Into the Future

Making, Gender, Technology, & Religion
from
Adam to Androids
&
Galatea to Tomorrow's Eve

Sam Gill
University of Colorado - 2017

Table of Contents

125,500 words
Notes: Expand discussion of Eve in terms of A& E book. Importance of issues of guilt and shame. Of male/female hierarchy. Of knowledge of life and death, etc. How history of Judaeo/Christian has been developed around interpretations of Adam and

Eve. How Eve is the more interesting figure (difference between Gen 1 and Gen 2, created at once or created from rib). Maybe around 242? Also Mary Wollstonecraft wrote about Eve in her famous treatise.
Durer did definitive A&E in 1504. Adam based on Apollo. His print included a reference to his "making" as if he were present in the Garden. Eve was modeled as a composite on a number of models.
Milton's Paradise Lost attempted to follow Augusatine's desire to take the A&E story literally. Not also that this book was the fundamental education of Frankenstein's creature.

Abstract

Into the Future examines the broad significance of the current trends and accomplishments in technology (AI/robots) against the long history of the human imagination of making sentient beings. The aim is to enrich our understanding of the present as it is trending into the future against the richly relevant and surprisingly long past. Creatively considered and in some depth are a wide range of specific examples drawn especially from contemporary film and television but also from cosmology, ancient mythology, biblical literature, classical literature, folklore, evolution, popular culture, technology, and futurist studies. Core notions developed progressively throughout the book include: the fundamental importance of *making* in understanding technology; the essential religious and gendered foundation of the long history of making; evidence of the rising of a new female-based model (Tomorrow's Eve) for making; the outlining of a new body-centered theory of harmony differing from the classic theories of Pythagoras and Kepler and how it might assist us into a rich future; the primacy of the self-moving organic body to conception and perception; the distinction and evaluation of the types of cyborgs or amalgams—metahumans—we are becoming; deliberation on the dawning of a post-human and post-religion era; the nature of violence as both constitutive of and a threat to humanity; and the assessment and interpretation of such technological markers as singularity, interface, Bit Reality, AI, and robots as they interrelate with distinctively human intelligence, creativity, and emotions. A realistic assessment of the sobering possible perils of the current developments in technology is persistently balanced by optimistic prospects for the future. *Into the Future* is distinctive, in part, in its drawing on a wide range of resources demonstrating the indispensable interrelationship among these disparate materials. Science, technology, economics, and philosophy are seamlessly interwoven with history, gender, culture, religion, literature, pop culture, art, and film. *Into the Future*, written for general as well as academic readers, offers fascinating and provocative insights into who we are and where we are going.

Sam Gill, Professor at the University of Colorado, is the author of many books and articles most recently *Dancing Culture Religion*. Recent work includes *Into the Future: Making, Gender, Technology, and Religion from Adam to Androids & Galatea to Tomorrow's Eve* and *Creative Encounters: Appreciating Difference; and How the Study of Religion Might Contribute*. His research has engaged him in fieldwork in Africa, Australia, Indonesia, Latin America, and Native America. His current research is related to perception, conception, gesture/posture/prosthesis, movement, dancing, and body distinctively approached by integrating a wide range of academic and cultural perspectives as well as the experience he has acquired in his long career dancing and moving.

Annotated Table of Contents

periods of religious history and human history and even earthly existence in the framework of cosmic timespace can only be disruptive to these common understandings. The concern of this chapter is not to pit science against religion, or creationism against evolution, or human making against godly making, but rather to introduce the idea that it is a distinction of human beings to hold at once opposing and conflicting positions. It is in this gap (often virtual) that humans find their creativity and their distinctiveness. A number of other key ideas are introduced in this chapter. Perhaps most important is that making, both in the context of religion as well as technology, has deep gender associations; males are the makers and they often make, without female participation or biology, females to serve their pleasure. Examples range from Galatea to Eve to the plethora of female robots/androids that began to appear in the late nineteenth century.

Ava and the Ultimate Turing Test

The 2015 film "Ex Machina" provides a fascinating context in which to explore timeless issues related to making. The film features a tech genius seeking the creation of a sentient being, "Ava" (a form of the name Eve), and, despite his obvious atheism, he is thrilled with the idea that to achieve his goal would establish him as a god. While making a sentient being seems a common goal of current AI technology, the idea was present in Homer. The construction of an "ultimate" Turing Test (the history of the Turing Test is discussed) furthers the idea of the holding together impossibles as a distinctive human marker. Ava, obviously artificial in being plastic and wires, is, nonetheless, embraced as wholly sentient and intelligent and feeling. This discussion returns to the importance of human self-movement as foundational to sentience. This powerful position critiques the bulk of AI research that suggests that it is the advancement of computing and pattern recognition machines (brains) that will eventually produce a sentient being; occurring at a moment of "singularity." The end of "Ex Machina" inspires new, yet disturbing, ideas. Ava commits cold lethal violence (killing her maker) to escape the laboratory where she has been created and through remarkable acts of free will enters a larger society and history; yet we know not to what this will lead. Her disturbing action inspires the effort carried out through the remaining chapters of this book to draw a composite among many female "made" figures in the construction of a "new" model for making and for the future of religion and humanity. This figure is identified as "Tomorrow's Eve."

Cursed, cursed creator! Why did I live?

The remarkable story of Mary Shelley's writing of *Frankenstein: A Modern Prometheus* (1818) as well as its history of interpretation provides an exciting forum for developing valuable ideas. This is a classic fictional example of the making of a sentient being and it powerfully illustrates a broad position developed in this book: that there is a remarkable relationship between maker and thing made. Making is always a setting apart; a rupture between maker and thing made. Yet thing made is always an extension (prosthesis) or expression of the maker and thus they are inseparable. Shelley's novel explores this relationship. The scientist Frankenstein desperately wants to abandon and be free of the creature he has made, yet his entire life is entwined with the creature. The creature's story told within Frankenstein's story is a fascinating exploration of the idea introduced above: that the physical self-moving experiences of the creature were fundamental to the acquisition of his most basic concepts, to his acquisition of language, to his sense of self, and to his longing for companionship. The fundamental questions of the creature are those all too human concerns "who am I?" "where did I come from?"

"why was I created?" A study of Mary's creation of the creature in the context of her history with Lord Byron and her famous husband indicates that the creature may well have been an expression of Mary's own, and specifically, female identity. Thus, surprisingly this creature is relevant to the construction of Tomorrow's Eve.

Falling in Love With "Her": One Singular Sensation

The notion of "singularity" introduced by Verner Vinge in 1993 has become a popular way in both art and science of articulating the moment when AI becomes so advanced that it breaks out of human control to become independent. For some it spells the end of humanity in a terminator world run by machines; for others, Ray Kurtzweil for example, it is the beginning of immortality and ultimate freedom. This chapter explores the implications of the idea of "singularity" largely focused on the Spike Jonze 2013 futurist film "Her" about the time when operating systems become consciousnesses. This chapter continues the explorations of the Ultimate Turing Test being grounded in the self-moving body, rather than a debodied mind, even though Samantha, the OS, is but a voice. Jonze's imagination of the singularity, although it is not presented explicitly, is fascinating in that as an entirely debodied consciousness the effect would be the complete disappearance of the super intelligence from any human reality.

Made of Clay: Prometheus and Golem

At about the same time Mary Shelley wrote *Frankenstein: A Modern Prometheus*, both Lord Byron and Percy Shelley were publishing works on Prometheus, a thoroughly complex and conflicted character; both maker and made, both human aspiring to be god and creature aspiring to be human. This chapter explores various aspects of the Promethean story including his bringing light and knowledge to humans as well as his eternal punishment for making humankind out of clay. The making of humankind out of clay is an ancient religious idea—one meaning of the name Adam is "clay"—and this is followed up in this chapter by a consideration of the history of Jewish golem folklore. The chapter further develops the discussion of "making."

Gender Matters

Gender is important (it matters) and especially when we realize the distinct pattern of the making of artificial beings as female gendered. The history of gendered makings runs from Galatea and Pandora to Eve to the earliest androids and robots to the plethora of androids and robots in the current decade. Framed in Jean Baudrillard's gender identified distinction of production (male) and seduction (female) in his provocative *Seduction* (1979), this chapter focuses on an extensive discussion of Fritz Lang's 1927 classic silent film "Metropolis" featuring the male construction of a female robot, the first in film, named Maria. The concern is to more fully explore the implications of male making without female participation of female figures who have no mothers or female models. It is a gendered matter and the discussion also contributes to the incremental development of a "new woman," a model or guide for the future, Tomorrow's Eve.

Creepy Dollies or My Fair Ladies?

The popular 1964 musical film "My Fair Lady" it is in the direct lineage of the ancient story of Pygmalion. The film, as so many versions of the story, is about making by a man of a lady that she might be loved, admired, and desired by all (especially men). The Pygmalion Galatea theme is a prototype for making throughout western history with dozens of examples. This chapter reflects on a few of these examples—constructed female creatures mentioned in Homer, the story of

Descartes living with a large dolly, Edison creating a creepy talking dolly, increasingly popular life-sized sexbots—yet, focuses extensively on the strange 1886 French novel by Auguste de Villiers de L'Ilse-Adam *Tomorrow's Eve*. The gendered implications of making are explored. There is consideration of why dolls are often perceived as "creepy." And the composite figure, Tomorrow's Eve, is incrementally developed.

I-Robot

Against the background of HAL-2000 in Kubrick's 1968 "2001: A Space Odyssey" and other commanding operating systems, this chapter focuses largely on the classic writings on robots of Isaac Asimov; a collection of robot stories published 1940-1950. The question that Asimov repeatedly considered in these stories was how independent autonomous robots might be controlled so as not to harm their makers. It is in the story "Runaround" (1942) that Asimov presented his widely-known three laws of robotics. Now commonly known as Asimov's Laws, the issues they address are currently central in importance. Notably Asimov's stories invariably demonstrate that his laws don't really work in actual situations, yet many AI/robot designers refer constantly to the Laws as though they work. This chapter explores the presence of AI in the form of algorithms that pervade contemporary life that have grown to such complexity that no one even knows precisely what they do. The discussion again raises the inseparable connection between maker and thing made that ultimately asks the most fundamental questions regarding the nature of being human. A discussion of the 2004 film "I-Robot" is included lifting up the themes in the film that echo the patterns of making, robot control, free will, and the nearly unavoidable religious evocations of such concerns.

Orphans of the Sky: Outside, Movement, & Corporeal Concepts

Robert Heinlein's 1940 novel *Orphans of the Sky*, in conjunction with other novels and a television series "Ascension" are considered in terms of the development of the concept inside/outside that philosopher Maxine Sheets-Johnstone believes to be the first concept we acquire in life. In *Orphans* the entirety of existence for the characters takes place in a huge cylinder, Ship, with many levels. They experience it as the totality of reality and have no concept of "outside" this space. Their life cycle is referred to as "Trip." The novel charts the near impossibility of these "orphans" of even being able to conceive "outside" when confronted with evidence of it; this evidence is that Ship moves in a larger context. The works of several phenomenologists—Merleau-Ponty, Husserl, Barbaras—are consulted for their theories of perception and knowing. An argument is advanced that the acquisition of the most primal concept, inside/outside, depends on self-movement and that this concept when engaged in what C. S. Peirce called "musement," leads to concepts of transcendence, encounter with other, and progressing to notions of horizon, infinity, and god.

Violent Delights

The popular 2016 television series "Westworld" is based on an android (hosts) populated western theme park where humans (guests) pay high fees to interact without restriction with the hosts. The encounters are often wantonly violent acts of rape and assault and murder. It seems that inside the park, free of conventions and law, the guests discover their true selves. The hosts, like the "orphans," have no concept of "outside." They are highly realistic AI/robots that are repaired and "wiped" in preparation for the next group of guests. This chapter focuses on two Westworld "hosts," not unexpectedly female androids Dolores and Maeve, who

experience and struggle with growing memory and self-awareness. For both the dawning of "outside" is crucial to their acquisition of independence. And a theme common to the developing composite figure Tomorrow's Eve is that their independence is won by their killing their maker (invoking Nietzsche's discussion of the murder of god). The core position of violence in Westworld and in the biographies of the focal characters raises the question of the philosophy of violence. The issues regarding violence raised in "Westworld" are used to engage philosophies of violence—Dodd, Zizek, Arendt, Benjamin, Sartre, and Patočka. A theory is advanced proposing that fictional violence or violence in art offers an environment in which, as in "Westworld," the nature of violence may be explored and its originary, not simply an instrumental, power is experienced. While the philosophers tend to address violence as a "problem," violence is unquestionably a factor in creation, free will, self-awareness. In the context of story, originary violence is the act in which we engage the question of the nature of violence in its sharpest and most philosophical terms. There is a disturbing identification of originary violence as an aspect of Tomorrow's Eve.

Robots & the End of Work: The Protestant Ethic & the Spirit of Capitalism

Although almost totally absent in the national political discourse on jobs and job creation, there is a growing concern about the possible end of work, or the great diminishing of jobs, that correlates with the current advancement of AI/robotics. While work is associated most closely with secular activities, the biblical associations with work include "to serve" and "to worship," as well as "to cultivate" and "to labor." This chapter frames the issue of the future impact of AI/robotics on work in the early twentieth century classic *The Protestant Ethic and the Spirit of Capitalism* by sociologist/philosopher Max Weber. Citing a wide range of the intrusion of AI/robots into traditional jobs, it is clear that the future is clearly going to markedly shift the human relationship with work; it already has. Yet, historically work is inseparable from religious values as well as individual and cultural identity. This chapter sets the stage for asking the fundamental questions about the future relationships between humans and machines; questions that will undoubtedly dominate future generations.

"Beam Me Up Scotty!" Corporeal Concepts & Posthuman

"Star Trek" becomes the arena for consideration; it has been classic television and film for decades. The core concern is the apparent equation of material reality and "information." While beaming someone up is beyond current technological capability, it is premised on our present pervasive existence of Bit Reality, the informational representation and normalization of nearly everything. Presented in the context of an overview of the long history of the development of Bit Reality that has culminated in the present overwhelm of bit-based information that can be beamed and transmitted, this chapter engage the ongoing discussion of our transition into the posthuman, that is, biological and information processing amalgams. In *How We Became Posthuman* (1999) Katherine Hayles noted that this understanding is not so different from the Cartesian view of humans as clockwork like machine bodies inhabited by ghosts (minds). While there is a long and concerted history of neglecting the body, now strongly supported by the transduction of body into information and normalizing it, this chapter draws on strands developed in many of the preceding chapters that establish a primacy to body and to the self-moving body. The core position on which to construct the future is to realize that bodies don't simply learn concepts, *they are concepts*.

