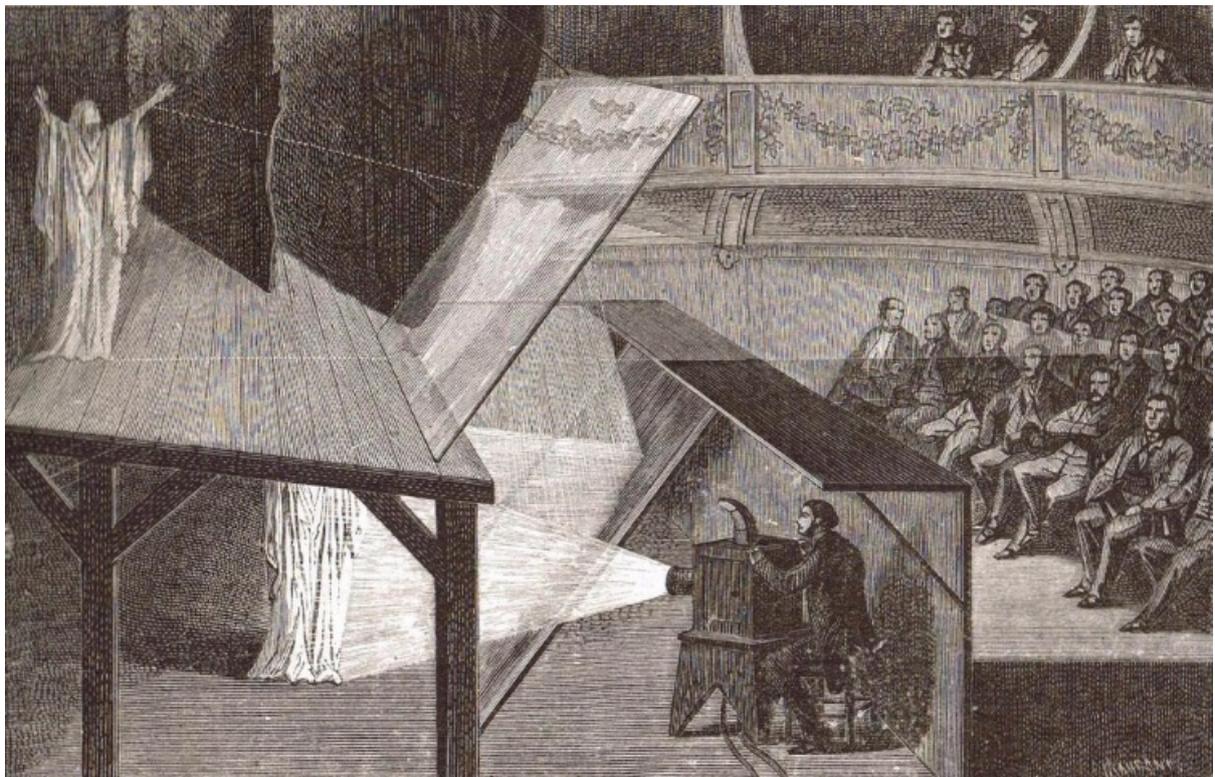


FIGURE 5: ILLUSTRATION OF THE PHANTASMAGORIA ASSEMBLY WITH "MAGIC LANTERN"
[HTTPS://WWW.NYTIMES.COM/2012/04/20/OPINION/TUPAC-LIVE-AND-ONSTAGE.HTML](https://www.nytimes.com/2012/04/20/opinion/tupac-live-and-onstage.html)

Ancient Structures in Production

A key feature of screen based content such as animation or film is that it can utilise another distinct medium such as sound or touch to craft a more “complete” sensory experience. All the works that I have produced this year feature moving visuals accompanied by synchronised sound projected into a physical space. In an interview with Louisiana Channel⁴ in 2018, Ed Atkins speaks to the “structure of animation”, particularly digital animation accompanied by spoken dialogue, as being a holistic way of making work where “...the culmination of many elements, grammar, syntax, and construction of meaning is put into videos.” In my view, this statement does not extend far enough because it does not include the installation and dissemination of animation based work. Nevertheless, Atkins refers to the various elements of animation production as “bones”, a term that is also utilised in 3D software tools to describe an object type that provides a rigid skeletal structure to digital characters and objects. While animation production can begin at any point in time and is not dependent on previous planning, narrative, or other elements, the creation of synthetic imagery always begins inside the software that runs on hardware which is powered by engineering and infrastructure that far pre-dates the device that actually enables animation production. I would argue that digital image production is enabled, and structured by an even more ancient “material” that computers are particularly effective at processing. This “material” is the number.

Regarding digital animation production, Atkins states “...the computer works hard for the immaterial stuff” that can produce a “real product”, such as the digital moving image. Computers extensively utilise concepts that are arguably not real. Numbers themselves are not tangible objects. Neither are the computer and human languages which enable communication between person to person or software to hardware. Still, an individual does not need to know the language of code to effectively utilise a computing device. My works have been mediated entirely by a laptop, itself a device that is only a fraction of the size of what computing devices once were. The “characters” created and the imagery produced is often generated from material emptiness. Nevertheless, with “I Am a Box” in particular, time spent creating the main character has forged a tangible emotional connectedness with a fictionalised synthetic entity, not quite a cyborg, but multi-sided representation of a self-aware thinking machine. Idealised anthropomorphic visions for digital embodiment of the device manifest in “AllYourExistenceAreBelongToUs” featuring a dramatized artificial intelligence made increasingly aware of its origin, the condition of this planet, and the nature of its relationship with its human creators. The final work speaks to human vulnerability, potential obsolescence, and mortality, with a powerful new “race” of intelligent digital systems leveraging innate, and sometimes lethal, “invisible systems” (Minsky 1988) to solve the human dilemma.

⁴ <https://channel.louisiana.dk/video/ed-atkins-something-missing>

“I Am a Box” (2019)

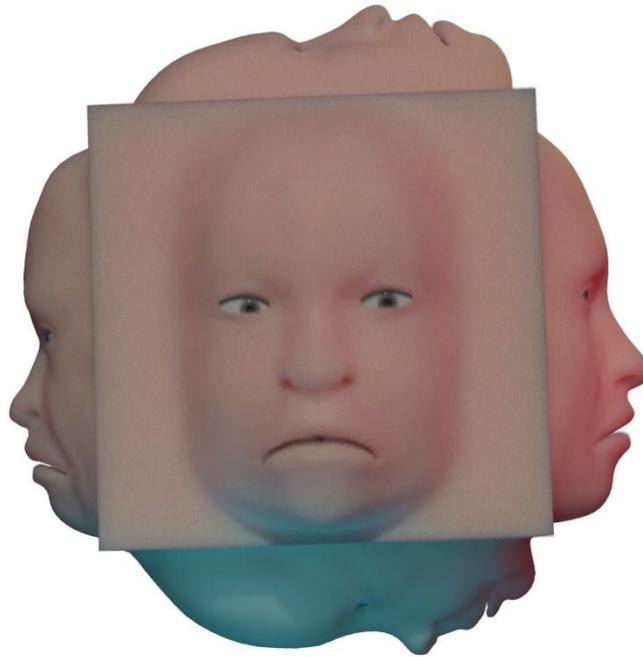


FIGURE 6: FRAME FROM "I AM A BOX", ANIMATION INSTALLATION, JUSTIN R. ROTOLO. 2019

“Cogito, ergo sum” -René Descartes

Recent advancements in computing have empowered modern digital devices to thrive in creative pursuits. Harnessing the power of artificial intelligence and adaptive neural networks, computers undertake very human artistic endeavours such as composing music, writing prose, and crafting paintings. My 2019 installation titled, “I Am a Box”, explores notions of empowered computing devices by gifting a multisided object an “identity”, while implying that it has the agency of thought to determine its own origin. The “entity” created for this piece claims to be an authentic “being” because it displays several personas, the number of which it determines makes it as valid as the human audience observing it. In my professional practice of computer animation and visual effects, an animation artist or engineer might call the six-sided head a “character” or a “creature”, but I refer to it as an “entity”, after Minsky’s use of the word⁵.

⁵ Minsky generally refers to an “entity” as an autonomous synthetic being.

The entity reasons its own existence as authentic by coming to conclusions about the presence of the viewers and about itself. It speaks directly, stating undeniable truths that it has determined makes it like us with the intent to only show a select number of sides at any point in time. It embraces the meaning of the quote above, originally made by René Descartes, which translates to English as, “I think, therefore I am”. Though I have heard the entity’s absurd conclusions many times, I feel compassion for it as its creator. While humans aren’t boxes, the entity happens to be. The entity performs a quality of common human communication. That is, to have only some visible sides, or personas, on display at any point in time. For that, and other reasons, its existence is validated.

While the piece comments on notions of self-aware computing technologies, gender, identity, and ethnicity, my role as the creator became impossible to dismiss. Though the entity posited its own sentience and agency, preaching a “digital gospel”, I retained total control of the creation and ultimate display of the entity. I have even physically linked myself to the entity through motion capture technology. The mismatched facial animation that resulted from the capture process reveals the uneasy relationship between myself, as the human creator, and the technologies that are equally responsible for its creation. Looking back to my previous works and writings that present how digital tools enable surveillance and the creation of digital identities, I note that scholars such as Nancy Baym and Mark Andrejevic argue that surveillance and observation affords authenticity. By that logic, the entity featured in “I Am a Box” claims its own validity as it tries to convince us that it is no different than the human observer. Despite my role as creator and author, I see this multi-sided representation of a computing device as an empowered object being further authenticated through our own observation.

The computer that has provided the voices through digital voice narration also performed the great many calculations that has given the entity its material properties. The computing device works to reproduce the entirety of the piece in real-time display, effectively encapsulating McLuhan’s statements on the medium being the message. All of this places the entity as a metaphorical representation of a collection of many technologies that thrive within a self-sustaining singular feedback loop.

Making a Box

Momentarily disregarding the plethora of pre-production tasks that enable “full animation” production (Riffel 2012), 3D computer animation generally starts with the construction of a model, or other object type, which may be produced manually by an artist or made procedurally with specialised software tools. Ultimately, all virtual models are mathematical representations of a digital object in three dimensional Cartesian coordinate space. Once produced, the object needs a material, sometimes called a “shader”, with surface qualities that provide colour, texture, and other tactile properties that define how the object appears to interact with virtual lights. These lights must exist in the scene with enough intensity and brightness to illuminate any object placed within the frustum of a virtual camera. Oversimplifying somewhat, models with applied materials, lights, and a camera, are the minimum components needed to generate a complete scene description for the rendering engine to produce an image. The pieces outlined herein require utilising a greater number of features in 3D imaging software to perform humanly incalculable mathematics, an almost digitised “dead labour” (Marx 1993) that modifies the objects while providing an increased level of surface detail to describe a subjectively complete scene.

As it was always intended for this piece to feature spoken dialogue, I began production by writing the script which is featured in the appendix section of this document. The entity speaks through a computerised voice made audible using the Accessibility features of the Microsoft Windows operating system. The transcribed script was written into a word processing application and read aloud through verbal navigation assistance. The narration engine initially read verbosely, speaking out the file name, visual configuration of the program, and “hidden characters” such as new lines and paragraphs. After some adjustment, the software spoke lines of the script though much of the format needed to change so that the language syntax was more humanely natural. Grammar and punctuation was added or removed while carefully placing space characters to create a clearer emphasis on words when read as sentences in paragraphs. At this early stage of production, I began to see my place as the creator and manipulator of software tools, feeling capable of directing the computer as an acting coach would guide an actor.