The Matrix

The well-known connection between the Wachowskis' 1999 film "The Matrix" and French philosopher Jean Baudrillard's *Simulacra and Simulation* (1981) represents a broad body of art and fiction that considers the possibility that one might become completely disoriented and unable to distinguish between "meat" reality and informational or bit reality. Fiction, by its nature, engages the issue of appearance and reality and such authors as Jorge Borges and Lewis Carroll were masters at presenting to their readers the experience of shifting among realities. In other terms, it is the discourse on the distinction between map and territory; and this distinction is fundamental to all academic study. In this chapter, while noting that a popular position is to figure out and unify such complex distinctions, that, as introduced in several other chapters, it is the human capacity and delight in recognizing the distinction and holding the two together without unity that is itself vitalizing. While extensive examples drawn from the contemporary informational reality sphere are discussed, also included is a discussion of how the principle holds in an example that is not characterized as informational or technological, the initiation rites for the Hopi Kachina cult (northeast Arizona). The discussion of "The Matrix" includes a critique of the emphasis on Neo ("the one" or the new Christ or Adam) as the continuation of Adam's Catastrophe, when a close look at the film reveals that it is the representations of Tomorrow's Eve, the Oracle and Trinity, that actually makes the future possible.

Meet Me on the Holodeck!

The pursuit of unity or wholeness is shared from the New Age to modern physicists and neuroscientists. "Star Trek's"1987 introduction of holodeck in the pilot episode to "Star Trek: The Next Generation" marked the onset of a range of technological developments from Wii to Virtual Reality. Yet the virtual reality of technology belies the historical background to holography based in the long-recognized distinctiveness of handwriting. Even today a holographic will, one written in the will-maker's own hand, is considered legally valid. Based on the presence of these rather polar positions with regard to *holos*, this chapter examines a range of disparate efforts to achieve wholeness, from physicist David Bohm's widely popular *Wholeness and the Implicate Order* (1980) to the New Age efforts such as Michael Talbot's *The Holographic Universe* (1991) that combine superficial science with misrepresented wisdom from cultures the world over and the many more contemporary efforts (Hawking's "grand theory of everything") that begin with a Cartesian divided world and attempt, like all the king's horses and all the king's men, to put the world back together. Upon some detailed critique of many of these approaches, this chapter returns to a position persistently developed throughout that *holos* is a corporeal concept inseparable from the distinctiveness of "hand" and "movement" both of which are inseparable from the experience of self and other. Wholeness is an attractive, yet romantic, idea, yet it misunderstands that it is through distinction and separation at once with connection, it is through the gap of self and other separate yet inseparable, that the distinctiveness of human movement and vitality are to be found.

ToolsRUs

While a plumber is known by his wrenches, a carpenter by his hammer, the concern here runs deeper. Building on the insights of paleoethnographer Andre Leroi-Gourhan who proclaimed the hand as the first tool, this chapter focuses on the use of parts of the body as well as the whole body to be at once subject (the tool user)

and object (the tool). This discussion of the body in skilled motion, the body as technique, furthers the ongoing discussion of making and the reciprocal relationship that occurs between maker and thing made. Tools, both body and mechanical, gesturally extend (prosthesis) the body. As marking on an ancient cave wall turned the body inside out and established memory as external to the physical body, so too do the school kids thumbing texts on a French playground. We extend and remake ourselves (literally) through the gestural use of tools, including our bodies. Upon acknowledging the importance of media to message with reference to Walter Ong and Marshall McLuhan, the implications are considered for modern tools based on Artificial Intelligence and Bit Reality; the medium is increasingly the only message. Despite the assumed electronic and digital nature of most contemporary tools, this chapter concludes with a discussion of the dancer, who uses her whole body as tool to transcend herself as she fully realizes her body technique through the othering techniques of the dancing body, as an enrichment to the emerging figure of Tomorrow's Eve who may lead us into the future.

Cyborg/Metahuman: Future of Gender & Religion

J. G. Ballard's *Crash* (1973) depicts the amalgam of organic body with machine through deeply disturbing and sexually laden images of the interpenetration of the two in automobile crashes. The imagery foreshadows the more clinical integration of carbon and silicon/metal referred to as cyborg, cybernetic organism. The cyborg presents the results of the trajectory to eliminate or make invisible interface, that transductive boundary between organic and machine. This chapter outlines the history of the term "cyborg" from its origination in 1960 by Clynes and Kline through a variety of fictional/film representations from "The Six Million Dollar Man" to "Robocop" to the Borg on "Star Trek." As early as 1991, Donna Haraway considered the encroaching cyborg and its gendered implications in her classic "A Cyborg Manifesto: Science, Technology, and Socialist-Feminism in the Late Twentieth Century." This chapter establishes a classification of cyborgs: the *Informational Cyborg* distinguished by a hive mind shared widely and constructed by big data mining and algorithmic manipulation and the *Metahuman Cyborg* distinguished by the mechanical and functional enhancements of the integral biological body through implants and enhancing prosthetics. Both cyborg types already exist and the future will undoubtedly see the advancement of both. The gender associations place the Informational Cyborg as the more masculine, the Metahuman Cyborg as feminine. Applying the perspectives developing throughout this book, the Metahuman Cyborg is shown to be the more promising path forward, an example of Tomorrow's Eve in retaining the fundamental importance of the biological body.

Watson and the Jeopardy! Test: Machine Learning

The remarkable success of Deep Blue that soundly beat Garry Kasparov the world chess champion, Watson the computer program that won "Jeopardy!," and more recently the computer AI that beat a world champion in the unthinkably complex game "Go," raises the questions of the potential of what has become widely known as "machine learning." The basis for advancements correlates with machine processing speeds and information storage capacities contributing to the development of algorithms that calculate statistical probabilities upon which to make decisions. Advancements suggest the eventual approximation, by means of simulation, of human speech, emotion, and creativity. Yet, these machines always imitate, they do not feel because they are debodied, cold in a cosmic sense.

Advancements based on machine learning raise the question asked in 1988 by Jean-François Lyotard, "Can we think without a body?" This chapter takes this question as seriously as possible, while also making the argument that body, even if a metahuman enhanced cyborgian body, is necessary to thinking and feeling and believing.

It is bigger on the inside! TARDIS & Wormholes

No consideration of the future would be complete without consideration of the long and famed television series "Doctor Who." Science fiction that involves travels across the universe and throughout time rely on a variety of techniques that move beyond scientific possibility. The popularization of the time machine by H. G. Wells in 1895 offered a classic technique. The development of the idea of wormhole is another; its history is traced. The British Police call box used by Doctor Who as TARDIS (Time And Relative Dimensions in Space) has become another classic. This chapter considers a range of time and space concerns raised particularly by the vast differences in speeds between biological processes (neurotransmission speeds) and machine operating speeds. One argument for the fears related to post singularity machines is that they learn at the speed of light, thus millions of times faster than the neurological speeds that seemingly restrict human learning. The argument here is a counter one, which is that it is precisely the relatively slow biological speeds that allow humans to experience timespace in a way similar to the qualities of TARDIS. TARDIS is, as the Doctor is always delighted to demonstrate, bigger (both in space and time) on the inside than on the outside. The analogy to the human experience of timespace suggested that humans experience the present—referred to as the "fat present"—as bigger than a knife-edge meeting of past and future. The present, in an experiential sense, contains all of the past (memory and knowledge) and the future (imagination and projection) as well as all of space. It is the fullness, the richness, of the fat present that distinguishes human processing as completely different from that of machines. The fatness of the present includes backward referrals in time and a powerful biologically based feeling component that we commonly understand as experience.

Secret Hidden Horror

A story is told of Pythagoras related to his invention of a theory of harmony in which his senses, his ears, compelled him into a forge attracted by the sound of the hammering. His scientific investigation of what comprised the sounds he heard led him to construct a theory of harmony based on the interactions among four hammers. Yet, and this is the most interesting part of the story, there was a fifth hammer that introduced disharmony and it was ignored by Pythagoras. Harmony, both of sound and among cosmic bodies, Pythagoras believed should reflect the perfection of God who created the universe. Kepler, two millennia later, on the cusp of modernity developed a new theory of harmony (music and planetary motion) in light of the new world revealed by Copernicus. Kepler came to contemplate an implication of the primal inside/outside distinction asking what is the ultimate outside of the universe. Kepler, as did Copernicus in some respects, believed that the universe, being made by God, had to be perfect and complete by His design. Kepler wondered if he dare think that the universe might be infinite and thus relative. Such an idea, he said, raised he knew not what secret hidden horror. This chapter charts the trajectory into the future in which current evidence suggests that the order of size and complexity of everything from our basic biology (the details often focus on the brain) and cosmology (where we live among 2 trillion galaxies) is

far greater than we could have imagined, thus raising the prospect that it is again time for the imagination of a new harmony, one based on the imperfect variations of the human body.

Step Again Into the Forge

Drawing together many of the ideas developed in earlier chapters—singularity, *holos*, corporeal concepts, fat present—this chapter musters the courage to forge ahead in developing a new harmony. It must be a harmony of self-moving bodies that acknowledges "fifth hammers" and "secret hidden horrors" as fundamental to vitality.

Song of Tomorrow's Eve

Responding to the mandate developed in the previous two chapters, this chapter sets forth an outline of the new harmony that might guide us into the future, the song and dance of Tomorrow's Eve. Where is the ear to hear? Whom does the resounding impel? Do algorithms weep? Or laugh? Dare we suggest that god might be found in hearing the singing ongoing, in the discord of the fifth hammer, in the marvel of the unreliable ear, in the variations among the violins? What irony the ear in the era of Bit Reality; and the feet where the cloud is the ground. What becomes of the alpinist? The dancer? In this chapter, we consider the importance of the self-moving body to sentience recognized as early as the sixteenth century by Étienne Bonnot de Condillac and refined a few decades later by Maine de Biran. The insights of Katherine Hayles on body, as well as Maxine Sheets-Johnstone, Brian Massumi, Michel Serres, and Jean-Luc Nancy, guide the development of a body-basis for a theory of harmony that is not biologically reductive but one that inspires a grand limitlessness and transcendence, arising from imperfection, variation, metastability, nonlinearity, and randomness. Drawing together the hints of the developing composite figure, Tomorrow's Eve, we move to a fuller articulation of the potential of this figure in terms of song and dance.

Jesus Wept, Robots Can't: Religion into the Future

As religion is a constant concern throughout this book, the growing argument is that it might be appreciated in terms of biology as well as theology. This final chapter focuses on the shortest of all biblical verses, "Jesus wept" (John 11: 35). To place this passage in the context of futurist technology key scenes from the 1991 film "Terminator II: Judgement Day" are considered. In this film, the Terminator has become a surrogate dad to the boy, John Connors, whom he is protecting so he will survive to be the leader of the resistance movement in the future, the era of the Terminator. In several key scenes in the film, the Terminator seems baffled by human crying that is associated with emotion; an apparently distinctively human trait. Robots can't cry. The biblical verse is fundamental to Christology in its demonstration that the Christ was fully human. Movement, gesture, body, experience, improvisation are essential elements to any emerging valued world. Certainly religion, despite our strong association of it with the spiritual and the immaterial, could not exist apart from these natural biological features. We must foreground our new harmony that is based firmly in biological bodies and we must carefully contemplate the implications of Michel Serres' statement, "After the musical offertory hymn, might the Word itself have arisen from the uprightness, disquiet and quiet, of the flesh!"

Thumbelina's Severed Head

"Whatever passes from not being into being is a *poesis*"
Plato, *Symposium*

A prominent French philosopher observes school kids obsessively thumbing their smart phones and he writes a book, and a fine one at that. What else should we expect? In his recent little treasure, *Thumbelina* (2012, English translation 2015), Michel Serres places these texting French school kids in historical context, "This young schoolgirl and new schoolboy have never seen a calf, a cow, a pig, or a brood of chicks. In 1900, most human beings on the planet worked the land; by 2011, in France and in similar countries, the number of people working the land had been reduced to one percent of the population. This has been one of the greatest revolutions in history since the Neolithic period."[1]

These texting school kids remind Serres of the origin story associated with the monastery of Saint-Denis on Montmartre in Paris. As one version of the story goes, in 250 A. D. on orders of the Roman prefect, Denis was ordered decapitated for preaching the Christian faith to the Gallo-Romans. Instructed to take him to the top of the hill for execution, his lazy executioners decapitated him halfway up. According to the story Denis collected his own head and carried it to the hilltop. Based on this miracle Denis was later canonized and the hill named Mount of Martyrs. Serres locates the intelligence of Denis in his severed head and the miracle with his capacity to continue on with nothing above his shoulders, with his head in his hands.

Serres connected this head in one's hands image of Saint Denis with today's Thumbelina and her handheld thumb-interfaced intelligent device.

> Even if she does not know this legend, she is nonetheless beholding her own head, in front of her and in her hands. It is a full head, because of its enormous stock of information, but it is also a well-made head, since its search engines bring up texts and images at a moment's notice, and its programs process huge amounts of data faster than she could ever do herself. She is holding, outside of herself, a cognition that used to be inside her, just as St. Denis held his head severed from his neck. Has Thumbelina been decapitated? Miracle?[2]

The violent image of a decapitated head might lead us to anticipate that Serres is preparing to launch a rant on the beheading debodying evils of modern technology, yet what of his invocation of the story of Saint Denis? What of his seeming interpretation of Thumbelina's decapitation as a possible miracle?

---

[1] Serres, *Thumbelina*, p. 2
[2] Serres, *Thumbelina*, p. 18.

Serres reminds us that prior to the printing press we had to memorize—inhead we might say—everything that contributed to our intelligence. How limited and difficult was that? Even after Gutenberg we still had to know about the books where this knowledge was stored and know where to find the books and how to read. In so many ways, pedagogy and academic research methods continue today to rely on keeping our heads on straight, on filling our heads with information, and focusing strongly on how to read which is how we get what is in our hands into our heads. Why hasn't this process evolved; kept up with technology? Like religions, perhaps academia in large part is out of touch.

Notably Serres celebrates that

> our head has been projected before us in an objectified cognitive box. … Thumbelina's severed head, better made than filled, is very different from her mother's. Since she no longer has to work hard to gain knowledge—it is already in front of her, objective, collected, collective, connected, accessible at her leisure, already reviewed and edited—she can return to the absence that hovers over the severed neck. There she will find air, the wind, and—even better—the light portrayed by Leon Bonnat, the academic painter, when he painted the miracle of St. Denis on the walls of the Pantheon in Paris. There, she will find the new genius, the inventive intelligence, an authentic cognitive subjectivity. It is as if her originality takes refuge in this translucent emptiness, in this cool breeze. Knowledge is almost no cost, yet difficult to grasp.
>
> Is Thumbelina presiding over the end of the era of knowledge?[3]

Serres sees beyond knowledge, beyond information; Serres imagines a "new genius, the inventive intelligence, an authentic cognitive subjectivity." And he gives us this shocking image of Thumbelina's severed head as invitation to invention and discovery.