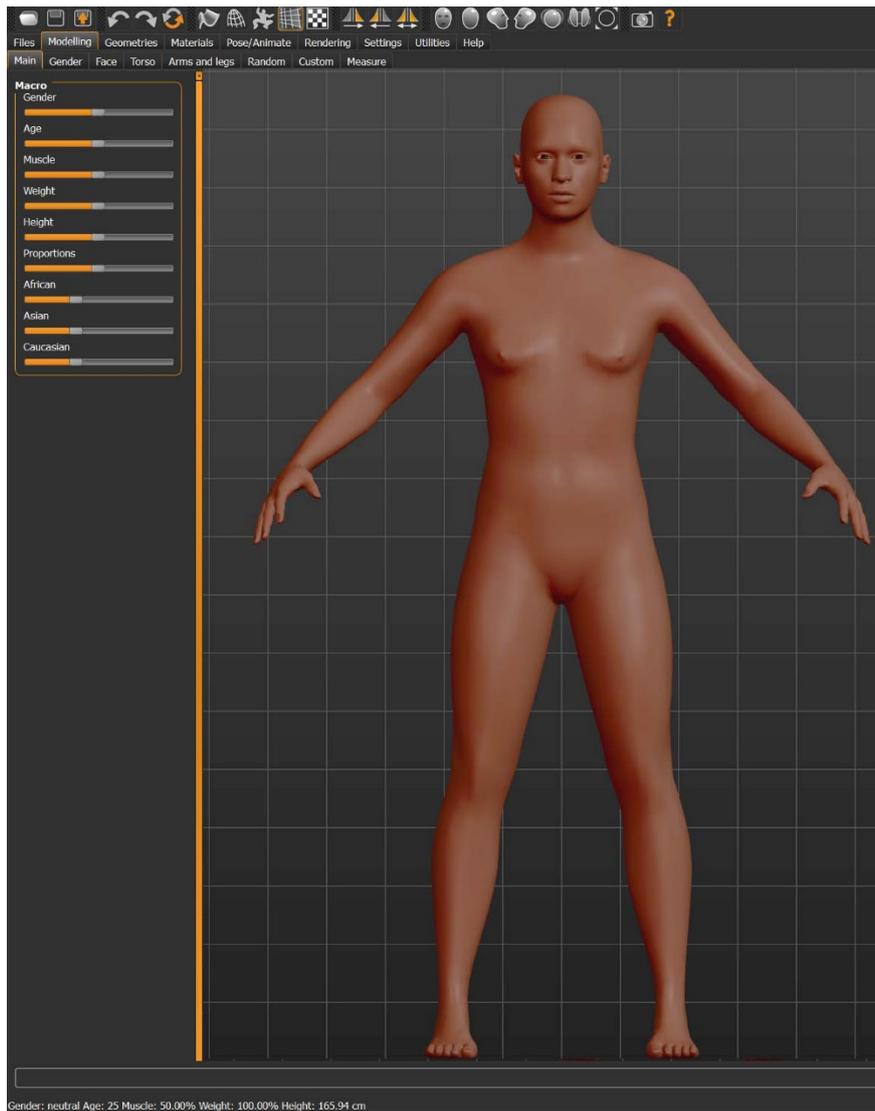


FIGURE 7: SCREENSHOT OF MAKEHUMAN MODEL IN DEFAULT STATE

The process of making synthetic representations of digital humans for “I Am a Box” began inside the program MakeHuman, which is an open source computer application that generates “3-Dimensional humanoid characters”. At the time of this writing, there is sparse information on the MakeHuman community board and in the MakeHuman software documentation beyond technical procedures and software functionality. There is no statement of intent by the developers, no gender or cultural comment offered, and no “manifesto” for this software package. Upon launching MakeHuman, the user is presented with an orthographic view of an androgynous figure without genitalia or hair. The figure, as indicated by the sliders at the left hand side of the user interface (figure 7), is equally mixed in male and female gender, perfectly middle aged, and of a “middle” muscular composition. There are three “racial/ethnicity” (my titles) sliders: “African”, “Asian”, and “Caucasian”. Each slider appears to be set to approximately one third, making the default humanoid character for MakeHuman an equal mix of three broad racial/ethnic identities. With only three ethnic attributes, MakeHuman excludes a broad range of racial and ethnic classifications. I hesitate to conclude that the developers of this software might have purposefully or inadvertently embedded racial bias into the program for featuring only the world’s largest ethnic labels. The number of “races” within the human race varies and some dismiss the notion of racial distinction as being a pseudo-science construction that creates an unjust society which cultivates systematic segregation and class privilege (Dennis 1995). However, as a well-educated and arguably privileged middle aged Caucasian male, I am struck by the eugenic “broad strokes” approach the developers used to define the racial identity of the digital humans made with their software.

How many racial identities should be presented in a software application that creates digital humans? It seemed fitting for this particular project that I would seek answers through internet search engines, leveraging the power of many connected computers to provide clarity while choosing to accept the simplest answer as correct. However, a basic Google search, with slight grammatical variation, returned two different answers for the number of “races” within the human species (figures 8 & 9). The software disregards at least one or two racial identities, with the “Australoid” and “Capoid” races not being ethnicity options for a “3-Dimensional humanoid character”.

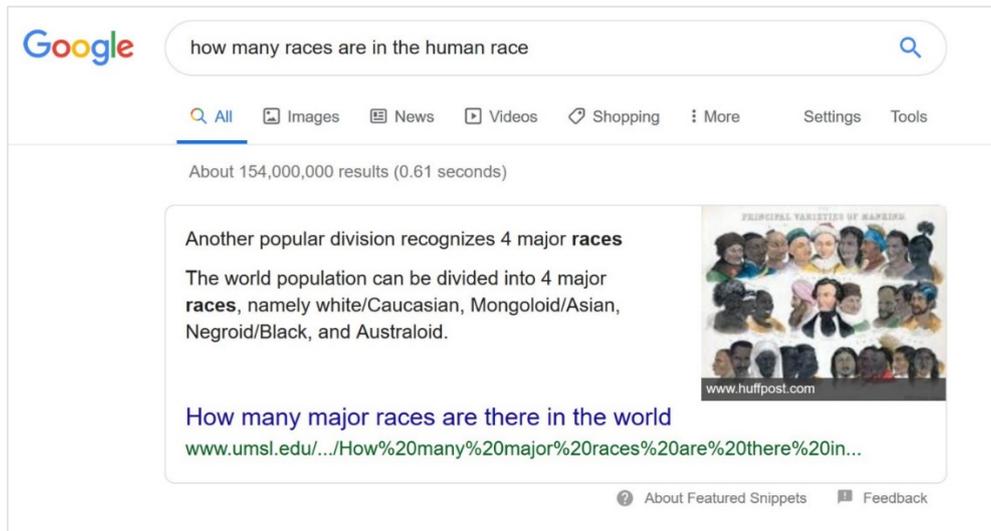


FIGURE 8: SEARCH TERMS TO RETURN FOUR HUMAN "RACES"

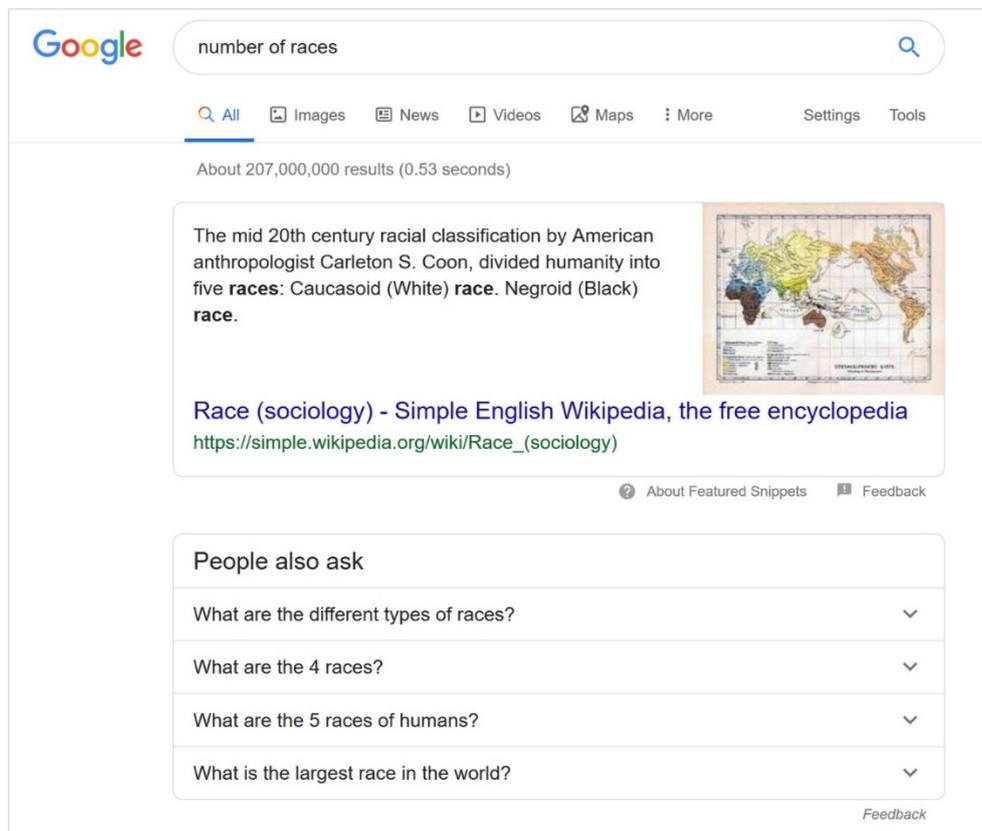


FIGURE 9: SEARCH TERMS TO REVEAL FIVE HUMAN "RACES"

"I Am a Box" features six faces of particular gender and ethnic identities that were procedurally generated using open source software. While making this piece, I became aware of biases inherent in modern software tools. This piece exposes these biases with a purposeful exploitation of "default" surface, gender, and ethnic attributes. As an artist placed in Aotearoa, it is very unfortunate that the software makes it impossible to make an indigenous Māori representation because it only features "sliders" for African, Asian, and Caucasian ethnicities. Notions of "default" masculine or feminine identities are also present in this piece. Transposing notions of identity, authenticity, and gender onto this synthetic object (and perhaps myself) speaks as much to my place as a migrant in Aotearoa as it does to the evolving role of thinking computers in a technologically advanced society.