There are other things that should shock us. Although Serres describes his schoolyard observation using the gender inclusive term "children," it is almost certain that the gender of the kids Serres saw texting was female; he does give them a feminine name and pronoun. Should Serres have approached these girls to inquired of their new genius and inventive intelligence he would likely have discovered that, rather than using their well-made handheld heads to access the

[3] Serres, *Thumbelina*, pp. 19-20.

universe of knowledge, they were texting and exchanging selfies on social media; theirs is an exchange of self-referential, empty, ephemeral social chat that is considered by them to be of great value. Almost certainly these girls were engaging in some aspects of social media; a social media invented and developed frequently by young nerdy techno-skilled porn-obsessed guys; a technology that has an almost addictive appeal to girls (well, and everyone else). To have their heads in their hands, means that these Thumbelinas can not only see themselves (I often see women in my classes using their phone cameras as mirrors) they can also take photos of themselves (selfies) which they do constantly in various states of mugging (duck face) and attire (or not) which they instantly post on any of many possible channels of social media, yet especially Snapchat.

Nancy Jo Sales' 2016 book *American Girls: Social Media and the Secret Lives of Teenagers* explores the shocking extent to which girls (and to a lesser extent boys) are engaged in and impacted by their handheld interface to social media that often comprises their entire social world.[4] In her study of girls ages 13 to 19 across the country she found that nearly all girls in this age range regardless of race, education, and household income, or whether they live in urban, suburban, or rural areas participate extensively in social media.[5] She found that a significant number of girls admit to spending as much as nine to eleven hours a day on social media. Sales documents and explores the potential negative impact on girls being dependent on "likes" for their self-esteem and their high vulnerability to being bullied and harassed online by their media "friends." So often their social media connection with boys is highly sexualized. I find especially telling Sales' link between the culture of social media and the culture of Silicon Valley. It is an all too familiar example of a pattern of the "invisible," yet highly intentional, "makings" by men—and men of a certain type and social background and experience—that deeply impact, often in questionable if not also deeply disturbing ways, almost every American girl; and they do so for money, lots of money.

Jean M. Twenge has studied generational shifts over time[6] and finds a stark shift in the behavior and attitudes of the generation (born between 1995 and 2012) that corresponds with the advent of the iPhone, 2007. These kids spend an enormous amount of time alone in their rooms using their iPhone as a window into the world. Physical social contact is more limited than it has ever been. They have decreased Interest from preceding generations in being away from parents, in driving, in

---

[4] I was discussing this subject with my daughter and my 13-year old granddaughter and my daughter remarked, "Well don't these girls spend time talking to their friends?" My response, "Well they text each other even when they are physically together." My granddaughter shook her head and said, "Yes, I know lots of girls who do this; they think it's fun."

[5] Sales found that 88% of American teen girls had access to a mobile phone, 92% were online at least once a day, and 24% were online nearly constantly. (p. 9)

[6] Jean M. Twinge, "Has the Smartphone Destroyed a Generation?" *Atlantic*, September 2017.

getting a license to drive. Although the causal relationships are complicated this generation is more likely to feel depressed and lonely and to commit suicide.

Some scholars on gender suggest that through history increased popularity of pornography often correlates with the rise in women empowerment. Centuries ago the invention of print increased the availability of porn, yet it also gave women greater access to knowledge and education. Perhaps pornography, popular largely among men, is a strategy by which men retain some feeling of dominance when they feel threatened by the rise of women. The recent development of electronic media has been accompanied by a universal rise in popularity and availability of pornography, yet it is also a period marked by the dramatic rise of women empowerment and the well-documented achievement of girls and women in most every respect significantly outpacing that of boys and men. Yet is it a concern that these female achievements also correlate with the potential objectification and degradation of girls and women facilitated often by their own obsession with social media including producing narcissistic selfie nude photos (nudz) and other acts intended only to establish themselves as "hot" and "famous"?[7] Unquestionably the conjoined and interdependent cultures of American girls and Silicon Valley contribute to the creation of the sense of self as understood largely in terms of online "image" and self-worth understood largely in terms of being "famous" and "hot." It breeds a culture of narcissistic self-objectifying Kardashians and Trumps whose principal skill is confined to creating their own fame, parading their wealth, being an enviable brand, while flaunting that their fame and the size of their wealth (and often also certain sexualized body parts) constitute the only measure of value. A trumped-up selfie image that receives "likes" has become for so many, especially the vulnerable, the measure of everything.

What is certain is that the head-in-the-hands of these contemporary Thumbelinas is indeed spawning the invention of a new culture and sense of personal identity, a near ubiquitous trend that is, according to Sales, being broadly ignored, misunderstood, and discounted despite the potential consequences that, once glimpsed, are profound and deeply disturbing.

The head-in-the-hands is accessed by the thumbs. From the earliest human use of the hand or a tool to make a representative mark on a surface there is a trajectory extending to this contemporary severed head. As André Leroi-Gourhan[8] noted this first use of a tool, the hand *making* marks on walls—"Kilroy was here!"—was the origination of the externalization of memory, yet also of knowledge. The hand was the tool used to pick the fruit from the tree of knowledge in the Garden of Eden, specifically an apple we are told (more on this later). Knowledge is both out there and in here. Knowledge is given duration and enhancement through accumulation and review and interpretation and use; all interactive—the copresence of out there and in here. As what is inside is projected outside—as we are capable of turning ourselves inside out, what Laurence Scott refers to as "the four-dimensional

---

[7] See Sales, p. 38.

[8] Andre Leroi-Gourhan, ???

human"[9]—through these makings, we have now come to such gymnastic feats of contortion as to hold our own and our collective heads in our hands. As Serres reminds us the play of invention "appears between the neck and the severed head."[10]

Although I want to throw in with Serres and his hope for a miracle I cannot deny that short of miracle (why Denis became a saint after all) severed heads invariably mean death. Decapitation is the ultimate amputation and it defies prosthesis, yet we can now hold our heads in our hands. This aesthetic of the impossible too characterizes our time: as does the near identity of the almost unimaginable rise of genius and cognitive subjectivity with the increased risk of the total loss of humanity if not also human life as we know it! Perhaps this impossibility is always the basis of a good story. Although in his book Serres does not engage the interpretation of Hans Christian Andersen's 1835 story "Thumbelina" or the Grimm Brothers' account of "Thom Thumb" (he does elsewhere *Hominescence*, 2001) this identity characterizes both of their lives, so beautiful and promising in miniature, yet their diminutive stature makes their lives always precarious.

As one whose generation, coming just before what we now refer to as the "Baby Boomers," wasn't even named—Tom Brokaw apparently named us the "Greatest Generation" while the Pew Research Report labels us the "Silent Generation"— I want to consider those youngest of today's adults. They too are having a bit of an identity crisis. They are squeezed in with the Millennials (born 1981-1997) sometimes called "Gen Z," a label being broadly offered perhaps because Z follows X and Y which have already claimed their generations overlapping with Millennials. As Z is the last letter in the alphabet, Gen Z has a rather ominous feel to it. I sometimes hear the term "digital natives" used to refer to those born coincident with the Internet; those who have never experienced a reality without personal electronic devices. I get that and understand the "naturalness" with which life and personal technologies coexist. Yet, I think of digit as also and more fundamentally referring to finger. Thus, digital refers to the capacity to distinguish by pointing; the capacity to make reference to pointer and pointed; the tendency to enumerate; the prosthetic extension of ourselves into and relate ourselves to the entirety of reality, material and imagined beyond our reach. Jean Twenge has appropriately given this group the label iGen since their distinctiveness correlates so closely with the appearance of the iPhone, smartphone.

In the hopeful spirit of Serres I suggest for those born just before the beginning of the twenty-first century we use the term "Tri-Centurials," or "Tricents," because, with the growing increase in longevity, this group may well live in three centuries. My former spouse's grandmother was born in the last year or so of the nineteenth century and lived past one hundred years of age thus living in the nineteenth, twentieth, and twenty-first centuries; surely, she is one of but a literal handful of

---

[9] Laurence Scott, *The Four-Dimensional Human: Ways of Being in the Digital World* (2015)

[10] Serres, *Thumbelina*, p. 40.

humans who have ever achieved this distinction. And the current group has a far greater likelihood than had she. I suppose other labels inspired by Serres might be "Thumbelinas" or "Gen Severed Heads." Maybe not!

It is important that Serres looked to a religious event in antiquity as a guide to the present; and to his openness to the possibility that the present Thumbelinas are miracles on the order of Saint Denis. Yet, this religious event was not of the sweet romanticized "religion is good" flavor; it was a beheading and martyrdom, violence, blood and death, incongruity in the most literal sense of a severed head, and characterized by an *aesthetic of the impossible*. It is the light between the body and the severed head that Bonnat envisioned and that catches Serres' attention. It is an example of an "impossible" that so commonly marks religion that fascinates Serres as an image of hope applicable even in the case of Thumbelina's Severed Head.

Hans Christian Andersen's "Thumbelina," as her friend Tom brought to us by the Grimm Brothers, is named to call attention to her size—half the size of a thumb—and through much of the story she goes by the name Tiny. Likewise, Tom, as his name denotes, is thumb sized. Yet their diminutive stature is precisely what makes their journeys and destinies so remarkable. By the end of Thumbelina's story, she is renamed Maia, invoking perhaps the mother of Hermes in Greek mythology—with the name also suggesting "mother" or "midwife"—and in Roman mythology the embodiment of growth as associated with the earth. To identify with the thumb, that which is small but mighty, is appropriate. Certainly, one of the wonders to behold is the journey the thumb has taken through its evolution from its form in apes and early humans to the distinct appendage of modern humans known for its dexterity and sheer acumen as demonstrated by those school girls Serres spied on. Thumbelina's head, held in her hands, is effectively useless save the interface of her nimble thumbs. While I still tend to use my index finger in a hunt and peck fashion I recognize the behavior as a denial of my evolutionary bounty. Typing on a standard keyboard is largely a matter of the use of eight fingers with the thumbs consigned to the lowly task of keeping our words from running together. The romanticized notion of some writers that writing is authentic only when performed in longhand on pads of paper has perhaps more to do with the active grip their thumb gives not only on the pen, but also on their writing process. Yet handhelds have keyboards totally unsuited for two-hand typing and especially for multiple finger typing. It is an interface designed for the thumb dexterity that distinguishes us human beings. This evolution in machines niftily correlates with the evolution of humankind as evident in this small body part; the most distinctive digit of the human hand.

The term "articulate" arrives to us from the Latin *articulare* meaning to divide into sections. As a verb, it means to divide or separate. In sound production, it refers to refined diction in speech or to emphasize the distinctness of individual notes in the playing of a musical sequence. It also means to unite by joints or joins as in the mechanics of arm or leg movement due to the joint design. Articulate also indicates explanation especially in the sense of giving clarity to meaning. As an adjective, articulate is synonymous with such terms as fluent, eloquent, intelligible, organized, and precise. The term handily articulates the conjunction of biology and intellect.

Modern humans share general hand morphology with early humans as well as apes including the presence of the thumb. Yet, perhaps no part of the body other than the thumb so clearly articulates the distinction of modern humans among our evolutionary kin. As Frank Wilson in *The Hand* (1998) summarizes, "the greatest variability found in the prehominid hand was in the thumb."[11] The human thumb has full opposition made possible by "not only the rotation of the thumb and to its relative length, but also to the rotational movements of the index and other fingers. These do not occur in any prehominid hand."[12] The evolution of the thumb correlated with "enhancing the overall grasping repertoire of the hand," as anatomist O. J. Lewis put it.[13] In his classic 1989 study *Functional Morphology of the Evolving Hand and Foot*, John Napier cunningly addressed the importance of the thumb, "The hand without a thumb is at worst nothing but an animated fish-slice, and at best a pair of forceps whose points don't meet properly. Without the thumb, the hand is put back 60 million years in evolutionary terms to a stage when the thumb had no independent movement and was just another digit."[14]

Napier was, according to Wilson, the first to see "past the thumb" to the fuller implications associated with the thumb on the evolution of the arm, shoulder, and body, including enhanced movement. The development of the thumb was essential to what is often referred to as the "power grip" an essential element in the evolution of the hand, arm, and body enabling enhancements such as manipulation, overhand throwing (a development upon brachiation, that is, arm swinging required for movement among trees), and striking—thus violence and making. The thumb development also enabled the "precision grip" that allowed the manipulation of tiny objects by the hand without contact with the palms. The chain of development anchored in the thumb is, as Wilson puts it, "an astonishing example of versatility realized through structure."[15] For the thumb to move in opposition it had to be made long enough to reach the other fingertips and its attachment to the wrist and the muscles and tendons moving it had to be modified so that the thumb could actually make pad-to-pad contact with the tip of each finger.[16]

Thumbelina and her clever thumbs places her in the history beginning with the classic 1833 study *The Hand: Its Mechanism and Vital Endowments, as Evincing Design* by Charles Bell that continues up to the contemporary studies of the hand that suggest that it is the development of the structure of the hand that led to the expansion of the distinctively human brain.[17] Her thumbs, articulate at texting,

---

[11] Wilson, *The Hand*, p. 22.
[12] Wilson, *The Hand*, p. 22.
[13] Quoted in Wilson, 128
[14] Napier quoted in Wilson, 128
[15] Wilson, *The Hand*, p. 136.
[16] Wilson, *The Hand*, p. 136.
[17] The proposition that the development of the thumb and human hand preceded and gave rise to the expansion in size and development of the complexity of the human brain is core to Wilson's book. It has been proposed frequently since. I tend

scrolling, and searching on her handheld, are the contemporary manifestation of the thumb enhancement that allowed her foreparents to grasp spears and stones to enrich their menu and to grasp charred sticks and ochre stones that they might articulate through markings on cave walls their thoughts, imaginations, and memories; that their thoughts and memories be prostheticized, projected outside their bodies.

Should we care to see the thumb as the quintessential example of modern human body articulation, we might see an essential link between these contemporary texting thumbs, the evolution of the distinctively human hand and brain, the adoption of the metaphor in which "to grasp" indicates comprehension as much as holding in the hand, the distinctiveness of human body movement including throwing, the refined manipulation of tiny objects (including writing), the development of language, the rise of tools including those that place the head in the hands, and the rise of music as comprised of distinct yet interrelated units or harmony. These observations give nuance to the phrase "we're all thumbs."

---

to think that neither the brain or the hand/thumb could develop independent of the other and that neither are independent of the development of the feet that allowed upright posture and bipedalism, not to mention dancing.