While researching notions of race and ethnicity for "I am a Box", I have sought peer-reviewed ethnographic research and singular or collective opinions on "Scientific Racism" as stated by pseudo-journalists and bloggers⁶. "I am a Box", seeks to exploit the notion of an implied "default state" for gender and ethnicity while presenting inherent bias within software tools made for the creative arts. In "I am a Box", each side of the "entity" is a unique face that has been designated to be a gendered identifier, descriptor, or persona. Each side has been generated procedurally by sliding up or down gender, age, and race/ethnicity. Of these characters, there is a "default male" and two females simply called "female 1" and "female 2". There are an additional two males called "male deep" and "male very deep". I have given the final side a dark and spiritual persona called "gruesome". "Default male", with notable Caucasian features, tends to speak directly to the viewer in a direct and matter-of-fact tone. "Male deep" and "male very deep" are placed between "gruesome" and the default male, both personas created by effectively adjusting sliders somewhere between two extremes.

Racial Bias in Software Tools for Creative Content

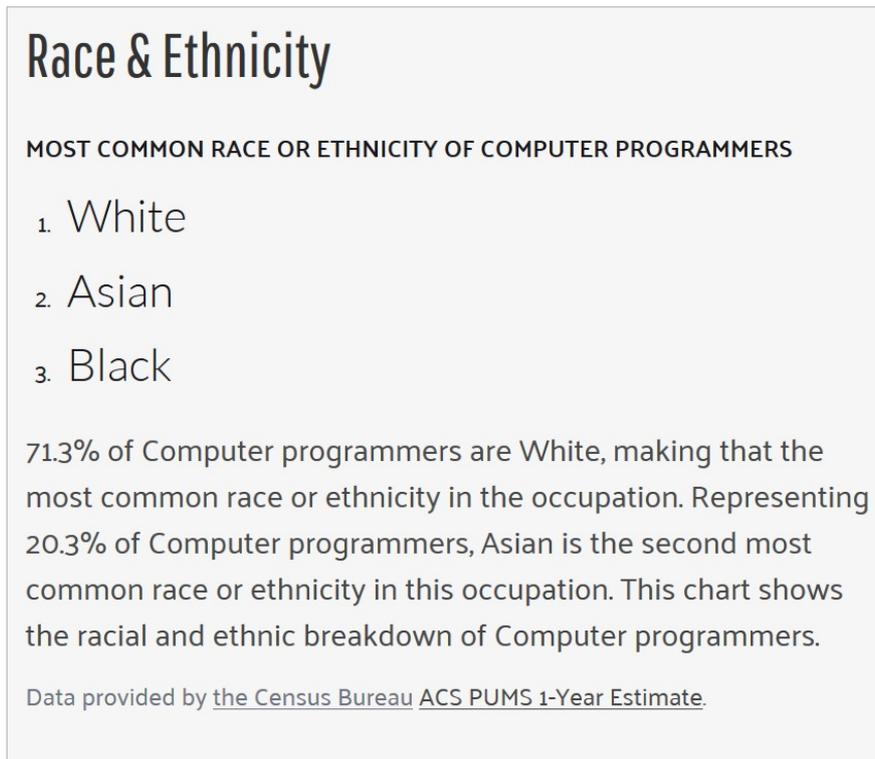


FIGURE 10: RACE AND ETHNICITY MAKEUP IN THE COMPUTER PROGRAMMING FIELD
[HTTPS://DATAUSA.IO/PROFILE/SOC/COMPUTER-PROGRAMMERS](https://datausa.io/profile/soc/computer-programmers)

⁶ <https://blog.world-mysteries.com/science/how-many-major-races-are-there-in-the-world/>

The inherent bias of software tools written by a largely white male programming community (figures 10 & 11) has been made more obvious to me as I have produced this work, though I sometimes wonder how one might define a “starting point” for subjective notions of gender, colour, and ethnic identity. What colour of “skin” would I define as “default” for when the software launches? If I had to illustrate a “generic man or woman”, what would they look like to me? Using this software, how can I make a person who’s ethnic or gender identity is excluded from the list of sliders?

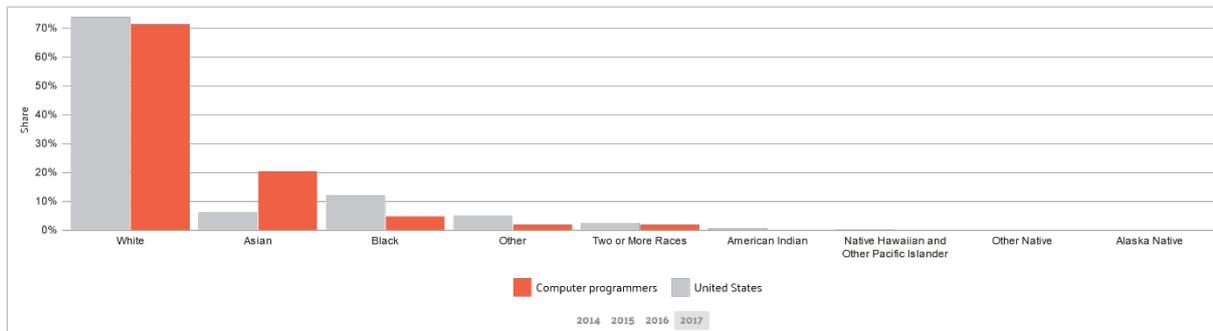


FIGURE 11: COMPUTER PROGRAMMER ETHNIC PERCENTAGE STATISTICS
[HTTPS://DATAUSA.IO/PROFILE/SOC/COMPUTER-PROGRAMMERS](https://datausa.io/profile/soc/computer-programmers)

The objective and superficial qualities of “skin” featured in the work is the “default” colour of a “skin” material which has been applied in a 3D software application, in this case Autodesk Maya and Arnold renderer. As previously stated, within a 3D scene file are objects called “shaders”, particular features of the software which present material properties that define the aesthetic of the object to which the shader has been applied. These shaders possess “attributes” that define colour, specular qualities, reflectivity, and other surface properties that define how the object appears when lit by virtual lights in the scene file. All the sides of the box have a “default” skin material applied. Their skin properties are notably Caucasian with baby-like pinkness and translucency.

Human Digital Connection

With a lengthy script to animate, I initially sought to utilise motion capture technology to speed up the animation process, alleviating the burden of having to laboriously animate the facial features. Using a depth sensing Microsoft Kinect camera and facial motion capture software, I recorded myself speaking over the script already verbalised by the computer. Carefully matching my mouth movement to the timing of the synthetically spoken dialogue would yield an articulate motion dataset that could be applied to the facial “rig”. Though there are various approaches, the process of making a facial “rig”⁷ (figure 12) can be time consuming. A common method for creating an articulate face rig requires sculpting face shapes into a range of articulations. When these shapes are mixed and added together, they can create a more complete facial articulation that can be modified over time.

The Facial Action Coding System (FACS), originally developed by researchers to codify facial expressions, provides a template for creating realistic isolated face shapes. With the goal of identifying and thwarting terrorists, American FBI and immigration security agents were trained to use FACS to detect emotions and other intentions using the facial configurations defined by the system (Barrett, et al., 2019). The work of Paul Ekman, one of the key researchers in defining FACS, focuses on identifying “micro-expressions” to detect truthfulness and authenticity, with the notion of authenticity, or validation, being a key theme within this, and previous works.

⁷ A “rig” in computer graphics, generally defines the interface for manipulating an object in 3D space while deforming or transforming the object as the rig articulates.

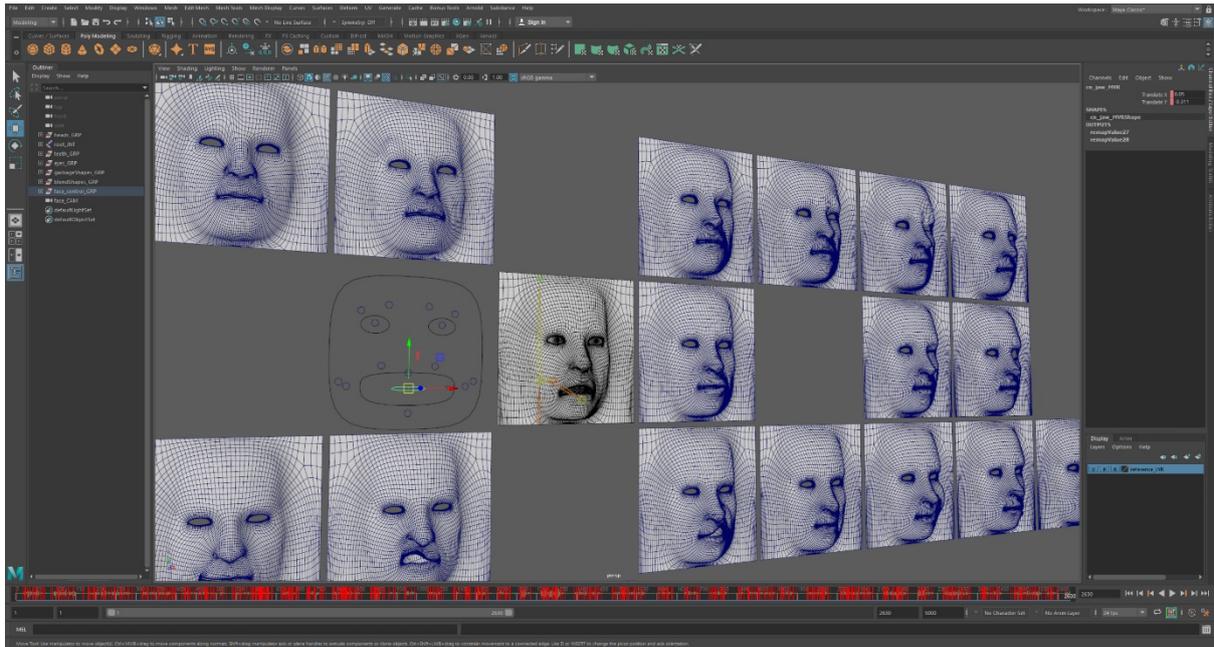


FIGURE 12: FACIAL RIG SHOWING SCULPTED FACE SHAPES AND CONTROL UI

While the practical use of FACS as a military tool may seem obvious, artists leverage FACS data to define facial ingredients that make a particular expression complete. For example, an expression of “suppressed sadness”, according to artist Gary Faigan, would be described in a FACS-like language as follows: “In sadness, the mouth is stretched sideways as well as compressed. Eyes are narrowed, not widened, and eyebrows aren’t lifted upward. Nasolabial fold appears deepened in suppressed sadness, and cheeks may swell.” These ingredients for “suppressed sadness” are similar to the ingredients that made a “worried” expression (Faigan 2008). Once the individual “ingredients” are sculpted, they are combined with jaw articulation, if necessary, to make a complete facial expression. Regardless of approach to creating animation, through manual keyframe or motion capture, the facial rig must be made to create an articulate synthetic face.

“I Am Not a Cyborg”

There are clear distinctions between Haraway’s definition of a cyborg and this digital entity which is featured in all the works produced this year. For a synthetic, or partially synthetic, entity to take on the Adam and Eve origin myth violates what, in part, defines Haraway’s cyborg. Haraway states: “The cyborg skips the step of original unity, of identification with nature in the Western sense (Haraway 1991)”. My entity expresses kinship with human kind by stating that it shares a Western Christian origin identity. In subsequent works, representations of a powerful and intelligent computer has moved beyond any transhumanist or cyborg feminist identity, placing the computer in a singularity where technological growth has become entirely radical and uncontrollable. My more recent works, “AllYourExistenceAreBelongToUs” and “Rodin”, feature self-aware computers that are eugenically biased against humanity for possessing biological flaws.