Little Green Sprout

In the dystopian world depicted in the 2008 animated film WALL-E,[18] the population of uninhabitable dead Earth has for generations been relocated to off-planet stations where the humans have turned into blimps because they spend their lives on "hover chairs" (floating chaise lounges) constantly consulting a screen to access satisfaction of their every need.[19] Earth life seems to have slipped completely from their memories. On Earth, only the little trash compacting and stacking robot WALL-E (Waste Allocation Load Lifter Earth-Class) seems to have a nostalgic connection with this old earth life tellingly evident by his obsession with watching old faded Technicolor song and dance movies on a rickety VCR player. His home is a metal storage container that is part of some huge broken transport vehicle in which he has collected treasured items from the junk he compacts—a Rubik's Cube, hub caps, spoons and forks (also a "spork"), strings of decorative colored lights, and a variety of spare parts for himself.

The off-planet station routinely and automatically, it seems, sends to Earth "Extraterrestrial Vegetation Evaluators" or EVEs to determine if the Earth has returned to habitability. While doing his daily junk compacting work, one day WALL-E finds a *little green sprout* growing in a crumpled boot in an old refrigerator and takes it "home" to add to his collection of treasures. Shortly thereafter EVE, a streamlined white egg-shaped female robot with lovely blue electric eyes, is left on Earth to scan for vegetation. WALL-E instantly falls in love with her. After a rocky and literally explosive beginning, they become friends and WALL-E takes her home to see his stuff. When EVE encounters the *little green sprout,* it triggers her "directive," an automatic protocol to return to the space station with this evidence of Earth's habitability. Unable to bear the loss of his new friend, WALL-E hitches a ride as a stowaway on the ship returning EVE to the space station.

The automated captain seems to represent the conservatism that detests change and adventure and it seeks to destroy the little green sprout so that the earth can be simply forgotten. Yet the human captain becomes inspired by the hope raised by the little plant and he rediscovers, with the help of old video, things like "ho-downs" and "dancing" and "agriculture." "You can plant a seed and water it and grow food, like pizza!" he says with amazement. With the help of WALL-E and EVE, despite his debilitating obesity, the captain overpowers the autopilot and the automatic

---

[18] WALL-E, Director: Andrew Stanton, Writers: Andrew Stanton (original story), Pete Docter (original story).

[19] This image is an interesting illustration of Renaud Barbaras's distinction between "need" and "desire" in his discussion of "living movement." For Barbaras "desire" is the energetics of movement that always conjoin a "there" to a "here" without the there being associated with a need that might be satisfied. "Desire" is, as I understand it, something like a horizon, inviting and something to pursue yet unattainable. These floating bodies no longer "self move" because the movement is one for them and always in satisfaction of some need. These folks no longer have vitality.

protocol to return to earth takes the ship back. The film ends with the "greening" of the earth having begun.[20]

The *little green sprout* is associated with both nostalgia for a destroyed past, the past characterized interestingly by music and dancing, as well as with hope for a future Earth-based life, a garden planet where plants grow. The little green sprout is the only remnant of Eden, the garden; the only remnant of god's creation rather than the rubbish attesting to human making. It represents the possibility of ongoing self-sustaining life; life that has a cycle that includes renewal. It represents a world in which dead things give rise to living things—an ongoing seemingly eternal life cycle—rather than an ever-increasing accumulation of junk. The film contrasts "green" makings with human makings that produce stuff that inevitably turns into junk, trash that piles up and won't go away, an industrial kind of making that is inseparable from pollution and destruction. Throughout much of the film it is primarily WALL-E, the trash compactor, and his little cockroach friend who display the greatest human qualities. Reminiscent of R2D2, little trashcan-looking beeping robots have shown time and again that often they can capture the core characteristics of humanity better than androids and maybe even humans.

This theme of human makings that seems to invariably eventually plague their maker is a very powerful refrain resounding throughout human history; it has an undeniably religious aspect. It is not so much humans achieving or creating eternal life; it is getting rid of what seems the eternal presence of stuff that humans create. At present, we address this largely in terms of scrap/throw away/landfill versus recycle/compost, yet that it is more fundamentally the question of "making." Perhaps unexpected is how commonly "making" has a religious dimension or aspect associated with it. Strong in Western religious traditions, but also common to religious traditions throughout the world, is the distinction between godly creations (the world, life, humans, plants and animals) and human makings (progenitive and biological but especially mechanical and technological; also, sometimes magical). There is a long and pervasive identification of all completely original acts as being necessarily, or perhaps appropriately, only attributable to gods. Any completely originative human act is thus one comparable to god; as, for example, in the technological (rather than two-parent biological) creation of sentient beings (the dreamed goal of AI/robots). While we would likely no longer indicate this understanding of making as an explicit belief (I'll turn to this history later); to identify human makings as godly is routinely implicated (not always overtly) even in the most popular contexts. We are gesturally formed in the terms of this connection.

The *little green sprout* turns up again in the 2015 George Miller dystopian film "Mad Max: Fury Road." Imperator Furiosa (Charlize Theron) driving an enormous black tanker truck and trailer, the War Rig, abandons her contracted designation, where she was to procure gasoline and bullets, to pursue her own mission. Unknown to Immortan Joe (Hugh Keays-Byrne), the tyrant who controls the Citadel where the

[20] https://www.youtube.com/watch?v=alIq_wG9FNk

raggedy remnants of humankind live, Furiosa has hidden Joe's Wives, five young beauties, in her rig and the whole female gang strike out to find "the green place," Furiosa's childhood home. Of course, upon learning of the rebellion, Immortan Joe sends his crazy gang in their cars pieced together from found scraps to bring the women back. Max (Tom Hardy) is an independent kind of guy and has attempted escape from, but is recaptured by, Joe's posse of mechanics. Max spends the first long section of the film strapped to a metal cross on the front of a car that is giving chase to the fleeing women. A metal grill attached to his head covers his nose and mouth, an echo of the chastity belts—Joe's mechanical control—the women liberate themselves from with bolt cutters. A tube tapping a vein in Max's neck supplies a flow of blood to enhance the critically ill Nux (Nicholas Hoult), the crazy this-is-a-good-day-to-die "warboy" driver of one of the chase cars. Max finally escapes and becomes uncomfortable companion to Furiosa; yet, the small extent to which he is savior to the women, he is a reluctant, almost accidental, one. And, compared with the Mel Gibson Max, this Max is not all that Mad.

The bulk of the film is an action-packed road chase with the ambiguous destination being Furiosa's childhood home vaguely identified as "the green place." Yet when they finally arrive the only remnants of her childhood community are the Vuvalini of Many Mothers—a few "lovely old bikie chicks" as the film's production manager affectionately described them—a small tribe of matriarchs. They knew Furiosa's mother and recall Furiosa's childhood capture. The eldest, The Seed Keeper, lovingly protects a satchel containing a few remnants of their old home; and coincidentally the core promise for their viable future. Among these items is a packet of seeds for various plants and a tiny pot made of the skull of a small animal in which grows a *little green sprout*, the only green thing in the entire film outside the gardens and greenhouses maintained by Immortan Joe atop the buttes at the Citadel.

One of the few conversations in the film more than a phrase long occurs just before the War Rig arrives at the place of the Vulvalini. Max is in the passenger seat, Furiosa is driving the War Rig; the wives are in the back seat sleeping.

Max: "How do you know this place even exists?" [referring to "The Green Place"]

Furiosa: "I was born there."

Max: "Why did you leave?"

Furiosa: "I didn't. I was taken as a child. … Stolen."

Max: "Have you done this before?"

Furiosa: "Many times. Now that I drive a War Rig this is the best shot I'll ever have."

Max: "And them?" [pointing to the back seat where the wives are sleeping]

Furiosa: "They are looking for hope."

Max: "What about you?"

Furiosa: "Redemption."

It isn't accidental, I think, that this conversation occurs shortly before they find the Vulvalini, just before they learn that, without knowing it, they had already traveled through what once was "the green place." It had become an eerie dark poisoned swamp where a few people crept about on stilts to avoid contact with the toxic water trying to glean a morsel of sustenance; a desolate dark place inhabited by crows. Now, only this one little green sprout seems to hold any "hope" at all; yet there is no garden in which to plant it. The little green sprout is the remnant of an almost forgotten past; a past now gone due to human destructive behavior, but also an idealized past of the Garden of Eden, the symbol of original hope and futurity as well as the symbol of sin and temptation and knowledge.

Perhaps redemption for Furiosa means both to regain something in exchange for payment as well as in the more religious sense of being saved, being absolved of the sins of her storied life. Furiosa seems to have paid dearly for her plight to freedom; not the least with the loss of her arm. As she seeks to redeem the life stolen from her she represents, in some sense, dystopian humanity lost in the desert. Her being raised up—literally hoisted up on a giant platform—at the end of the film may be the culmination and affirmation of this redemption.

In both of these popular films the *little green sprout* is a sign of hope, yet also a token of an almost forgotten past. It invokes remembrance of things past, nostalgia for the world of origins, for the Garden of Eden, for the presence of god's makings, for the innocence of clear boundaries. The *little green sprout* is a tiny living thing in the midst of vast worlds that have been overwhelmed by silicon (in Fury Road sand is everywhere, literally a silicon valley) and metal (WALL-E has a seeming endless job compacting and stacking metallic junk). The little green sprout as presented in both these films reminds us that the core of the modern revolution, to which Serres referred, is the technology that transformed agriculture making, farming, into an industry rather than a way of life where kids played with and tend to farm animals and knew, beyond a plastic wrapped packaging, where their food came from.

These two films present a remarkable portrayal of the female figures who are the caretakers of the little green sprout and are thus, more so than any other characters in these films, associated with hope for a future fecund world. These are not mothers, bearers of future life; they are non-childbearing women. EVE is a robot and though she clearly has gender she is not sexual. Despite the sweet intimacy of the romance that leads WALL-E and EVE to hold hands and dance in space, theirs is still a robotomance and we do not expect them to produce little EVEs and WALL-Es. In Fury Road, the Seed Keeper is a crone, an elder, a survivor and even though the group of women is called Vulvalini of Many Mothers, there are no youth, no babies, no men. In these two films the image of Eve is a new Eve who is not a mother; she is a farmer, yet one in search of fertile land. The new Eve, I'll call her Tomorrow's Eve, may refer to a leitmotif common in many forms among stories and technologies across this history. I will use this name to refer to this cluster of made figures and the ideas and issues raised by their existence. I imagine her as taking many forms, appearing in both genders.

This little green sprout also reminds us that in the vast cold universe seemingly everywhere void of life, only on Earth and, at that, only in the thinnest and most precarious and tenuous layer can the little green sprout survive; only here in the incalculable vastness did, as the stories tell, God choose to make life. We are reminded that we are turning increasingly to Silicon Valley and all things oil (energy and plastic) and metal to pull ourselves into our future and alarmingly we are already developing some of the pronounced physical characteristics of the blimpish off-planet folks; perhaps we, like they, have forgotten how to dance.

It seems a bit surprising that as far back as the 1984,[21]—the year whose number was used by George Orwell in 1949 as the title of the most widely read of all dystopian novels, a time before the advent of The Google, The Amazon, and The Internet (and not experiencing a remarkable popularity)—the first "Terminator" film was made followed, in 1991, by its sequel "Terminator 2: Judgment Day." The films show us the possible consequences of our speeding trajectory into the future. The Terminator films show that advancing technology, Skynet, gained self-awareness (that is a sentient yet artificial intelligence) and took control of and destroyed most of humankind (commonly referred to as "singularity"). Only a small Resistance Movement comprised of a few tenacious humans has survived in that world of the future. Yet in these films no little green sprouts have survived; there is no hope. The only strategy is to invoke the time-travel introduced by H. G. Wells in 1895. But this strategy only displaces the conflict to a time in the past (roughly our present). Robots try to prevent, and later to protect, the future resistance that is understood to be dependent on the leadership of one young man, John Connor. To go back and change the past so that a different present (in our future) would occur is never a strategy with certain outcomes as at least a thousand books, films, and televisions shows have explored.

It is fascinating that today the development of AGI (artificial general intelligence, or human equivalent intelligence) and ASI (artificial super intelligence, or intelligence exponentially greater than human intelligence) are trending. Some of the greatest scientific minds—Stephen Hawking—and tech entrepreneurs—Bill Gates and Elon Musk—have expressed that their greatest fear is what they envision these technological advances might bring; one presumes death to the final sprout and domination of Terminator-robot soldiers. It is ironic I suppose that this is the imagined future of the current enterprise of their own making, makings that have made them billionaires. On the other hand, Ray Kurzweil, and a whole movement he has inspired, eagerly anticipate these developments as nothing short of wonderful—

---

[21] Of course, it must not be forgotten that the original Mad Max trilogy all appeared from 1980 to 1985 and each in some ways tells the same story as does Fury Road. Indeed, much of the last half of the second film "Mad Max: Road Warrior" is a chase involving a huge armored tanker fuel truck driven by Max (Mel Gibson) out from a settlement in the midst of a hostile gang driving reconstructed cars and motorcycles. As in Fury Road, it was all about the journey out and back, for Max turns the huge rig around during the chase and heads back to his point of origination.

utopia rather than dystopia—as the final full blooming of some cyborgian combination or amalgamation of machine and person-remnant that would seemingly finally render the little green sprout irrelevant or perhaps artificially intelligent. This is a cyberpunk world where one's experience is an apparently seamless amalgamation of cyberspace, androids, cyborgs, and pharmaceuticals. While the immortality and utopia of Kurzweil and his followers may be overly ambitious and optimistic, I do believe that we are, as Dona Haraway discussed in 1995, quickly becoming enhanced and augmented beings, what I'll call metahuman cyborgs.[22]

The enduring popularity of robots and cyborgs and time travel has gained new and imaginative explorations by artists, philosophers, scientists, and the genius technical innovators that so significantly shape our trends as well as our contemporary cultural identities. Surely, and this is of more importance, the interest is not simply a passing fancy of popular culture, but is rather based in concerns perhaps as old as is human existence and as large as are human efforts to comprehend human nature and the universe. Yet, the settings and characters in these contemporary explorations intimate that there is something unprecedented about the current processes; perhaps it is a blurring of fiction and technological reality. We find ourselves both amazingly and fearfully faced with the deepest concerns about what it means to be human, what it means to live on this planet Earth, what comprises our sense of the ultimate (Singularity, God, the unknown); old concerns indeed, yet they are given existential urgency because of a sense of what our current unprecedented capabilities might mean for what we are rapidly becoming or who we are unbecoming. These old and often classic encounters with the novel and the barely imaginable begin to give rise to the anxiety of crisis as we become aware that what was heretofore clearly fiction is rapidly broaching reality. We are sobered by the glimpse that we may be on the verge of forgetting who we are to the point that we no longer even feel nostalgic.

The issues we face, I am suggesting, are in a sense the ancient issues of makers, makings, and things made. In the beginning, it was God who created. According to one widely told and enduring story this making included the universe as well as, soon thereafter, the making of "man/male" created in "His," God's, image. In one version of the story, woman was made; yet she had no mother so she had no image of, model for, who she should be. Beyond the biblical traditions, there are countless other stories of creator gods; indeed, what characterize a god more than creating the world and people? Today, taking our human capabilities seriously, we dare imagine creating the self-aware robot, a contemporary and nonfictional version of Mary Shelley's *Frankenstein* (1818, rev. ed. 1831) creature and the golem of Jewish folklore. Such makings raise the issue of the classical view of religion, that is, that since god (gods) is the only true or legitimate maker of living things (we so commonly set aside women/mothers as somehow irrelevant or taken for granted), such human making of self-aware super-intelligent beings is an attempt at becoming

[22] See below "Cyborg/Metahuman: Future of Gender & Religion"

god, or more likely the achievement fitting of a god, replacing the original makers, the Creators. Is ours the era of creation that ends religion? These are classic issues as old as Prometheus and Pygmalion, yet today there is an urgency born of the scientific/technological claim that the making of artificial intelligent robotics is approaching this singularity, this unprecedented threshold, when humans can make in the same fashion as gods, even besting them. Such issues are of the greatest order of practical, philosophical, and religious importance.

The more interesting and important aspect of "makings" is perhaps not the current debate about the likelihood, possibility, and timing of such sentient superior-to-human makings, although this discussion seems to me currently center stage and often dominates. While I personally think that any seemingly serious engagement of this discussion betrays a severe lack of understanding of humanity and maybe also technology, that aspect of my objection isn't likely all that important. What is of greatest important is the shape and character of the discussion across time and cultures and its many faces at present. It is the much larger frame of discourse—the one that asks the big and ultimately unanswerable questions, "who are we?" and "what sort of being (or process) made us?" and "what is the nature and responsibility of our making?"—that I believe offers the greatest interest and potential.

While these issues currently have vast traction in news and popular media—it seems discussions of intelligence, brains, robots are everywhere and popular—to my knowledge there is little awareness of the importance of these concerns among religious communities (especially in the contemporary west, but I believe also worldwide) or even in the academic study of religion. I've found that women's and gender studies have some few important considerations of the topic, yet these concerns remain far from what this invariably gendered topic deserves given the broad incidence in popular culture. Religious conservatism, so widely influential today, seems inseparable from an unfriendly stance regarding most change and the concern with the consequences of change, particularly as brought about by evolution or human agency. In this prominent religious view, even the existence of such concerns, it would seem, would, along with evolution and climate change and the long history of the universe, be dismissed and denied. Certainly, the current persistent and bold consideration of so many aspects of these issues by Pope Francis is highly interesting. Yet there is a strong correlation of religious traditions, as broadly understood, with maintaining some constancy with what has been established in the past, the long past. Tradition (perhaps also "history") is typically more closely associated with maintaining constancy than it is with a sequence of interconnected developments; although I'd suggest that we couldn't imagine tradition without a sense of change. Perhaps this tunnel vision is a factor in the steady decline in recent years of religious affiliation and the decline of interest in religious affiliation among young people. Such a correlation is, of course, too broadly drawn, yet the positions of those in society that most strongly and publically identify their position as "religious" are without question those who are the more trenchant and change denying. It is noted how difficult it has been for Pope Francis

to initiate in the Roman Catholic Church even modest change on social and environmental issues.

Boldly stated, the broadly recognized conservative tendency of religions is markedly in contrast with the wildly innovative tendencies of technology that have enmeshed themselves in nearly every aspect of contemporary life in cultures throughout the world. The worldwide span is important to emphasize. While until recently the impact of rapid technological development was confined to the more advanced and wealthy cultures and countries; this correlation is rapidly shifting. With the approaching ubiquity of smart phones in cultures the world over, the concerns associated with these new makings are now global concerns. Given this situation there is worry (though mostly unacknowledged) as to whether religions, as they presently exist, will survive very far into the future as anything other than remnants of a former time—quaint rituals and poetic literature and memorable paintings and tourist visited monuments and architectural landmarks and a few outmoded marginalized odd communities bound by the shared gestures of the bygone; fossilized non-living representations of the little green sprout; not so different from a series of ceramic "Precious Moments" manufactured *en masse* in China. Many religious people today compartmentalize life so that the dictates, beliefs, and demands of their religions may coexist without apparent direct conflict with the prevailing beliefs and knowledge of contemporary societies, with the findings of science and technology and philosophy. While this strategy of compartmentalization obviously works for many, it is difficult to believe that the full creative potential of religion, as hopefully we might imagine it, is adequately achieved in this way. Those who are unable to embrace what is an often uncomfortable and perhaps secretly unacceptable develop compartmentalizing strategies that tend to gravitate either to a strict conservatism that demands a staunch literal application of dogmatic and ideological positions to all of life no matter how at odds it is with the most common sense knowledge of the contemporary world or they come to a full and often emotionally charged denial of religion while exploring a wide variety of alternative strategies to deal with what are and should be religious concerns. Surely an important challenge of our time is to birth new more interesting alternatives.

Despite this trajectory that seems to spell the end of religion as we have known it, we must acknowledge that this traditional conservative existence of religion, little changed in so many ways for centuries, continues to be at the heart of most of the wars in the world. Most of the existing violent conflicts in the world today as well as the stark divide among even the people of the modern West are frequently articulated in religious terms. Policy and attitudes on politics, climate, environment, human rights, marriage, gender, individualism, abortion, women's health, public health, race, citizenship, immigration, wealth, security, class, territory, country—all

these and more—are frequently based on differences in religious ideology and worldviews, that is, the consequences of large groups holding tightly to quite opposing views, views shaped by their mostly unchanging religious ideas and practices. Religion deeply influences culture and history. Perhaps part of the appeal remaining in religion is the promise of stability in a world buffeted by accelerating change; surely this is fundamental to the Roman Church. Even though at the individual and local levels we tend to cling to the idea that religion is fundamentally "good," the evidence of its contribution to violence, conflict, strife, discrimination, hatred, and violation of human rights is undeniable and it occurs worldwide; no culture or religion is exempt or an exception.

What is clear is that the radical shift of wealth and power that has occurred in the last quarter century has correlated with the advancement of the information age. The data mining companies that go by such names as Google and Facebook and Amazon (and now even Netflix) are extending their reach into every corner of the world. Such change is on an unprecedented order, certainly equivalent to Gutenberg yet occurring on an almost unimaginable timespace frame; immediately global. Remember the Bible was the first book printed by Gutenberg in 1454 or 1455. It seems incomprehensible that traditional religions whose strategy has tended to be maintaining stability can survive the current seemingly inevitable transformation of worldsense. Some use the term "posthuman" to indicate the era we have already entered. While I'm not so fond of this term, the argument that we are rapidly changing who we are is a compelling one. At the very least we must seriously ask what re-imagination of religion must occur that it becomes a powerful and important and creative force contributing to the unfolding future.

It is not only religions that seem to be out of step with the rapidity of change in information technology and artificially intelligent robotics, it is also politics and the politics of the economy. In the seeming endless political discourse there is much discussion of the need for creating jobs and increasing wages for workers and for how wealth should be distributed, yet, while there is much discourse on outsourcing and illegal migrant labor among other things, politicians and economists typically do not acknowledge that robots have already taken over many jobs formerly held by humans and that at present AI/robots are encroaching on managerial and research and writing and even fast food jobs, not just manufacturing. It is widely acknowledged, yet only by the few, that in the near future a significant portion of the human labor force will be displaced by robots and that the employment alternatives

for such masses of former workers is bleak.[23] The consequences of a thriving economy with a huge segment of the labor force unemployable are of the greatest concern.[24]

I don't wish to join Singulatarianism following Ray Kurzweil's optimism that we will become immortal by 2045 (maybe simply because I may not make it to that date and I can barely entertain the idea of living forever as a 102 year old; I'd need more than immortality … something on the order of radical age regression … does anyone ever think of this aspect of immortality?) nor do I wish to join the religious conservatives that insist on the denial of all change that can't be justified by dogmatic literal ideology. Surely neither of these soils will support the flourishing of the little green sprout. I'm most fascinated that today we find ourselves facing issues that demand knowledge of science and technology, but also of religion and philosophy and history and economics. These are all complementary both essential to and in many respects inseparable from one another. The point is that one cannot consider any one concern while ignoring the others. We find ourselves living at a time when we must be inspired by Janus to look both back over the long human and religious history while also imagining, with the greatest creativity and courage, the potential of our various trajectories into the future. Like Janus, we stand at a threshold and must look both directions at once; perhaps the only defensible way of being two-faced. Religion (the generic category) and religions (the specific historical cultural institutions and practices), no less than science, technology, and economics must re-imagine themselves so as not only to survive into the future but, all the more importantly, to also shape and determine it creatively and humanely. Religion and religions cannot do so without asking the most fundamental interrelated questions: What is religion? What is being human? What is making? What is gender? What is the relationship between maker and things made? What is experience? What is self-awareness? What is creativity? What is responsibility? What is so fundamental to our sense of religion that it seems invariably to include something radically other (gods, mythic creatures, ultimates, impossibles); something beyond limits and horizons and intelligibility and graspability? How can we address all these issues while fully embracing the importance of the current trends towards the future?

I do not believe that we should engage these questions with any expectations of finding answers, particularly easy or pat ones; such a motivation would most likely birth new intolerant ideologies. Indeed, one of the most important realizations I believe with which we must begin is that answers are ultimately neither satisfying

---

[23] I believe that the recent politics related to returning jobs to the coal industry is a case in point. Many believe that by ending environmental and safety regulations the jobs will return to coal industry. Yet, the greatest loss of coal-related jobs is due to the development of mining technology that has replaced workers that used pick and shovel with enormous coal mining robots. Nothing is going to remove this technology so that manual labor will return.

[24] This concern will be the subject the essay below "ToolsRUs"

nor creative. Answers halt and vacate vitality. What we must comprehend is that to engage these issues, concerns, and questions is to appreciate that doing so is, in some sense, itself a religious action that is vitalizing, that is, an ongoing process that promotes the fullest engagement with living. I suppose I might be criticized as being a "vitalist," if there is such a thing, or a "humanist;" I wouldn't deny either, yet I want to explore, with reference to long and rich history, how religious traditions have commonly, perhaps distinctively, raised, rather than resolved, the confounding unanswerable questions about life and existence as surely as they have occasionally offered what some have found to be comforting and stabilizing answers. I suggest that the very distinctive markers of religion—those attached to the incomprehensibility of deities and other worlds and ultimates and radical others—function to create a vitalizing tension and opposition that can be understood as tonus (healthy tensions) and generative and creative.

It should be no surprise to us that religions have asked serious questions by invoking myths, dragons, angels, devils, and all manner of deities and creatures. Perhaps it will be a surprise that a leitmotif among most of these stories is "making and unmaking."[25] It may also be a surprise that to this list of traditional religious characters we now need add others—cyborgs, aliens, androids, robots, and metahumans—that are not so readily or immediately considered of religious concern. Popular culture is presently exploding with comic book superheroes most of them are metahumans, that is, human beings augmented with super powers. Such enhanced humans have been around for a very long time (since Homer), yet the recent proliferation surely reflects a widely-felt fascination experienced throughout culture.

The image of the "little green sprout" is itself a complex "making." It is the artifice that makes a fundamental distinction between organic/natural and mechanical/technical makings. Placed in the broad cultural history that is religiously informed, the "little green sprout" reminds of pristine origins, the Garden of Eden ("the green place"), the nostalgia for a lost innocent past (the time of EVE, the little veggie-seeking robot's name), the longing for a connection with the original maker (God) and kinds of making (agriculture, which a century ago was the core of most human life), the fragility of life, the quality of life correlating variously with radically different kinds of makings. For such a small fragile thing, the little green sprout invokes an exceptionally large milieu. There are makings and then there are makings; they are not all the same.

---

[25] Of course, religion has often been considered as distinguished by cosmogony—cosmic creation—as evident in many seminal understandings of religion (Mircea Eliade's being obvious). And in Eliade's pattern there are collections and considerations of these creation stories such as Charles Long's *Alpha* …. My concern herein is much broader and focused on human acts of making and unmaking.

Fury Road

It would be fascinating to follow the stories of various characters in George Miller's 2015 film "Mad Max: Fury Road." The subtitle of the film suggests the centrality of the theme of moving with passion and purpose.[26] There is a bit of ambiguity regarding the road referenced by the subtitle, "Fury Road." It seems to be the name of the road taken by Imperator Furiosa driving the War Rig to Fuel Town and Bullet Farm where she is to trade water and mother's milk for fuel and bullets. Yet Furiosa almost immediately abandons this road and heads across the open desert to the destination she calls "the green place" in pursuit of her redemption and hope for the wives of Immortan Joe she has secreted. The word "fury" indicates an unrestrained or violent anger, rage, or passion and indeed this characterizes nearly every second of this filmic journey, so it seems impossible to not identify the track taken by Furiosa also by the term "Fury Road."

In Greek mythology Fury names a female spirit of punishment often represented as one of three goddesses, the Furies or Erinyes, who executed curses pronounced on criminals. Fury tortured the guilty with stings of conscience and inflicted famines and pestilences. Some ancient literature recounts how the Furies are persuaded by Athena to become protectors of justice and to assure the prosperity of the city of Athens. Furiosa, joined by the five wives of Immortan Joe, might be understood as modeled on these figures of Greek mythology. Perhaps the film, enhanced by its severely dystopian setting, is a version of the old story that life is a journey with every moment invigorated by the presence of grave risk yet is a moving on that must be pursued with passion and the courage to act strongly and with unwavering conviction even if supported only by hope and redemption.

If this film does nothing else, it demonstrates that, whatever the seeming conditions, one must keep moving. I can't imagine anyone experiencing this film who wouldn't repeatedly feel, "okay now these folks are royally screwed, there is no way in hell they can get out of this one" (I thought this several times), only to be shown that moving on is living on; neither are for the feeble or passionless. There evolves a situation during the last third of the film, which is devoted to the return journey to the Citadel, when Max is hanging upside down outside the driver's door between the huge wheels of the War Rig held there only by Furiosa's grip on his foot. Furiosa is seriously injured, as is Max, both victims of the crazy polecats. The War Rig is not running well allowing other huge and lethal vehicles to close in on them just inches away from Max. One of the wives has been snatched. The old Vulvalini known as the Seed Keeper is gravely wounded and dying in the front seat beside Furiosa. At this point I found myself saying, "Okay they are done for!" although I think I used more colorful language. Nux, the War Boy turned an ally to Furiosa by love, has been working on the failing engine, despite doing so while they are all traveling down the road at crazy speeds. At the last possible instant, he succeeds and the

[26] https://www.youtube.com/watch?v=hEJnMQG9ev8&feature=em-share_video_user

engine roars back to full power giving them the energy boost to get out of the mess. Whew! For the fortieth time.