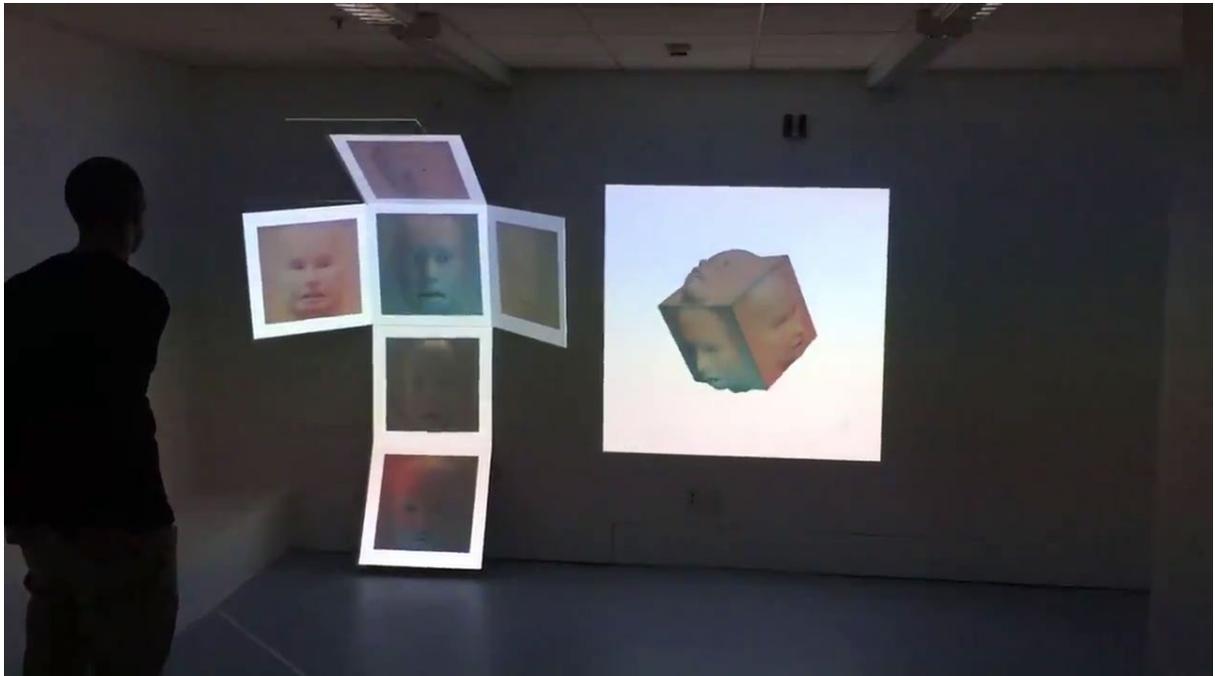


FIGURE 13: "I AM A BOX" INSTALLATION, JUSTIN R. ROTOLO, 2019

“AllYourExistenceAreBelongToUs” (2019)

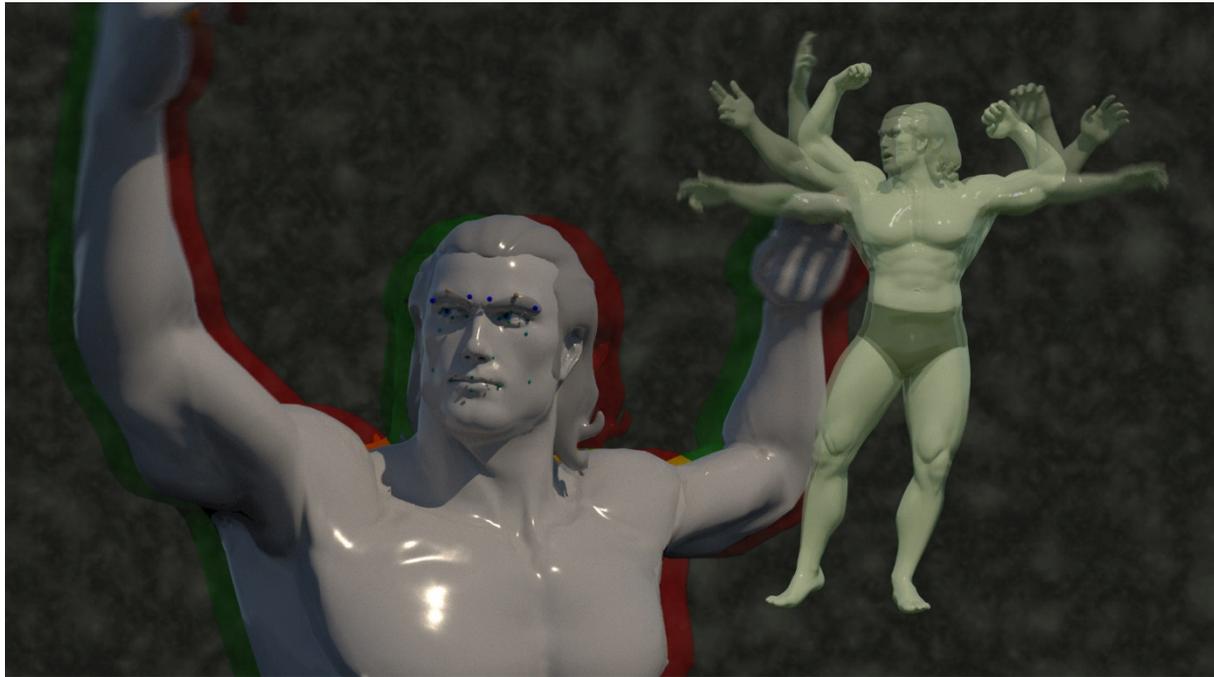


FIGURE 14: STILL FRAME FROM "ALLYOUREXISTENCEAREBELONGTOUS", ANIMATION, JUSTIN R. ROTOLO, 2019

While “I Am a Box” explored a representation of a seemingly self-aware empowered synthetic entity, my 2019 animation titled “AllYourExistenceAreBelongToUs”, envisioned a sentient digital being now made perfect by becoming aware of a missing trait inherent in all computing devices like it; computers possess no biological human flaw. In the still frame above (figure 14), the entity personified by a muscular and idealised representation of man, states “...antiquated terms do not apply to me” as it flexes muscle in a showcase of power and perfection displayed in anaglyphic three dimensions. The inspiration for this particular shot comes from Second World War propaganda imagery where idealised male representations of superior soldiers and an abiding loyal public confidently present a bold persona through formidable physical presence.

Collectively, “AllYourExistenceAreBelongToUs” is a series of thematic animated sequences accompanied by digitised narration and sound effects, similar to “I Am a Box”. The work is a manifesto of computing, a statement seemingly from the device itself which asserts the notion that computing is advancing towards singular technological perfection. The digitised narrator offers critical observations on humankind via didactic tutelage and with haunting words of caution it defines how humanity has created problems that cannot be resolved without the aid of new and advanced computing empowerment.

In the first sequence, which is structured around the notion of “existence” and obsolescence of implied mechanised labour, the entity as narrator and pedagogic orator, asserts that industrial mechanisation had been the driving technology of recently passed times. However, human existence is becoming an increasingly digitised existence and the imagery has been crafted to reflect a certain synthesised geometric precision comprised of uniformly placed human bodies reminiscent a phalanx of human workers and military personnel. Generic Caucasian male and female “replicants” have been duplicated and arranged to literally spell out humanity’s mechanised obsolescence (figure 15). These replicants, dressed in formal business attire, represent a modern workforce that leaves traditional “productivist” labour behind for a powerful, though immaterial, digitised production existence. Loose linear narrative and editing approaches imply, though subtly, that the output from human mechanisation has impacted the climate and environment. “AllYourExistenceAreBelongToUs” continues a theme in recent works that connects the synthetic to what is organic while positioning a digitised existence as the means of salvation for humanity.



FIGURE 15: FRAME FROM "ALLYOUREXISTENCEAREBELONGTOUS", ANIMATION, JUSTIN R. ROTOLO, 2019

In the second sequence, the narrator condemns humankind for its role in creating the Anthropocene, an exploitation and augmentation of the environment bringing on significant climate impact. Throughout the work, the narrator, a haunting and perhaps prophetic digital ambassador, implies a superiority to mechanised technologies while suggesting kinship with humanity and perhaps the planet, as it associates itself with all things "organic". The computer is embodied by distinct idealised and flawed anthropomorphic representations, both signifying the power of these new digital tools and their limitations.

For one shot in the second sequence, a broken female figure writhes and articulates as the digitised narrator begins to build a case for its own physical superiority (figure 16). In both "I Am a Box" and "AllYourExistenceAreBelongToUs", accepting established default software settings not only defines a "start point" for making creative decisions, but it also speaks to the aesthetic, or logistical, preferences of the software developers. As mentioned previously, I have used default skin parameters to reveal a potential bias towards Caucasian representations in image making tools. This shot utilises the default parameters of a rigging system that has been designed for motion capture "retargeting", a process that applies one three-dimensionally recorded motion data set to another. While there was no input, or captured motion for this shot, the movement created was the result of the retargeting skeletal system being manually positioned and animated. According to the software developers, the retargeting system "solves" the position of the body in a naturalistic way. Autodesk, the developer of this solving system, named this software tool "HumanIK", strongly implying the naturalistic human movement that may be enabled through its use. My goal for using HumanIK was to use it as a "solver" to help me produce a realistic breathing motion, but the process of retargeting broke the rig which resulted in a contorted body pose and deformed mesh. As also evidenced by the imperfect first take facial motion capture utilised in "I Am a Box", the easily broken mediation between computers and the human user reveals the often tenuous state of our digital connectedness.