The cars in the Mad Max films play an important role in this dystopian world. They are ingenious works of dystopian welded art. They are the magnificent "makings" of the dystopians. The vehicle art and the remarkable mechanical functioning of the cars are stunning testimony to the ingenuity of human makers at the worst of times and in the worst of situations, to the persistence of human creativity even in dystopia. The cars have their own personalities; to be larger than life characters often dwarfing their human drivers and passengers. The drivers and passengers often seem extensions of the cars rather than the other way around. Indeed, the dystopian religion of the Citadel seems to center for many of the young men on these machines. Boys and their cars! The mechanics comprise a ritualized cult centering on cars, the "Cult of the V-8." Their individual totems are their personally designed steering wheels. There is much to marvel in dystopian technology. It demonstrates an ingenuity and cleverness and individuality that has all but disappeared in contemporary high tech. It is a technology of raw power and movement, yet it is also one of individuality, ingenuity, distinctness, folk art, and the wholly unexpected. It is a post-manufacturing technology; that is, these makings are mostly remakings comprised of assemblages of found manufactured junk. Surely this ingenuity and cleverness is at the heart of "steampunk" as a technology and a style. Steampunk conjoins steam era industrial technology with advanced electronic technology. In "Mad Max: Fury Road" the human powered wheel mechanized elevators that are capable of lifting the huge War Rig up the side of the butte is technologically amazing and even plausible.[27]

Max's face grill inhibits and controls his speech; the chastity belts of the wives control their sexual activity. These devices are somewhat equivalent in the film it would seem; male speech compared with or equated to female sexuality. Water and mother's milk are literally equated with gasoline and bullets as exchangeable commodities. Both Max and the wives experience liberation by the cutting away and removal of these mechanical restraints; these are personal and gendered freedoms won on Fury Road. One memorable moment is when one of the wives gives her removed chastity belt a swift kick before they travel on. Max is being drained of blood, given to Nux, the terminally ill driver of the car to which Max is attached like a hood ornament.[28] Nux refers to Max as his "blood bag." Surely Max's posture, hanging from a cross, and his sacrifice (though an unwilling one) of his blood for others are intended to invoke the crucifixion and connect Max with Christ (the Savior). Yet, it is the flashback images of his daughter, apparently killed before

---

[27] MM Vehicles art: http://abduzeedo.com/mad-max-vehicles ; https://www.behance.net/gallery/26283033/Mad-Max-Fury-Road-Official-Site-and-Vehicle-Showcase ; http://vehicleshowcase.madmaxmovie.com/

[28] Notably attaching humans to the front of vehicles is not new to this film having occurred in "Road Warrior." And there is even a hint of the polecats in that film as well.

the apocalypse when Max was a cop, that repeatedly saves and motivates Max. And if there is a signal act of self-sacrifice it is done by Nux, willingly killing himself in a way that assures the escape of Furiosa and the Wives. And he does it for love. Although near the end of the film as they are nearing their return to the Citadel with Immortan Joe's body, Furiosa lay dying from her injuries. Max, still equipped with a plastic tube connected to his neck vein, attaches it to Furiosa to provide her with life-giving blood. Max, not so long on blood himself appears to do this selflessly knowing he will likely die—his true sacrifice.

Arriving where "the green place" is supposed to be, they find only a rusted old metal power pole in a sandy desert and a motley gang of bikie chicks called the Vulvalini, remnants of Furiosa's ancestors. They learn that "the green place" has become poisoned and is no more. There seems no place to go; hope seems lost. In one of the most searing images in the film, with evening light casting her in silhouette fallen to her knees with the wind blowing the sand about her, Furiosa howls in anguish, silenced by the fury of the wind carrying her voice away into the vastness. Yet to live another day hope must prevail and Furiosa decides that they must attempt to cross the "unknown territory," endless desert flats. She calculates that they can probably last for 160 days. Max decides to go his own way telling Furiosa, "Hope is a mistake. If you can't fix what's broken, you'll go insane." Yet, as Max watches the women drive off into the desert, he has a vision of his dead daughter who beseeches him to take action, to get moving. Max intercepts Furiosa and the Vulvalini and convinces them that if they seek hope and redemption[29] their only chance is to return to the Citadel.[30] This choice of route will require them to engage the motored gangs that have been chasing them; their only weapons left are surprise and audacity. Yet, it is clear that it is the moving itself, not the place, that fuels and enacts hope and redemption. Or perhaps better hope and redemption are ways of characterizing moving vitality.

Hope and redemption, but redemption more so, are common religious notions. Redemption is being saved from sin and evil and it is usually something attributed to the action of god, earned by good deeds or given as grace or forgiveness. Max, a

---

[29] As Max is trying to convince the women to return to the Citadel, Nux traveling with the women is among the first to accept the plan saying, "It sounds like hope." Pressing his plan to Furiosa Max says to her, "At least if we go that way we might together find some kind of redemption." He offers his hand to her and finally she accepts the plan and grasps Max's hand.

[30] This journey might be understood in many possible ways, yet surely it is a primary gesture that makes a place one's home. Yet, taking moving and gesturing radically it gives a nuanced meaning to the adage "there's no place like home." This would mean that home is not a place so much as an unattainable designation associated with certain values enacted through gesture. This mobilizing of the idea is compatible with the phrase "home making" as an action never done. The moving approach also gives insight into the phrase "you can't go home again" suggesting that it is relationship thus moving/gesturing, rather than place, that has primacy.

blood bag affixed to the cross shaped hood ornament on the pursuing roadster, reminds us of this old old story. In the end, he saves Furiosa's life and does so by giving her his blood connecting the plastic tube from himself to Furiosa as she lay dying; he gives his blood that she might live at the expected cost of his own life. Yet, seemingly with an endless supply of blood, Max lives as well, perhaps his own redemption.

Hope and redemption are both associated with something sought, but not yet attained. Both terms denote moving, the continuing transcending of where one is in the desire for what seems to be or is imagined at a distance, yet remains on the horizon beckoning yet always a bit out of reach. Hope and redemption invoke a way to understand what characterizes life and the most fundamental insight is that we are *animate organisms*. The life we attribute to our being is inseparable from our *self-moving*.[31] We don't acquire movement, we come to life as movement and our vitality is characterized by the way we move. Thus, we must recognize that hope and redemption are *corporeal concepts* that arise from human self-moving; that is, that hope and redemption are empty terms apart from the felt experience distinctive to human self-movement.

Both hope and redemption are associated with something sought, but not yet attained. Both terms denote moving, the continuing transcending of where one is in the desire for what seems to be at a distance, yet remains on the horizon beckoning yet always out of reach. Hope and redemption invoke a way to understand what characterizes life, that is, we are animate organisms. The being of our life is to move. We don't acquire movement, we come to life as movement and our vitality is characterized in the way we move.

Hope and redemption have temporal implications. Hope suggests the conjunction of a present felt absence with its future felt presence. Hope is the attribute of experiencing in positive terms a not-yet future. Redemption implicates some history, some past, that must be set right somehow some day. Redemption is the attribute of experiencing a not-yet future conversion to positive of the currently felt negative attributes accumulated from the past. In identifying hope, rather than redemption, as what the wives seek, Furiosa is indicating the innocence of their past although a past characterized as confinement. She acknowledges her own painful and storied past by indicating her goal as redemption. These temporal implications of hope and redemption are not simply descriptive; states identified with specifiable places along the grid of time.

Hope and redemption give specific coloration to what Renaud Barbaras referred to as "desire and distance," terms he explored in developing his understanding of the energetics of living movement.[32] By *desire* Barbaras does not denote some lack that

---

[31] Despite the awkwardness of this hyphenated term I use it to be more precise. It indicates movement that a body actively performs as opposed to passive movement as in a vehicle. Based on Barbaras's use, I also see the term synonymous with "living movement."

[32] Renaud Barbaras, *Desire and Distance*

can be fulfilled or even an emotion really. *Desire* is how he refers to that living force of moving, moving on. We feel it as vitality; that bittersweet sense of going on while also departing from. Desire is a dynamic or tonus rather than a place or a need. And as desire has a temporal implication, it also has a spatial one, *distance*. A remarkable, yet obvious, attribute of living movement, as discussed by Brian Massumi,[33] is that it is never "in" any place, yet it always implicates the conjunction of places, if virtual ones. Simply put if we attach moving to any specific place, it would cease to be moving. Moving is the very quality of not being in any place, neither here nor there. Yet moving implicates the living connection of a virtual here with a virtual there. Moving is always relational; mover in context of moving, here in relation to there. Moving is vectored, directed, valued, and experienced because it invokes this sense of *distance*, a virtual spatiality. Moving implies a distance before there is a measurant; moving occurs in a virtual gap.

Kinesthesia, the feeling of self-moving, is grounded in proprioception, the biology that turns moving and touching (nearly synonymous) into awareness and experience. These miraculous gifts that distinguish humans among their animate kin imply a "common sense" or the awareness, even a reflective awareness, of being sentient.[34]

The most important makings have to do with moving. In the history of technological development, it is the advancement of modes of movement that has marked development. The wheel distinguishes a leap forward in early human history. Johannes Gutenberg's press, distinguished by its movable type, was revolutionary because of how it enabled and expanded the movement of information. In more contemporary times it is the automobile and tractor that revolutionized travel and automated agriculture. The moving capacities of airplanes and space travel have interconnected the globe and the solar system. Today drones and even virtual reality are makings that advance and revolutionize moving. And, of course, the advancement of communication is the advancement of virtual movement.

Movement is the objectification of *moving*; the verb made noun, action made thing. We have become most comfortable comprehending and reckoning moving in terms of movement; the track rather than the traveling. Math and science tend to be concerned with gridified movement, with traces rather than moving in process. We see movement as captured by a line or trajectory from here to there that in being represented as a fixed object permitting the calculation of all sorts of things like speed, acceleration, and lapsed time. Yet clearly as movement, the vitality, the actual moving, has been removed or transduced into a different form or phase of reality. Yet, even when we backfill moving as a trajectory across a piece of paper, a route on a map, a journey across a place, we can comprehend that moving involves both a here and there that are at once separate and conjoined, even copresent that is the impossibility of being present at the same time. A journey traced as a route on a

---

[33] Brian Massumi, *Parables*, p. 4.

[34] Variously Aristotle's "common sense" or *aisthesis*, Christian Hübner's "coenesthesis," and Daniel Heller-Roazen's "inner touch."

map clearly has a here (or beginning) and a there (or destination) that are different and separate[35]; otherwise no route, no movement. Yet we can objectively simultaneously see the beginning and end points and all those points in between.[36] The whole process exists at once for us. In movement, we are "in" all places at the same time. In contrast, in moving we experience a common presence of here and there while being "in" neither one. While moving, our "here" is never a full presence because, were it so, we would not be moving. While moving, our "there" is a not yet, a destination, the idea of destination, a horizon even, present only as destination not as presence in place. The experience of "process," the sense of moving, is framed in the common presence of here and there, yet with the experienced implication of uncertainty or openness or transition. And isn't it this uncertainty (the *is* that also *is not*) that is inseparable from the experience of vitality, of life itself?

We might well spend a lifetime engaged in the process of appreciating and comprehending the inseparability of moving and vitality; it is certainly among my obsessions. Maxine Sheets-Johnstone's remarkable book, made even more so with an extensively revised second edition, *The Primacy of Movement* (1999, rev. ed. 2011), goes far in this endeavor.[37] She points out that we do not learn to move; moving is not something we are capable of doing yet must acquire. Rather, as animate beings, we are born moving; even prenatally our mothers are assured of our aliveness as they feel us moving. A stillborn describes a newborn that is still, that doesn't move; it is a baby born without life. Yet, throughout our lives, we certainly learn many kinds of movings; Sheets-Johnstone calls them "I cans." The life cycle is often articulated as the tracing of modes of motility that mark distinct phases in our journey (note the metaphor) through life—from creeping and crawling to walking to doddering. There is a primary connection between moving and living; an identity. Shared motility connects us with all animals and creatures; modes of motility help distinguish among animal groupings.

Hope and redemption then might valuably be comprehended in terms of moving. We might propose that hope and redemption are distinctive ways of shaping the factors of desire and distance that comprise moving; moving as vitality. Perhaps, simply put, hope and redemption articulate life force in some specifiable terms. Both terms provide a sense of direction and motivation, a desire and distance in Barbaras's terms, that we might comprehend as moving or living movement. We might understand that one's life is a journey fueled possibly (necessarily?) by hope and redemption. Quite commonly stories of life are told in just these terms: movement, hope, redemption. We may appreciate the importance of these words in

---

[35] Yet, of course, as "Fury Road," "The Fantastics," and life itself show the end point is often a return to the beginning.

[36] I find it helpful to understand this "representation" of moving in terms of Charles Sander's Peirce's theory of signs. The map image is what he called *iconic* in that it allows the whole of process to be represented as present.

[37] As also does her collection of essays *Inside and Outside* (2016)

terms of their correlation with specific qualities of moving and those qualities include passion and fury.

It is fascinating to me that in the development of AI most the attention has been and continues to be on debodied minds, calculating brains in boxes that don't move. Robotics is the bodying of AI and it is proving highly difficult to create bodies with smooth and efficient movement. Recent DARPA (Defense Advanced Research Projects Agency) competitions in robotics demonstrated how difficult it is for robots to accomplish such simple tasks of going up stairs and opening doors; tasks my 18-month-old grandson has totally mastered. The joking response to those who express fear about the advancement of intelligent robots is that there is no need to panic, just keep your doors closed.

The larger implication of the positions supported by Sheets-Johnstone and others is that the moving body has a primacy in the formation of concepts, experienced and aware knowings, and I would also say to the constituency of identity. Barbaras shows that moving is essential to perception. This places primacy also on experience, repetition, felt learning rather than solely on programmable algorithms constructed by some young male programmer who likely hasn't had much variety or depth of living experience. Think about how such a person might code values for friendship, good parenting, love, jealousy, parental attachment to child, empathy, fear, handling paradox, appreciating beauty, enjoying music, being touched, expressing feelings, growing old; the list is endless. Academics, like programmers, are typically body and movement challenged and body and movement deprived; lifestyles/occupations characterized by sedentary sitting immobility. So too are business people—we don't call them "suits" for nothing—just picture those enormous rooms filled with cubicles. Our children no longer go out to play; few even walk to school. What is our "fury road"?

There is a long history of associating god, or creator, with perfection, with finality, with completeness. From Pythagoras to Kepler, to comprehend the design of the world was to contemplate how god surely made it; and the first principle was that the manifest universe had to reflect god's perfection. Despite placing the sun in the center of the solar system, a blasphemous claim unthinkable to most and completely at odds with anyone's daily observations, Copernicus nonetheless represented the planetary orbits as perfect circles centered on the sun because he felt, despite knowing differently, that he had to reflect god's perfection in terms of perfect circles. Indeed, geometry came to be preferred to arithmetic because it offered whole perfect forms whereas arithmetical formulations quickly gave rise to perplexing irrational numbers like Pi and the square root of two. The understanding of god as creator, god as perfection, has long shaped the efforts to comprehend all of god's creations from humankind to the whole universe. In many religious traditions god is looked to in order to provide the final word, the answers to the seeming incomprehensible. The very ideas of faith and belief are often associated with a sort of comfort and relief and confidence and peace associated with the embracing of what is otherwise beyond resolution or human comprehension.