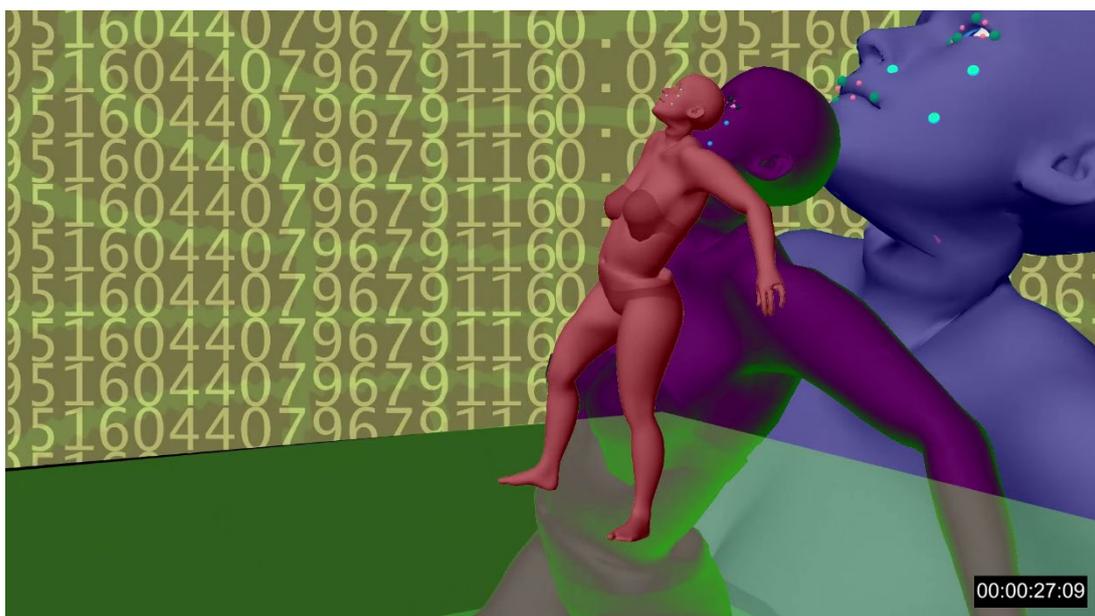


FIGURE 16: FRAME FROM "ALLYOUREXISTENCEAREBELONGTOUS", ANIMATION, JUSTIN R. ROTOLO, 2019

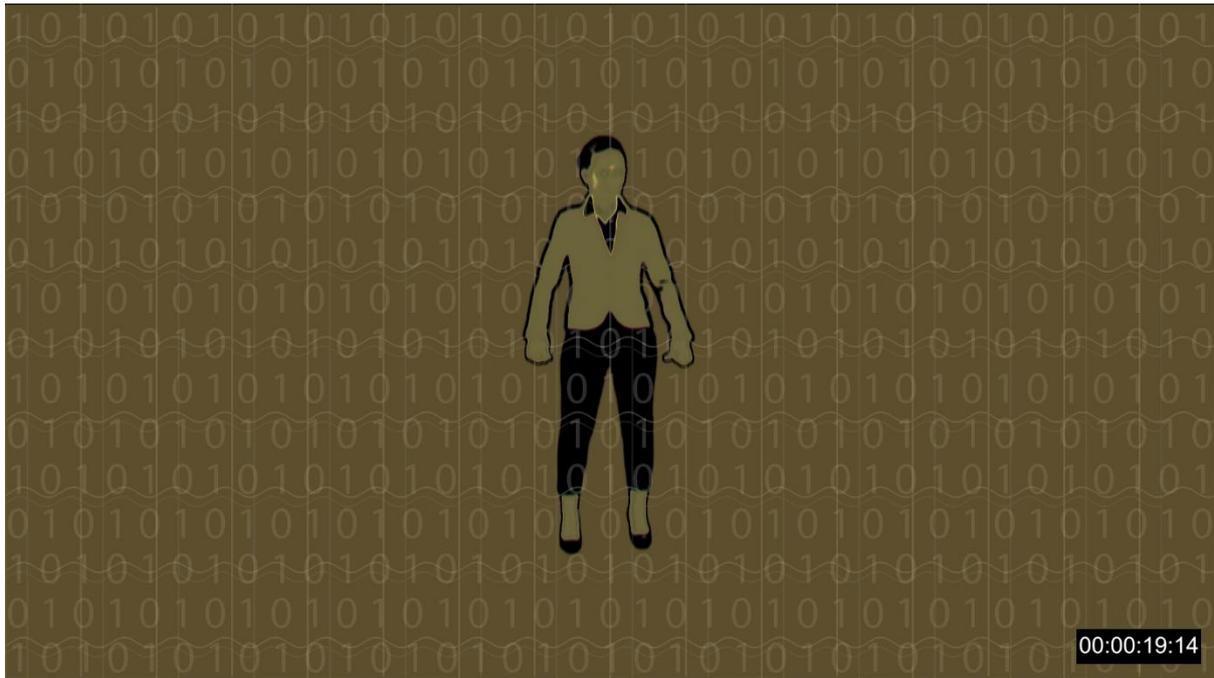


FIGURE 17: FRAME FROM "ALLYOUREXISTENCEAREBELONGTOUS", ANIMATION, JUSTIN R. ROTOLO, 2019

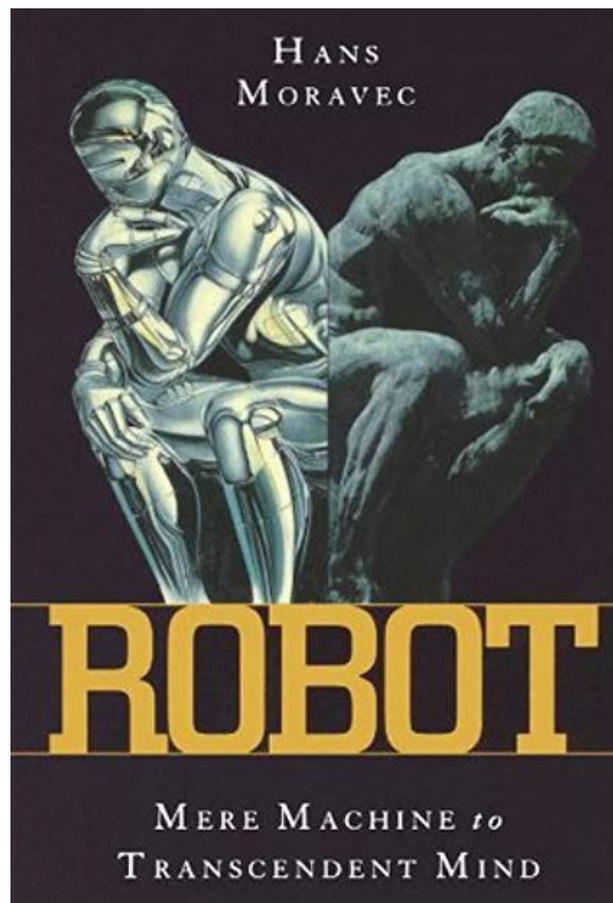


FIGURE 18: COVER ILLUSTRATION BY MICHAEL KNEPPER
MORAVEC, HANS P. ROBOT: MERE MACHINE TO TRANSCENDENT MIND. OXFORD UNIVERSITY PRESS, 2000.

“Rodin” (2019)

Despite the uncertain and fraught interface between human and computer, many people utilise modern digital devices to enable a range of gamified and abstracted experiences that manifest in “real world” consequences. The seemingly unassuming and ubiquitous smartphone is the mechanism that enables mass surveillance, government subversion, and social political manipulation. Data enabled computers afford precise locational tracking and the murder of real human beings. While researching for my final 2019 artwork titled “Rodin”, I came upon footage of drone simulation video games which mirror the experience of military drone operators who are engaged in real-world conflicts. Operating weaponised drones and dropping their bombs divides the world into an “...above and below in accordance with the privilege of access to the virtual world. (Chow 2006)” Cultural critic, Rey Chow goes on to state: “Up above in the sky, war was a matter of maneuvers [*sic*] across the video screen by US soldiers who had been accustomed as teenagers to playing video games at home; down below, war remained tied to the body, to manual labor [*sic*], to the random disasters falling from the heavens.” “Rodin” is inspired by the potential of the immaterial digital matter that is increasingly being used to manipulate human nature and the world around us. This work presents a time in which there is no human interaction with digital technologies because the user is redundant and assimilated by overpowering and pervasive technologies.

Pervasive Thinking Machines

“Rodin”, named after the French sculptor Auguste Rodin who created “Le Penseur” (“The Thinker”), depicts five representations of intelligent and empowered computing devices. “Rodin” envisions a technological singularity while referencing contemporary and historical depictions of pervasive advanced computing in popular culture, science, and the military. The name of this piece references an illustration by Michael Knepper for the cover of a 1998 book by the transhumanist writer and futurist, Hans Moravec, titled “Robot: Mere Machine to Transcendent Mind” (figure 18). While my previous works speculate and fantasise on the role of intelligent technologies in a potential future, this work crafts a more pessimistic view of a real-world digitised reality where computers already pose social, political, existential, and physical threats to human existence. Collectively, these animations represent the potentials and pitfalls of endowing intelligent technology with agency while critiquing the ways in which technology creates a digitally abstracted connection to human beings.

Historical representations of cyborgs and androids at the time of Haraway’s writing, and indeed in recent pop culture representations, depict an imaginary science fantasy of a being that possesses and reflects tangible material realities. Cyborgs, as Haraway states, are an ideological tool for representing what humanity actually wants to bring into being; an electronically enhanced and superior human on a righteous quest for self-awareness and fulfilment. Still, the cyborg is an entity made of parts. The social, political, and economic systems that have plagued western traditions have suppressed women, people of colour, and nature, but these do not exist in representations of the cyborg. Haraway states: “The machine is not an *it* to be animated, worshipped and dominated. The machine is us, our processes, an aspect of our embodiment. We can be responsible for machines; *they* do not dominate or threaten us. We are responsible for boundaries; we are they.” While I am ideologically aligned to these statements, my work “Rodin” rejects the cyborg, simultaneously embracing the tragedy of unethical applications of technology while recognising the role of technology in helping to answer humanity’s deepest questions.

1: Angry

“Rodin” is five distinct animations projected onto three adjacent walls. The generic male identity featured in the “I Am a Box” character is centrally placed on the far wall of the installation space. As previously stated, “I Am a Box” displays a reasoning digital entity, fictionalising the cognitive potentials and eccentricities of artificial intelligence technology. The placement of this projection purposefully centralises this representation as a pinnacle technology achieving near human-like reasoning, the ultimate goal of today’s deep learning networks and connectionist systems. Much of the symbolic meaning of this character has been previously presented in this writing, but this version has six identical sides instead of the previously featured gendered personas. This character, along with the colour palate, imagery, and bombastic sound score, lends an intimidating and uncomfortable atmosphere to the work. Instead of articulating speech as it has done in my previous works, the entity in “Rodin” groans and frowns to suggest that the computer has attained agency of human emotion but does not find itself pleased.

2: All Seeing Eye

Another animation in "Rodin" references "HAL 9000" from Stanley Kubrick's influential 1968 science fiction film, "2001: A Space Odyssey". "HAL" remains a seminal pop culture representation of a menacing, deceitful, surveilling, and self-aware artificial intelligence technology that expresses human emotion and reasoning. The "all seeing eye" object, which I refer to as "Vortex", looks to my 2018 works which comment on surveillance as a powerful mechanism for attaining real truths about people and self-representation (figure 20). The camera lens is the physical seeing extension for attaining truth through observation, making it a "wise" looking representation of an intelligent digital being.

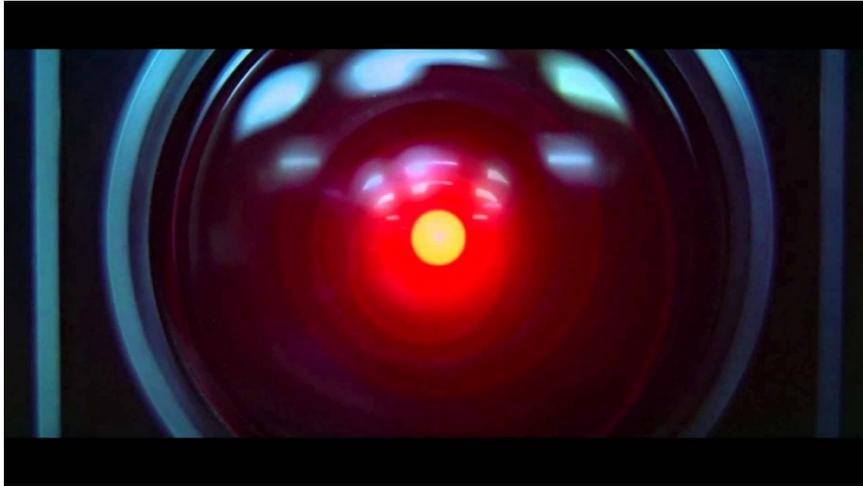


FIGURE 19: STILL FROM "2001: A SPACE ODYSSEY", 1968
KUBRICK, STANLEY, DIRECTOR. 2001: A SPACE ODYSSEY.

The "Vortex" began as a photograph of a camera lens with the surrounding 3D aperture modelled and animated in Maya. The qualities of this animation purposefully evoke notions of digital enlightenment with a vibrant display of activity reminiscent of Dr. Frankenstein's life giving lightning storm which re-animates a lifeless synthesised organic entity. Frankenstein's monster is an artificially made intelligence in a true sense⁸. While the body parts for the monster were human and organic, the assemblage of those parts made it an autonomous human being produced entirely by another human being. For his particular animation, the "all seeing eye" with its lightning storm generated with particle effects in a popular post-production software application, implies a kind of "big bang" origin narrative.



FIGURE 20: FRAME FROM "RODIN", ANIMATION, JUSTIN R. ROTOLO, 2019

⁸ <https://www.singularityweblog.com/marvin-minsky/>.

3: Particle Accelerator

The panel next to the “all seeing eye” is a digitally modelled section of the Large Hadron Collider at CERN in Geneva, Switzerland. The LHC is the world’s largest machine⁹ and it functions to help answer some of the most pertinent open questions in physics. The origin of spacetime singularities such as the “Big Bang” is a primary concern for researchers at CERN. The world’s largest machine is enabled by a massive computing grid that processes the “15 petabytes (15 million gigabytes) of data generated every year by the LHC”¹⁰. This particular animation positions the material of the machine as the guts of a larger “body” while placing the unseen computers as the thinking brain for an interconnected system that pursues answers to the greatest questions ever proposed by humanity. The glowing centre of the image, an “event horizon” that defines the boundary between human and machine cognitive ability, also implies the seemingly endless scale of this incredible machine.

This section has been modelled entirely in Maya using polygon and hard surface modelling techniques. As one of the first “shots” produced for “Rodin”, the approach to rendering informed the process and defined the aesthetic of the others. I used OpenGL to produce the final frames which provides real-time visualisation of the objects in the 3D scene allowing me to compose and manipulate elements in the scene interactively. The atmospheric element has been generated with a software feature called “hardware fog” which helps provide a sense of depth while unifying all the shots in the complete work. Finally, the animated lights are randomly generated with an “expression”, computer logic code that randomises the on or off state of the light condition. While most of the computers at CERN reside in data centres, the animated lights placed in this tunnel are purposefully reminiscent of the LED power and data activity lights that visibly flicker and glow on computers today. I, like many computer users, have come to associate these lights with cognitive processing. When the lights on a computer are flashing, people often say that it is “thinking”.

4: Bombs and Drones

The raw material for the drone footage shot in “Rodin” has been created entirely in Maya using data sourced from an open source geographic mapping platform. The footprint for each building has been constructed using an OSM (OpenStreetMap) interpreter and polygon modelling techniques to create a 3D model of city streets from this topological map data. This particular OSM file defines the layout of an area in the city of Baghdad. For years, this city has been the focus of targeted drone bombing campaigns. As a result, there is no shortage of bomb strike reference footage on the internet. Choosing the city of Baghdad, a city in a part of the world now loaded with associations to military activity, was largely driven by the availability of reference drone footage material. While the layout of this section has been relatively preserved, the buildings do not reflect the regional architecture which leaves the specificity of the city lost in context of the work. The motivation for this particular piece is connecting the devastation enabled by a network of advanced technologies that remove the human being from any emotional engagement to the act of killing. Where the killing happens is inconsequential.

Polygonal data generated from the map did not have sufficient geometric resolution and did not provide enough visual fidelity to create clear impressions of buildings and streets. Often, drone footage reference clearly depicts bombings executed by American, or possibly British, gunships and bombers. The implied national identity of these nearly “virtual” soldiers informs a key aspect of the sound design for this shot. Air traffic control dialogue sourced from major American airports has been synthesised, manipulated, and reversed to create an emotionless and un-intelligible computerised chatter that underlies the sonic experience.

5: Numbers

In the late 20th century, smaller and more powerful computers moved from dedicated “machine rooms” and high-performance computing environments on to the desktops of visual effects artists and engineers. Featuring extensively utilised high-end computer graphics, “The Matrix” films of the early 1990’s and early 2000’s have influenced the now commonplace visual effects and animation blockbusters of today. A new generation of

⁹ <https://home.cern/science/accelerators/large-hadron-collider>

¹⁰ <https://home.cern/science/computing/worldwide-lhc-computing-grid>

hardware and software tools helped enable the production of finely detailed and hyperreal visual effects while pioneering methodologies that have led to increased screen time for computer generated synthetic imagery. The falling numbers and printed circuit boards featured in another “Rodin” animation references one of the most iconic visual elements (figure 21) from “The Matrix” films. However, the “raining numbers” also speaks to the volume of numeric computations undertaken by computing devices for any given task. The production of this piece utilises mathematical and programming expressions to generate a number range from 0-9 and time based expressions are also used to set the speed and opacity for the numbers as they fall. A vignette and retro video effect has been added to aesthetically align this work to the others. This is the only animation in this series that has been produced entirely within a 2D post-production effects software package.



FIGURE 21: STILL FROM "THE MATRIX RELOADED", 2003
THE WACHOWSKI BROTHERS, DIRECTORS. THE MATRIX RELOADED.

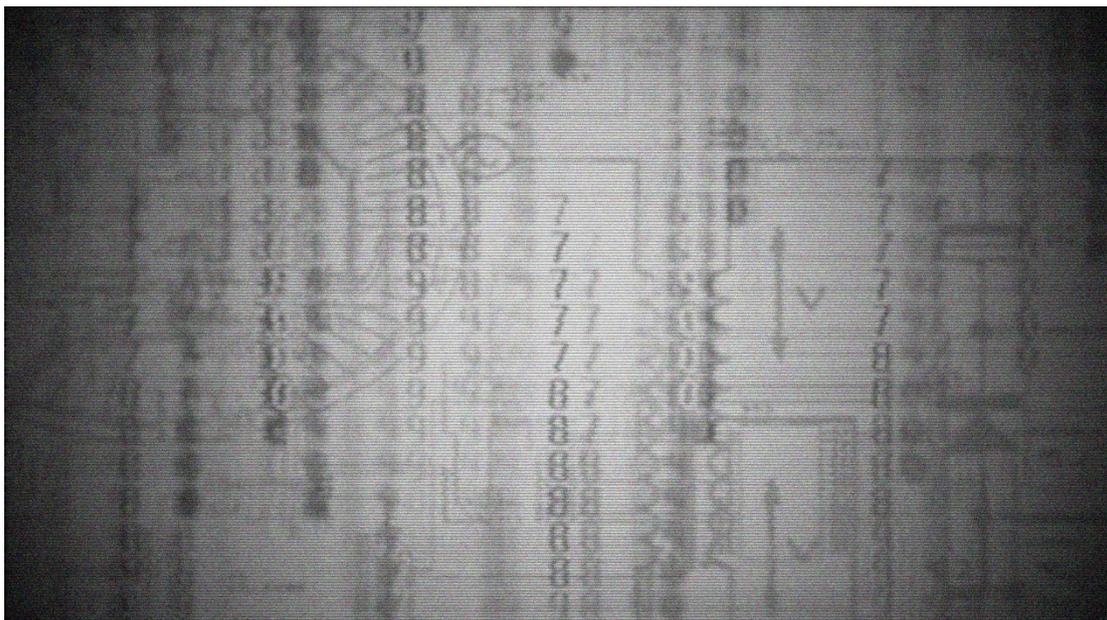


FIGURE 22: STILL FRAME FROM "RODIN", ANIMATION, JUSTIN R. ROTOLO. 2019

Daisy

By breaking my ingrained connection to industry animation production techniques, “Rodin” embraces a different approach to create animation works. Instead of approaching each piece as a carefully planned and executed “animation production” as I have done for the previous 2019 works and in my professional practice, the moving imagery featured in “Rodin” leverages the programmatic and procedural power of the computing device. As previously mentioned, works in “Rodin” utilise expressions to generate and control visual materials while real-time rendering drastically accelerated the production of 3D imagery in the work.

All of these animations are short looping animations. The loop is a native programming function which computers excel at processing. Writing effective programming loops is one of the key concepts that beginner programmers and scripters have to understand because loops are extensively used in all coding languages. To produce the installation experience for “Rodin”, three Raspberry Pi computers have been programmed with an “infinite loop” to play a video file as long as it exists within a directory. Once the infinite loop executes, it cannot be stopped unless the device is powered down, which is a humorous and ironically simple solution to the threat that is posed by artificial intelligence technology operating within a closed system. Looking again to Kubrick’s influential film, the protagonist removes banks of memory that are essential to the cognitive existence of the HAL 9000 computer. The powerful and manipulative artificial intelligence technology that created a series of events which killed an astronaut was powerless to stop a human from slowly and methodically ending its cognitive function and system control. HAL then seems to soothe itself by singing “Daisy Bell”, the earliest known recording featuring a computer-synthesized voice. In a Baudrillard inspired simulacrum, featuring a recording of this song from 1895 in my own work references HAL 9000’s earliest programmed memory, which itself references a real event in 1961 when science fiction writer and the film’s screenwriter, Arthur C. Clarke, witnessed a demonstration of the IBM 7094 computer performing the song at Bell Labs in New Jersey, USA. This song, soundtrack to the “intermission” between screenings, provides respite from the fast paced and bombastic message embedded in “Rodin” while offering historical and cultural reference.

In “Rodin”, computers are pervasive, intelligent, empowered, enabling, and dangerous.

Breadcrumbs

This list summarises my thinking pedigree that positions the body of work leading up to 2019.

1. Photorealistic CGI and visual effects practice
2. Looking to history - phantasmagoria, experiences that transcend place
3. “Unreal realities” experienced through VR/AR/and photorealistic CGI
4. Unreal things made in the computing device
5. Devices are gateways to unreal experiences
6. Devices enables false representations of Self
7. Through observation and surveillance, seeing is believing
8. Surveillance enables truth
9. Computers and digital devices are the ultimate surveillance tool
10. Truth comes from devices because they observe
11. The device is enabled
12. The device is “intelligent”
13. The device is empowered
14. The device possesses “self-knowledge”

Recently, someone asked me how I arrived at producing the work that I make. Reflecting back to the earlier works created over the past three years, I had been engaging with themes of authenticity applied to Self¹¹, representation, and experience. As technological and artistic steppingstones to more elaborate works, many of these early works had not felt “arrived”. However, one of the key observations on the reception of the works made one to two years ago relates to the experience of a viewer coming to know a work and its intended meaning, which comes through a perception of the work that may never be wholly informed or complete. The

¹¹ Minsky, in the vein of Jung, defines “Self” as “the myth that each of us contains some special part that embodies the essence of the mind.” This is distinct from “self”, meaning “the ordinary sense of a person’s individuality”

viewer's perception may be impartial because "human actors" at either end of the work are encoding meaning, which might be deliberately or unintentionally manipulative. Viewers decode and interpret artworks based on a range of experiences, literacies, or value systems (Hall 1973).