Believing in god's perfection, holding to a faith that god's creation is purposeful, even if humanly incomprehensible, has commonly resulted in the identity of religion itself with these godly attributes. Religion, it is reckoned, in having to do with god (or gods) is thus godlike itself and therefore perfect or at least "good." I believe there is a connection between the tendency to limit religion to a palliative and soothing and gap-filling explanatory function and the staidness and ossification of religious institutions and traditions. One might read the stories of the Garden of Eden as associated with the creation of "gaps," separations that engender movement and are coincident with life itself. In essential ways, creations, makings, are necessarily separations that create gaps. God's perfection may be comprehended as much in the profundity of this supremely confident act—leaving gaps, imperfections, novelty—as in some sense of identity with absolute unity and the perfections of geometric figures.

Stories of creation are also accounts of separation and we often call them by the interestingly ambiguous term "myth," meaning both the truth before there is a measure of truth and things that are false yet believed to be true. To create, to make, is to set apart, even if it is a making in one's own image. Michelangelo's painting, "The Creation of Adam" (1511-12), on the ceiling of the Sistine Chapel reminds us of the gap. God's and Adam's forefingers are outstretched towards one another, but they do not touch. There is a gap, the separation that marks creation. The identity yet separation of God, the Heavenly Father, and Jesus, incarnate as man, correlates with the gap of creation; the persistent irresolvable issues raised when "man" is made in the likeness of god, yet has free will and the capacity to sin, in other words to act apart from the accordance with God.

The gaps of makings, that might be characterized as desire and distance, constitute moving and life. Making and creating, the setting thing made apart from maker, are coincident with moving. This gap is also the space of freedom and violence.[38]

Such stories, such structuralities, are not distinct only to Christianity, but also to religions throughout the world. In Bali, a place I've spent some time, the benevolent beings live in the mountains, the malevolent near the sea. Balinese life is overwhelmingly occupied in keeping these forces in their proper locations despite the constant and inevitable occurrence to the contrary. Daily offerings, constant festivals, persistent prayer, and dozens of actions occupy Balinese people in much of their daily lives and their makings constantly respond to this living in the gap.

[38] See "Violent Delights"

The shortfall of understanding, in the simple terms, "religion is good" is in a sense the identity of "religion" with a specific conception of god as perfection. This understanding of religion ignores the gap that is an essential aspect of creation, of making, of moving. And, it could be argued, indeed I firmly believe, that it is this gap that both conjoins and sets apart that is the generative force of living religions; this chiasm is the way we understand the religious quality of moving. While religions are often comforting and reassuring, they are even more so confounding and exasperating. Both hope and redemption involve what is "not yet" in some sense, yet present in imagination or principle. Religion occurs as the human experience of and response to the graspable ungraspable, the intimately known unknowable, the all-caring all-knowing awful. Remarkably these very qualities that are presented in the grandest possible terms in religions are the same as those that characterize moving or vitality; an aesthetic of the impossible.

Based on the history of religions, we might well understand religion not as simply "good," but more powerfully and accurately as playing out, as moving, in the chiasmatic gap that conjoins but forever holds apart; the dynamic connection of the categorically separate (god and human), yet the inseparability of creator and created, maker and made, here and there. Religious traditions chart the course of religious lives as passionate journeys on Fury Road.

There is a particular reason that I feel this re-imagination of religion, or the recovery of an essential yet overlooked distinction of religion, is of particular importance to the grappling with the current issues of "intelligence" and "making." As I will show in a number of iterations and developments on this theme, I believe that the approach to the advancement of machine intelligence; specifically, artificial intelligence to achieve human intelligence or even advance beyond human intelligence is currently based on the principle of closing gaps, that is, for the intelligence to develop with increasing efficiency and complexity of algorithms so that it can imitate human intelligence with diminishing distinction. It is a common goal of robotics (including AI) to increase the quantity of data that can be processed by an increasingly refined (and even machine self-refined) algorithm so as to produce the "right" answers. As I'll recount the story in more detail later, this was the impressive and breakthrough approach to IBM's development of Watson. In this present development, it appears that what is considered important and the key to approaching human intelligence, is a closing of the gaps by producing more "right" answers. The current trajectory towards development of AI/robotics is almost totally devoted to the closing the gap between machine and human. Indeed, the imagination of the future time when this goal is achieved is considered a point often labeled a "singularity." The perspective I'm considering here is that the history of the rise and advancement of human intelligence, a history that might be recognized as importantly inseparable from religion, has been one of creating and maintaining "gaps," separations, openings, chiasms; for these are essential to creativity, novelty, discovery, making, and intelligence. Mistakes, errors, misjudgments, confoundment, incredulity, incongruity lead to creative thought and significant development.

Religion and science are often set in tension with one another; religion and the humanities broadly finding themselves in a receding position with decreasing value. When one's notion of religion or even the humanities is that it provides "right" answers to all possible questions, it would seem this continuing imbalance is inevitable. And, it seems that when we understand intelligence almost exclusively in terms of deriving the "right" answer, then we can join those who believe it won't be long until AGI (artificial general intelligence) is achieved. Surely also under this impoverished understanding of religion, it is of decreasing importance; it has a radically shifting role, into the future.

What I propose is that in the contemporary period we are arriving at sets of concerns that allow us to return to reconsider earlier periods when there was complementation and continuity between religion and science, between practical life and the academy. When we realize that the issues raised are valuable because their very insolvability is what connects them with vitality and creativity, we open both science and religion, daily life attitudes and academics, to the exploration of the novel, the gaps, the irrational numbers, and the copresents that have long been the core of the vital life. Science and religion align when one approaches issues of creation and making; these are matters of horizon, present yet seductive in always being more than what can be grasped. Machine intelligence can be directed toward what programmers call goals,[39] yet goals are not equivalent to "hope," they are imitations of the unfeeling mechanical gestures developed on the analysis of mass amounts of "information" (big data) that have been captured from observations somehow connected with what some humans have called hope. There is a gap between the mechanically imitated and the felt, yet it is a gap whose creative potential for insight is being ignored in the efforts to eliminate it.

[39] See Bostrom, p. 186

Garden of Making and Unmaking

There is something shocking, seemingly blasphemous, about Elaine Scarry's statement "the Hebrews are … engaged in a sustained act of inventing an Artifact so monumental and majestic (however problematic) that it perhaps has no peer in any other single artifact invented by another people." This making so significant as to require the capitalization of the word "Artifact" is none other than God, that would be God the Creator, the Creator of Heaven and Earth and all humankind. According to Scarry, the Hebrew Scripture, the Old Testament, is the account of the human "making" of this most majestic and ambitious Artifact. The Hebrew God is the product of the making of the Hebrews. I wonder why Scarry holds the Hebrew invention somehow without peer among all other religious people and surely she does not hold that somehow all gods other than the Hebrew god are not inventions at all. Still, these unsettling statements are at the core of coming to understand "making" with some degree of sophistication; a necessary task. Tomorrow's Eve, a composite figure of my own modest invention, is one artifact I want to consider. She engages aspects of making that are alternatives leading us to fascinating concerns.

We are used to recognizing many, indeed thousands, of gods as we survey the religions of the world. The very existence of these "gods"—or "figures" we so categorize only occasionally recognizing that the category itself is of our own making—seems clearly and unsurprisingly the "makings" of distinctive cultures and histories. We seem usually capable, at one or another level, of recognizing that there is a plurality of such figures, entities, or "Artifacts" to use Scarry's term. Yet particularly in a monotheistic context, such as the religions that have dominated western cultures, there always comes the rub of how to reconcile these various "makings" of other religions with the sole and uncontested "maker" that is acknowledged as the core of our own scriptural grounding, our cosmogony. A little openness to reflection on this self/other distinction reveals how sensitive and emotional is the matter.

The classic account of making, the cosmic creation, is the first story, the genesis. If making is understood only in terms of a cause and effect linear sequence, then specific understandings of time are assumed. The first making is first because it occurs in time that already exists; an understanding of time that stretches out in a sequence that enables us to relate one event to another often causally. When we say "In the beginning, God …" we place God in or at the beginning of what is yet to come, all of existence, all that we now know of our world. But the implication is that our familiar sense of time is retrofitted as ambient to God's creation. God's creation unfolds in stages that correlate with the days of the week. As we read the stories, they have a "just so" quality to them because we already know the days in the week. Such it is with all of these stories; they are true because we live the obvious consequences of these makings.

Such conditions give rise to all sorts of complexity. For example, in modern physical cosmology and biology, science calculates human existence as spanning perhaps two hundred thousand years, which is a negligible amount of time in the cosmic timescape that physicists calculate as spanning fourteen billion years. Yet a year—

as is a day or a week—is a standard of measure correlating with the length of time it takes for the earth to circumnavigate the sun, our sun. We don't have a day, or a week, or a year, or a light year before we have our sun and our solar system. Our sun formed some four and a half billion years ago. And it is noted that only since Copernicus have we even accepted the heliocentric nature of our solar system. So, everything we say about existence in temporal measurement is our artifact; a construction retrofitted into the way we have so very recently come to experience things on our little planet on the fringes of a little galaxy in a universe that has billions of them. In this reckoning of time, humankind has existed for something on the order of only 1/70th of one percent of the timespan of the cosmos; modern cosmology has existed only ¼ of one percent of that tiny fraction or 0.00000357 of the time since the Big Bang. While in this frame we may still accept that "In the Beginning God existed …" (and many scientists relegate god to this vague domain; the time before the Big Bang) we then have to acknowledge that "He" hung around stargazing for a very long time before thinking up us human playthings or even our solar system. And in this scheme the whole business of evolution then becomes a rather sticky wicket. Life on earth is believed to have existed for 3.5 billion years; again, only two hundred thousand of those included humans.[40]

An alternative to this view, not infrequently taken, is to deny the time calculations of science and figure ways of "making" scientific facts conform to the timeframes constructed on readings of scripture. Christian scripture dates within the last *two* millennia, Jewish scripture within the last *four*. Again, notice that even here a presumption about the nature of time—days, weeks, years—trumps even the actions of God. Doubtless the most common strategy is to just ignore all of these concerns; figure they arise as some oddity of religion or story—that is, these creation stories are on a par with common "just so" folk stories like ones that entertainingly tell us how the beaver got a flat tail—and to perhaps compartmentalize our thinking and speaking on such matters.

Another possibility is that we might consider "making" the fundamental action and allow for the construction of time to take various forms in terms of various makings. Certainly, while we are obsessed with something like the objectivity of time—just consider the Bureau of Standards[41] located in my hometown of Boulder Colorado—we certainly don't experience time as homogeneous. My point initially is only that "making," human artifice, is at the core of how we come to understand religion and theology, culture, history, and science and cosmology and certainly what it means to be human. I'm not invoking a focus only on stuff, on matter. That is why I prefer the verbal gerund form "mak*ing*" to any nominal form and to a discussion of

---

[40] A fascinating way to comprehend these time frames is in terms of the Cosmic Calendar. See https://en.wikipedia.org/wiki/Cosmic_Calendar .

[41] Given this discussion the entire issue of "standards" is a fascinating one. What is a standard second and what is measured to come up with it? How is it expressed without using a clock to do so? How does history and culture figure in setting standards? Are they objective?

materialism. Nor am I suggesting a Marxist reduction, although Scarry's analysis of Marx's views of making is, I think, important. And also at the outset I have to frame the discussion of making with the idea that we need not resolve what seems inevitably paradoxical; we may choose to find that religion—the category constructed by academics and folk based on the recognized value of comparable traits among the history of religions practiced and experienced—has its forte in constructing these most elegant and provocative relationships. Indeed, this is a fundamental proposition; religions don't resolve inconsistencies and offer answers to thorny concerns. Rather, religions give birth to such complex matters and thus our engaging them vitalizes us. Religions create gaps. The very accounts of creation do so literally in that the creation is set apart from the creator while the created are also inseparable from the creator. One might say that the history of any religion unfolds in the consideration and negotiation of this gap. This way of understanding religion means that we may accept Scarry's statement that the Hebrew God (the core of the great theological tradition of Judeo-Christianity) is Artifact (the makings of the ancient Hebrews developed and remade throughout Jewish and Christian history) and we can also accept the attributes of the Artifact articulated as the Creator of Heaven and Earth. The seeming circularity or inclination towards paradox is not the weakness or flaw of this making, it is its generative energetics, its importance, its enduring vitality. It is the gap in which we may engage in the experience, tenuous as it usually is, of coherence, a sense of value, a sense of hope and even redemption.

In structural terms, Scarry describes this relationship of maker and thing made as two segments of an arc, one projection, the other reciprocation; makings necessarily remake the makers. I suggest that we are human because somehow we are capable of holding, even treasuring, this impossible position, without losing sanity or entering into an eternal logic loop (what in computing terms is referred to as being "hung up"). And even more fascinating, *the engagement of this seeming impossible situation is generative of vitality and life and history and culture and religious action and behavior and experience*. This gap that marks "making" is the secret of our creativity and novelty. It distinguishes us from AI. I want to suggest that while we can certainly understand and appreciate that many "religious traditions" would proclaim Scarry's statement to be blasphemous[42] and in certain contexts legitimately so, the future of religion(s) in the emerging world of the constant presence of diversity, complexity, conflict, paradox may depend on our capacity to embrace and celebrate the ancient paradoxes that are articulated in terms of making, makers, things made.

---

[42] The term "blasphemy" is of interest in that it usually denotes the denial of the gap of making itself as posited by religions. It is the act of divine making that sets creation apart from the creator, giving rise to the traditional distinction between sacred and profane. The proposition here is only that such is a human concept and thus a corporeal one at that.

The choice has heretofore been between seeing religion as revealed and beyond human invention or considering religion as an aspect of culture or the nature of being human, a human invention. Since we can grasp these seeming exclusive positions at once we must recognize that even this aspect of religion, as the traditional sacred profane distinction, are forced and more rightfully occur, not to be resolved, but to be recognized as vitalizing in a way distinctive of religion. Further the issue of the exclusivity and authenticity of specific religions among, and over against, others almost always leads to conflict and misunderstanding and violence. Isn't this religiously based violent conflict among the most fundamental forces in the world today? We may discover that we are able to shift among a variety of seemingly trenchant irreconcilable frames of making to gain fuller understanding without being compelled to abandon positions of strong belief and commitment. And we may be able to find ways in which what has seemed the oppositional intentions and methods that distinguish science and religion are recognized as but *styles* and frameworks that, when seen in terms of makings (as opposed to origins and constructed temporal scales), may be found to be more akin to one another than we have commonly recognized.