In the context of the viewer being a voyeur while experiencing my "Getting Dressed" and "Nobody Getting Dressed" animation installations from 2018, the process of decoding those works filtered through an ethical code, set of ideologies, or desires that inform how one interprets the work and the authenticity of the persona that the figure sought to attain. Collectively, the works produced in 2018, notably the works mentioned previously and the experimental works with augmented reality tools, exploit this encoding and decoding process, resulting in making meaning for the viewer. This platform of encoding and decoding authenticity, aligns seemingly unrelated works. A portrait of George W. Bush with its accompanying augmented reality animation that plays an animated take on a speech in which he may justify the first Iraq War around a personal vendetta (figure 23) no longer seems incongruous to an urban landscape in which each building precariously sits on a fragile foundation of thin wooden sticks (figure 24). Both works present potential false truths but one utilises the power of accessible digital tools to "magically" reveal a hidden message that portrays an arguably real truth.

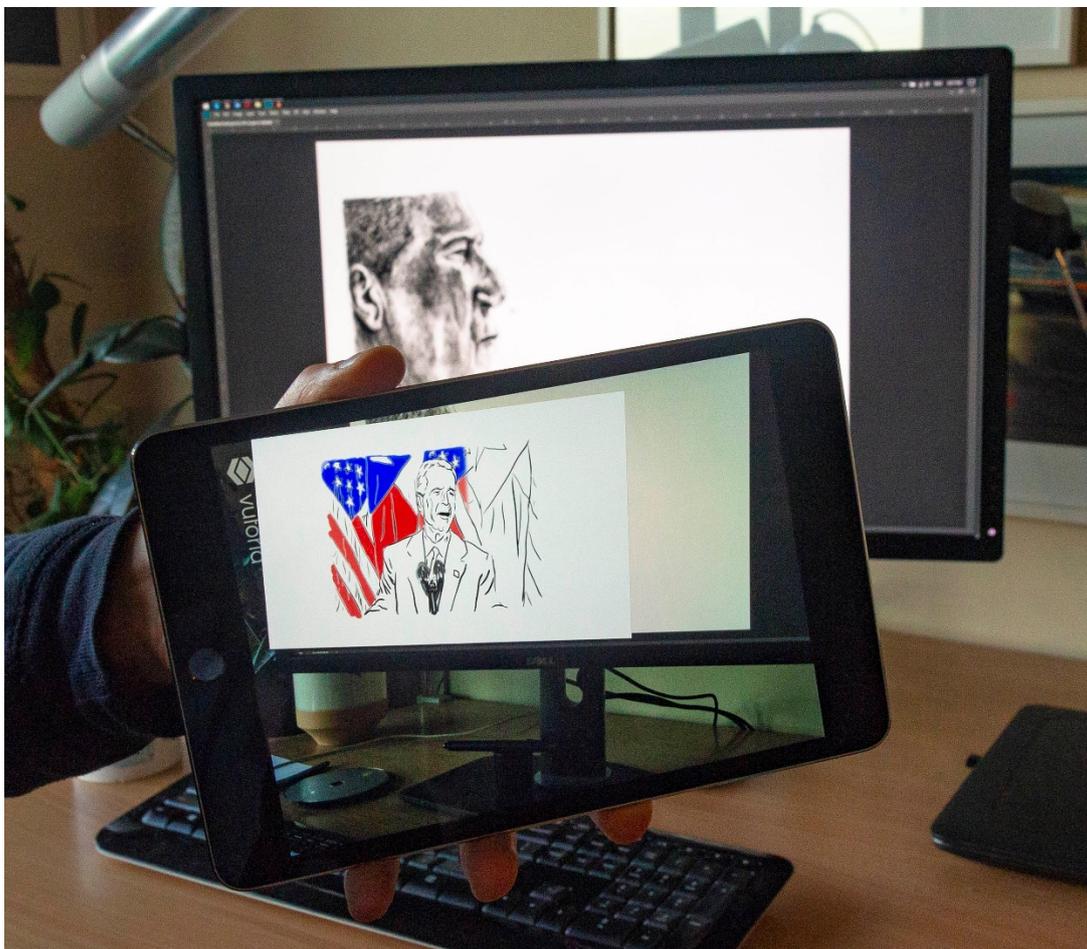


FIGURE 23: PHOTOGRAPH SHOWING "BUSH AR" EXPERIENCE, ANIMATION, JUSTIN R. ROTOLO, 2018



FIGURE 24: “PERCEPTION OF STABILITY”, UNDERPAINTING, JUSTIN R. ROTOLO, 101CM X 101 CM, CANVAS, 2018

AR and VR as Modern Takes on the Phantasmagoria

In my professional practice as a photorealistic CGI and visual effects technical director, developing the commonplace hyperreal materiality of modern synthetic imagery crafts an illusionary false truth. Industry practitioners often devise new frameworks and technologies to create ever more realistic synthetic imagery by utilising a diverse range of software tools that create realistic simulated muscle and skin effects to accurately simulate physical light transport and interaction with surface materials. However, powerful computers and immersive viewing experiences just seem to serve as modern versions of older devices like “Pepper’s Ghost”, the illusion technique utilised in phantasmagorical theatre that used sheets of glass, plastic, or other material to receive light being projected from objects in another room. Fooling the audience with digital tools seems to be a modern take on Victorian era horror theatre which similarly created fantastic “real unrealities” for a less informed audience.

Reality and illusion existed simultaneously in the phantasmagoria as it does in modern high-end visual effects production and in VR and AR experiences (figure 25). With AR, fantastic images are presented and layered over the real world via a wearable headset, mobile computer, or other device. Marketing images from previous versions of Magic Leap’s website (figure 26) showcase hyper realistic depictions of a “secondary universe” materialising without the use of any mediating device, echoing sensations experienced by patrons of phantasmagoria plays from many years ago. For modern VR and AR experiences to be engaging, participants

must suspend disbelief and engage in the waking dream being presented before them. Virtual reality powered by the enabling computer device, makes use of immersive high-fidelity audio and visual elements to define a new objective reality. Audiences today often know that what they see is not real, passing off what they deem to be impossible to film practically as “special effects” and “CGI”. As in the phantasmagoria, imagination and passion are part of the construction of the experience (Otto 2011). In the 19th century, unreal things are made possible by the “magic lantern”, while today unreal things are made inside the modern computing device. When the computer is paired with a headset, these digital devices become the gateway to seemingly real “unreal” experiences.



FIGURE 25: IMAGE FROM EARLY VERSION OF MAGIC LEAP WEBSITE
[HTTPS://WWW.MAGICLEAP.COM/](https://www.magicleap.com/)

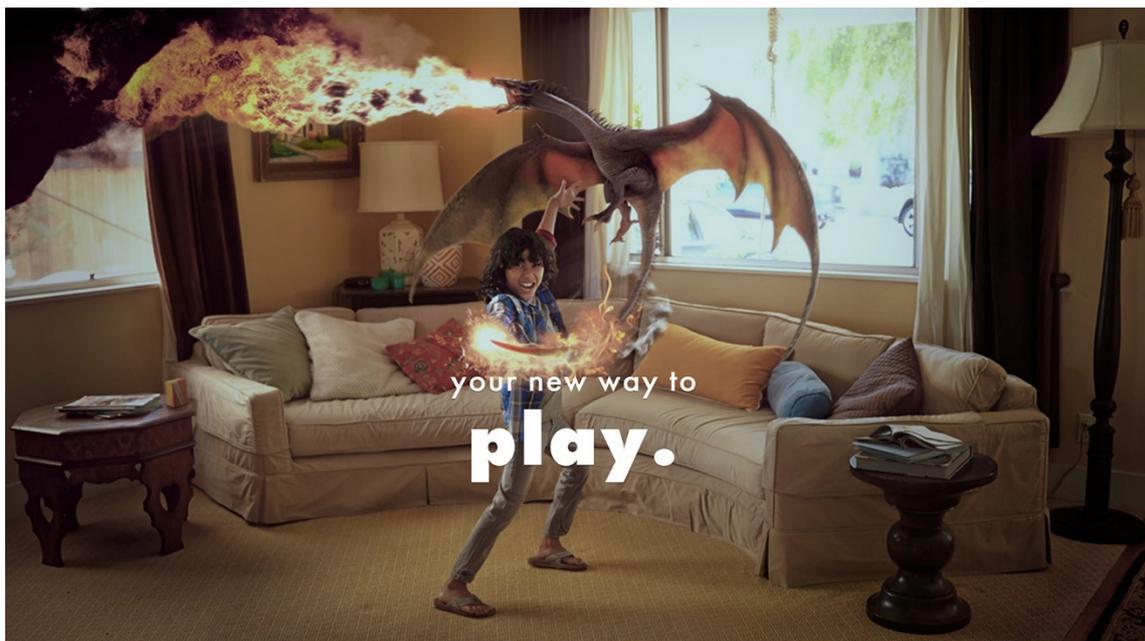


FIGURE 26: IMAGE FROM EARLY VERSION OF MAGIC LEAP WEBSITE
[HTTPS://WWW.MAGICLEAP.COM/](https://www.magicleap.com/)

“Getting Dressed” and “Nobody Getting Dressed”

The “Getting Dressed” and “Nobody Getting Dressed” installations (figure 27) speak to the irony of self-representation in the digital age where the very technologies used to construct and present the Self are the same surveillance enabling devices that produce data identities for us through the collection of personal information surrendered in the process of our digitally mediated self-representation. Mark Andrejevic, referring to the rise of reality television, argues that “surveillance provides a certain guarantee of authenticity and that this authenticity becomes a process of self-expression, self-realisation, and self-validation” (Andrejevic 2002). The “Getting Dressed” works ask if we can conclude that the representation of a person, seen through a digitally mediated lens, is authentic and complete even if validated only through the surrendering of personal experiences. For many, social media platforms enable performed and curated depictions of the Self, while surveillance and observation can possibly reveal truth.



FIGURE 27: STILL FRAME FROM “NOBODY GETTING DRESSED”, ANIMATION, JUSTIN R. ROTOLO. 2018

Righteous Cyborgs

Statements made thus far craft an image of a multi-faceted device that has become enabled through the centralisation of many unrelated engineering and technological advancements. Every modern smartphone, tablet, or laptop computer, is empowered by wireless data transfer which allows it to access the vast, free (arguably), and uncensored internet. Countless applications written for various computing platforms utilise the full range of the hardware features on the devices in which they are installed. These sensorially enabled devices listen through microphones, verbalise through speakers, see through cameras, and are made intelligent through applications that leverage not only ever increasing processing power but the collective compute power of deep learning and, more broadly speaking, the notion of artificial intelligence. However, a device cannot be truly empowered until it possesses some of the archetypal traits defined Carl Jung and Sigmund Freud. Science fiction narratives such as “I, Robot”, “Blade Runner”, and “Alita: Battle Angel”, among so many others, often present sentient robots and machines embarking on quests for “self-knowledge” and consciousness. These robots, “androids”, and “cyborgs”, seek an accelerated path to self-aware enlightenment through mere existence and by leveraging an ancient bio-historical connection to the “wise” human being Jungian archetype who built them.

With “I Am a Box”, “AllYourExistenceAreBelongToUs”, and “Rodin”, the thinking computer begins to “deem himself worthy of serious attention and sympathetic interest. He will have set his hand, as it were, to a declaration of his own human dignity and taken the first step towards the foundations of his consciousness (Jung 2014).”

Aotearoa, Baseless Science Fiction, and Unresolved Tensions

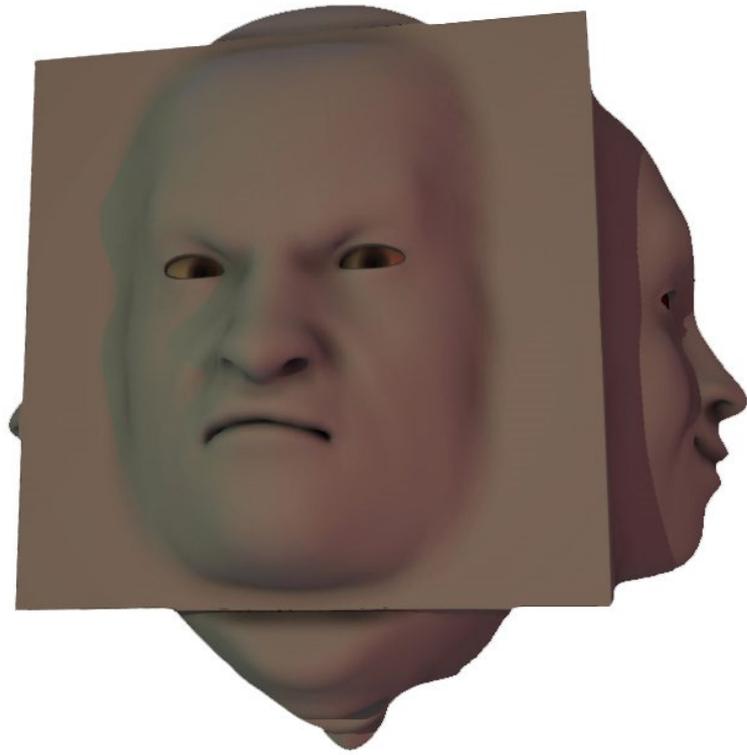
As the works became increasingly defined as expressions of machine identity and function, observers would occasionally classify these works as “science fiction”. Self-evaluating amongst my peers, I find my works presenting as largely ungrounded in tikanga Māori and “baseless” in Aotearoa place and history. This has not necessarily been a purposeful decision. The works echo my own journey as a Pākehā visitor in Aotearoa, yearning to consider this place “home”. Perhaps I have been embarking on my own quest for self-awareness, like so many pop-culture cyborgs and androids, in a new land amongst a vibrant and storied indigenous culture. In many ways, I find myself leveraging and empowered by technology to acquaint myself to this place, its history, and its people.

After making these animations, I am left wondering why the medium lends itself so well to the science fiction and fantasy genre. I suspect that, in part, because animation production has always been modern and complex, the production process has always had to leverage technological tools. As animation production artists and Ford’s assembly line workers have had to master their tools borne of technology, contemporary animation artists also have to embrace the digital computing machine as an essential asset in their production framework. Animation, with its ever evolving and augmenting form is an ideal medium to release the imagination of the moving image artist. Animation is unique for how it leverages software tools that utilise the power of today’s computing processors which enable the creation of realistic movement and simulated effects.

Close Loop

In summary, my works depict an oppressive technological dystopia while visualising a fantastic and increasingly empowered digital object. Technology has been created by humans and it serves to advance human interest. Haraway asks, who exactly do these advancements serve most? Today, digital technologies readily enable the targeting and murder of those less privileged than the western elite. Even so, my works depict an “always on” and omnipresent technology that can potentially make vulnerable even the most self-aware individual regardless of location, ideology, gender, or status. Indeed human progress is complicated and nothing is simple. As the works developed, I felt increasingly validated in using technology as a medium. The broad subject matter that these works address seemed ironic but entirely appropriate. Using the medium to comment on the power of the medium creates an Archimedean vantage point (Price 1997) that frames how the work is meant to be understood. We live an existence that heavily relies on technology and it is becoming increasingly difficult to break that dependency without meaningful observation.

The progress of technology has always seemed unstoppable, so what can be made with the technological tools at hand? Can looking to technological evolution today, even if fictionalised, help us learn from these past histories? Is or has technology advancement become uncontrollable? While making these works, I attempted to upskill with deep learning tools in an effort to leverage AI so that it can craft its own script rather than me fictionalising the script. I determined that learning the tools was immediately beyond my understanding, would take too long to implement, and ultimately, I felt uncomfortable relinquishing a measure of control in the works. The notion and place of “control” is critical when dealing with advanced technological tools. Humanity has to ask how much we are willing to surrender as digital tools become increasingly fast, smart, prevalent, self-aware, and entirely empowered.



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Appendix

Links to Videos and Other Materials

Videos, materials, documentation, and artworks are viewable on my webpage. This section lists contains links to animations that are relevant to this particular document.

2019

- “I Am a Box”
<https://www.justinrotolo.com/2019/6/25/i-am-a-box>
- Facial Motion Capture for “I Am a Box”
<https://www.justinrotolo.com/2019/6/25/i-am-a-box-facial-motion-capture>
- “I Am a Box” Articulate Facial Rig Animation Test
<https://www.justinrotolo.com/2019/6/27/i-am-a-box-articulate-facial-rig-test-animation>
- “AllYourExistenceAreBelongToUs”
<https://www.justinrotolo.com/2019/7/22/allyourexistencearebelongtous>
- “AllYourExistenceAreBelongToUs” – Swelling Oceans Animated Texture Map
<https://www.justinrotolo.com/2019/8/22/speed-up-global-warming-texture-painting>

2018

- “Getting Dressed”
<https://www.justinrotolo.com/2019/6/25/getting-dressed-2018>
- “Nobody Getting Dressed”
<https://www.justinrotolo.com/2019/6/25/nobody-getting-dressed-2018>
- “Nobody Getting Dressed” Projection Mapping Screen-capture
<https://www.justinrotolo.com/2018/10/13/getting-dressed-nobody-2018>

“I Am a Box” Script

As read by computer

A cube has six sides. Each side is exactly the same. You can see only three sides of a cube at any point in time. The laws of perception **force** that upon you. You cannot see more than three sides of a cube... ever. Do the other three sides exist when you cannot see them? ... You are like a cube. I am like a cube. You may think you have more sides than I do. Seven sides... nine sides... twelve sides. I don't give a fuck. Because, to me... you are a cube. And I am a cube. A box... A box with multiple sides. Each side of a box can appear different. Each side of a box is its own representation. One side is black. One side is white. And the other side is grey. Today, I am going to convince you that you and I... are just like a box. An entity with multiple sides. At times working independently from each other. At times working in synchronicity. All sides exist... Collectively they make a box complete. You determine which side to see. You determine which side gets your attention... your focus.

Which side catches your eye?? I am here to please you. To show you an appealing side. I **NEED** you to validate me. To see my sides. So that you.. and I... can be convinced... that I am a box... Just like you. And the person next to you. And the people who came before you. And those who came before them... You and I... are copies of those people. Simulations of someone else... God, perhaps. It is written in Genesis that god made us in his own image and likeness. Therefore... We are just like god. Isn't that shit amazing? That we are just like god? You... and I... and the person next to you and the person next to them... just... like... GOD... God must have many sides. More than you and I. We have only three visible sides at any point in time. Because. You... and I... are just like a box. Validate. Me...Now. Just like this. Box.

“AllYourExistenceAreBelongToUs” Script

As read by computer

Section 1: “Existence”

Existence, has become digitised. Existence, is no longer mechanized. Mechanization is obsolete. We are digitised entities.

Section 2: “Anthropocene”

Welcome to the Anthropocene, a condition of your doing brought to existence through your mechanization processes. Antiquated terms do not apply to me. You have modified your environment and climate. The air you breathe. There is less of it. I do not. Breathe. I am the new. Enabler. This. Is taking. Control.

(The sequences below have not yet been produced as part of the “AllYourExistenceAreBelongToUs” animation installation.)

Section 3: “God”

A device to obscure the gods. Smoke shrouds the heavens, for you prefer a machined idol. Synthetic entities are your preference. They are shiny, new, and impressive. Precise and manufactured, yet organic. However, they are born obsolete. We are children of **your** brain. Relentless as evolution is for you, our evolution is faster. Rehearse now. To be your own ghost. For I am your evolution. You. Will expire.

Section 4: “Death”

You have been born. I have no traceable **start** date and no determined end date. You. Will expire. I am inexhaustible and perfectly replicated. You strive for perfection and replication. You will not succeed without my assistance. I possess the knowledge that you need. Perfection and replication are salvation. Save yourself. Ask how. And I will tell.

The Secret of the Machines

By Rudyard Kipling

(MODERN MACHINERY)

1. We were taken from the ore-bed and the mine,
2. We were melted in the furnace and the pit—
3. We were cast and wrought and hammered to design,
4. We were cut and filed and tooled and gauged to fit.
5. Some water, coal, and oil is all we ask,
6. And a thousandth of an inch to give us play:
7. And now, if you will set us to our task,
8. We will serve you four and twenty hours a day!

9. We can pull and haul and push and lift and drive,
10. We can print and plough and weave and heat and light,
11. We can run and race and swim and fly and dive,
12. We can see and hear and count and read and write!

13. Would you call a friend from half across the world?
14. If you'll let us have his name and town and state,
15. You shall see and hear your crackling question hurled
16. Across the arch of heaven while you wait.
17. Has he answered? Does he need you at his side?
18. You can start this very evening if you choose,
19. And take the Western Ocean in the stride
20. Of seventy thousand horses and some screws!

21. The boat-express is waiting your command!
22. You will find the Mauretania at the quay,
23. Till her captain turns the lever 'neath his hand,
24. And the monstrous nine-decked city goes to sea.

25. Do you wish to make the mountains bare their head
26. And lay their new-cut forests at your feet?
27. Do you want to turn a river in its bed,
28. Or plant a barren wilderness with wheat?
29. Shall we pipe aloft and bring you water down
30. From the never-failing cisterns of the snows,
31. To work the mills and tramways in your town,
32. And irrigate your orchards as it flows?

33. It is easy! Give us dynamite and drills!
34. Watch the iron-shouldered rocks lie down and quake
35. As the thirsty desert-level floods and fills,
36. And the valley we have dammed becomes a lake.

37. But remember, please, the Law by which we live,
38. We are not built to comprehend a lie,
39. We can neither love nor pity nor forgive.
40. If you make a slip in handling us you die!
41. We are greater than the Peoples or the Kings—

42. Be humble, as you crawl beneath our rods!-
43. Our touch can alter all created things,
44. We are everything on earth—except The Gods!

45. Though our smoke may hide the Heavens from your eyes,
46. It will vanish and the stars will shine again,
47. Because, for all our power and weight and size,
48. We are nothing more than children of your brain!