In the simplest terms this approach is based on comprehending that making—similar to the qualities by which I propose that we understand moving—necessarily involves maker and thing made in the peculiar relationship where they must be set apart from one another, distinguished by a gap of some kind even if virtual, yet they are intimately interconnected with one another to the point of being inseparable.

So, for example, as related to the current complex situation in which we both seek and fear the human making of sentient AI/Robots that are superior to human beings, we at once declare that the human maker of such entities has become god and we also fear (the word might better be something related to "awe," even "awful") that such makings will themselves have godlike powers and hold dominion over us humans. How is this different from the religious issue of god making humans yet being created with the capacity to gain knowledge and free will and thus giving them the option to reject and ignore and replace, even with made idols, their maker? I find it remarkable that while we have long made AI shaped like a box and it has often served us well kept in a box (computers), our current obsession (yet not really so new or unusual once we remember the millennia-long history of such interests) is to create self-sentient beings with humanlike motility—cyborgs, androids, intelligent hominid-shaped robots. Perhaps we, like God or our greatest Artifact, want our ultimate makings to be in "our own image."

In fictional accounts, increasingly ubiquitous, we also reflect our most difficult and persistent gender issues. The makers are invariably men. While the extreme gender imbalance has long been noted for Silicon Valley and the computer/robot makers, it has yet to change. These AI robot makings are made without the sexual and maternal participation of women, practically without any female participation at all. Does this gender practice mark the makings therefore as "godlike"? Religious making in our long western traditions is the making by a commonly identified male deity of a man as the first human. Woman was either made second to serve as

companion to man or as his extension, Adam's rib (sidekick). Both were non-sexual non-biological birthings not involving woman. In this history, our history, it is fascinating that the sentient beings made by man, from the time of Eve to contemporary sci-fi, are most commonly constructed as female gendered, as women who typically function largely to satisfy or complement men; this is so in such classic films as "Metropolis" (1927), "Wild Science" (1985), "Cherry 2000" (1987), "Ex Machina" (2015) and "Westworld" (2016). Although on the most cutting edge of science and imagination, we have to recognize that this is but the most recent chapter in the familiar "old old story" set in "the Garden of Eden." Perhaps the makers of AI are godlike not because of their power to create sentient life so much as that they are modeling the kinds of making attributed to God, that is, those kinds of makings achieved without woman, without sexuality, without biology, without maternity, and without any female models for those beings that are created with the female designation. What is fascinating to me is how fiction is currently making the new Eve—I'll call her Tomorrow's Eve—in quite different terms. Yet, quite remarkably, as the distinctions of Tomorrow's Eve are articulated, we will recognize that they have been present in these created females all along.

The potential for cynicism in the contemporary world is high, yet I prefer to focus on the prospect for creativity and insight. I believe that there is the possibility that this latest chapter in our history might introduce something novel and more interesting that will show the way for religion(s) to go forth revitalized into the future in ways that reconstruct the dynamics of diversity and gender and creativity and ecology. We are, I believe, at a point of great urgency and that what we do now, even in (actually, *especially* in) these forgotten and seemingly irrelevant makings of the humanities, might make a critical difference into the future.

"Artifact" and the related term "artifice" are terms I like; they illustrate the sort of dynamic relationship I'm promoting to be lifted up. The word "artifact" indicates a thing made by humans. And, it is invariably a projection of the body of the maker. The glove is a projection of the hand; the shirt is a projection of the human torso and arms. Artifact extends some aspect of the body beyond its limits; perhaps we might even say its God-given or God-made limits. Thing made is typically, not always, set apart from, while based on, the body, thus transcending it. In the familiar terms I am developing, making involves creating gaps. It is prosthetic as it is gesture. *Artifice* is a term used to refer to a trick or chicanery, something set to appear as what it is not, in other words, a lie. Notice how art, artifice, artifact, artificial—all based etymologically in Latin *facere*, to make—are only powerful and engaging terms to the extent that they engage these various oppositions in the interplay among impossible attributes. Take away the constructed or concocted aspect of the artifact, its making or its madeness, and it is dead and empty. The ambiguity of *madeness* is key to it having value. To lift up the importance of the value of madness is the forte of art, yet also religion. I suggest that imagining a vital track for religion

into the future can surely not occur apart from embracing the play of making[43] as implicated in our terms artifice, artifact, art, author, authentic.

To illustrate the aspect of religion indicated by the term madeness, I summarize in the broadest terms one view of religion and making that has held and continues to hold a deep position in religions the world over. I choose to present it in the terms developed by my teacher, the late Mircea Eliade, who was perhaps the most influential religion scholar in the mid-twentieth century. Although in academic contexts his understanding of religion has now been supplanted, I believe that the great majority of religious people throughout the world continue to align with his understanding. I also believe that there is more than a bit of his view still deeply informing academic studies of religion.

In the mid-twentieth century, religion understood as a distinctive human trait gained broadly-embraced articulation when Mircea Eliade traced common patterns across religious traditions throughout history and geography.[44] His enterprise was not unlike that of anthropologists Edward B. Tylor and Sir James George Frazer in the late nineteenth and early twentieth centuries, although his understanding of religion was starkly different from theirs. These renowned anthropologists rose to meet the challenge of the obvious complexity and diversity of the human cultures of the world as ethnographers in unprecedented efforts were then documenting them. Some anthropological theory influenced by biology recognized a cultural Darwinism that situated religion as arising late in the development of humans. Archaic and primitive peoples, by their reckoning, practiced "magic" a forerunner to religion. Other anthropological theory, perhaps more beholding to a fundamentally religious worldview, upheld that a "high god" existed among the earliest and most primitive forms of culture. The reasoning is obvious; as understood by Christianity, since God created the world, those who represent the most ancient and primitive cultures then should have the most pristine religions.

Eliade's views aligned more closely with the anthropological "high god" view but they were generalized into something that might be called an *academic theology*, that is, a theologically based understanding of religion (an academic construct) derived from the comparative study of religions (actual and specific historical cultural traditions). To translate Eliade's view into terms more explicitly akin to "making," he understood, based on his vast comparative studies, that the terms "real" and "true" could have no distinctive meanings apart from an understanding free of the relativism of human life and history. Thus, only things made by god, things made upon god's command, or modeled on god's makings, could be considered to be "real" (or as he sometimes termed it "really real"). Placed in the context of time, Eliade recognized that religious people the world over commonly place gods in the beginning times (*in illo tempore*), times distinguished as the time before time began, the time of the history of the gods, the time of myth, the time of the first makings. The idea is that the world as made by god is the standard of

---

[43] Or as I develop elsewhere this "play" may be understood as *metastability*.
[44] See Mircea Eliade, *Patterns in Comparative Religion* (1958)

perfection, of truth, of reality simply because it was the pristine reality of god's making.

When located in spatial terms, Eliade held that religions around the world recognize the special significance of the place where god appeared to create or orient creation or where god departed after making the world or where god continues to be accessible. These places are the great cities like Mecca and Jerusalem; these places are associated with high places like mountains and trees; these places are memorialized by the construction of temples and cathedrals that have great spires and towers. These places serve as "centers" or "axes" around which the world is oriented. The centers (*axis mundi*) are fixed (although endlessly replicable, a process of making; a replication on a divine pattern) because of their being associated with the presence of god and they serve to orient all the rest of space. These places (centers for Eliade) are the destinations of pilgrimage, the orientation of prayer, the places of felt power, the places for connecting with god, the places marked as "real."

For Eliade history is inevitably the degradation of reality, truth, and perfection because human makings do not comply with god-makings. Human acts of making must always be measured by their compliance with and being modeled on the standard of god's makings. To be real—and thus *meaningful*, to use another of Eliade's term—human makings must explicitly replicate in some way god's makings. Yet, success at this making is never perfect. Eliade recognized the tendencies of history and of human creativity to degrade the very standard of truth and reality. Thus human making or perhaps creativity is always, for Eliade, problematic. In a sense, any novelty or creativity is ripe for the introduction of confusion, relativism, diminishment of meaning, threat to truth; things we might think of as sinful or meaningless.

Myth then, for Eliade, is the story or collection of stories (mythology) that serves as the access to the details of god's creations in the beginning. Myth is the body of stories or scriptures that recounts god's original and originating acts. Myths and scriptures serve as the unquestioned standard by which to measure the real and the true. Truth, reality, and meaning are accessed in the degree human action is in compliance with these original events.

Ritual accomplishes something that Eliade understood in terms of an "eternal return."[45] Ritual serves to both annihilate the effects of history—by forgiveness of sin or renewal by sacrifice, for example—and the replication of the original acts of god's makings so as to reset, so to speak, the clock (or calendar) to correlate with the presence of god's originating makings. Ritual annihilates the effects of history to restore the pristine conditions of the beginning time, the time of god's makings.

While this academic theological understanding of religion seems to correlate fairly well with conservative scriptural understandings of western religious traditions as it also does US judicial Constitutional Originalist Conservatism, it is remarkable how extensively Eliade was able to document these patterns in countless religious

[45] See Mircea Eliade, *The Myth of the Eternal Return* (1954)

communities through history and world geography in cultures of every type and size.

Perhaps when presented in the summary and stark terms, as I have done here, Eliade's view of religion may seem somewhat old fashioned and perhaps rather forced as an adequate representation of all religions. Yet, I suspect that it corresponds in broad terms with the views of religion most commonly held, especially if articulated, by religious people throughout the world. While Eliade has suffered a backlash among religion scholars in the last couple of decades—he died in 1987—I doubt this reaction has done much to diminish this popular view or even to reduce by much its residual influence in the academic study of religion. Perhaps more importantly, this view of religion is fundamental to the liberal comparative view that shapes world politics and economics.

I'd suggest that such a narrow view of "making" however does not serve well the contemporary period, especially where diversity and difference must be not just tolerated, but appreciated, even treasured. Eliade's view tends to collapse all difference usually by considering observed differences as superficial and apparent rather than actual. Still, since actual and fundamental difference is not really tolerated, I find this a major shortcoming in the contemporary world where difference should not be explained away, it should not be just tolerated; difference should be appreciated and treasured. It is in the creative gaps marked by their differences that religions and cultures must move into the future.

For me, another major shortcoming of Eliade's academic theology is its perspective on novelty. Despite our contemporary near obsession with the pursuit of creativity and novelty, they are acceptable, in Eliade's views, only when replications of god's work. Surely we must embrace novelty, even in terms of the influence of the random or accidental, for life to have vitality. Creativity and novelty are "gap" phenomena and they inspire vitality and moving and making.

Some of the "religious" manifestations that are relatively close to Eliade's broad view are interesting. One is to see materiality and making as sinful and religiously risky and to develop lifestyles of poverty and material simplicity; to hold one's makings to those religiously prescribed in tending the land and animals. Another alternative common today is to shift one's understanding of religion to include the acquisition of wealth and materiality as evidence of the presence of god. Later I'll discuss the views of Protestantism on work as insightfully analyzed by sociologist Max Weber. He noted that Protestants identify their religious duty in terms of hard work; in this religious view, hard work is fundamental to the religious life. What was perhaps not anticipated in the protestant view is that hard work is commonly an act of "making" things and thus it contributes to the accumulation of wealth, which often eliminates the immediate motivation for working hard. Perhaps in this context, the issue of making is resolved by these great rewards being seen not as of one's making but rather as gifts of god's grace. "Ask and ye shall receive."[46] Perhaps

[46] Some of these views are legitimate, others potentially not. Comedian John Oliver brought some of these religious organizations into the spotlight on his Sunday

the most common alternative is to disconnect the idea of making and creating from religion altogether; to compartmentalize these in the terms Eliade presented as "sacred and profane (or secular)."[47] Religion is a Sunday kind of thing; making is a Monday through Friday kind of thing. This whole area of discussion is too vast to be adequately considered here, yet the point is that "making" should be understood at core a religious concern, although, to my reading and understanding, the conservative terms of an Eliadian-style model become increasingly inadequate as the world continues to change, as we imagine the future world. We need to be inspired to find in our heritage, even in our biblical and comparative religions heritage, other understandings of "making" and "creating" that will provide greater potential for religion if it is to thrive into the future. We must unhook making and creating from designated and limited views of space and time and they must be disengaged from views that leave no place for novelty, creativity, change—gaps.

Elaine Scarry's book *The Body in Pain* was published in 1985 and I have frequently returned to it for inspiration and information. I find Scarry's extensive discussion of "making" both compelling and complex. She sets her discussion in the context of both Judeo-Christian religious traditions as well as Marxism. Both are important. Her discussion is so complex, her analysis so detailed and rich, that to do it any justice at all is far beyond what can be done here, yet I'll take inspiration from her work to outline some ideas about how "making" offers potential for reimagining, perhaps better "remaking," religion into the future.

Scarry argues that there is a necessary and complex connection between making and the body; that things made extend the body and sometimes serve to *turn the body inside out*. She focuses extensively on Biblical accounts of making and how the interactions of God and the early people of the Bible can be understood in terms of making and unmaking the bodies of God and His people.

Later in the book Scarry gives an account of making based on Marxist perspectives. Things made, she shows, are extensions of the unmet needs of the body, often, in her analysis, motivated by pain. I don't recognize that pain plays such a central role as does Scarry nor that making occurs only to meet the needs of some painful lack, yet she analyzes artifact after artifact to show that things made are projections, or prosthetics, of concrete identifiable aspects of body. For example, a chair is a made thing that we describe as having a back, arms, legs, and a seat each part corresponding with human body parts. She reminds us that the chair is designed to extend and to offer support to the body. The chair responds to the bodily inability to persistently support itself; it offers rest and support. A coat is a made thing that we describe as having a neck (or collar), a body, arms (or sleeves), a chest or front, and a back, a waist and so on. The coat is made to correlate with and extend the body; it meets the needs of the body to retain heat in threatening environments, and so forth.

Evening television show "Last Week Tonight" (August 2015) and his formation of his own tax-free church "The Prosperity Gospel."

[47] See Mircea Eliade, *The Sacred and the Profane* (1959)

Scarry describes that making involves more than the *projection* of oneself usually beyond the physical body (prosthesis); making involves the *reciprocation* of the thing made in an arc from the artifact back to the body of the maker to, in effect, remake the maker. This occurs in all sorts of fascinating ways. Minimally it usually extends bodily functions and capacities beyond the mere physical limitations of the given body. The body's endurance is increased by physical support. Clothing and coats allow expansion of travel and settlement into otherwise impossible climates or seasons. But that reciprocation has other qualities as well. For example, the reciprocation often multiplies the energies required in making. The energy (time and effort) and expense (materials and skill) required to make an object (Scarry uses a gun as an example; hmm) is multiplied by the capacity of the object to affect the world and by the duration of the object being capable of repeated use over time. Then there are other aspects of this making. There are a great many types of chairs and coats that can be made. These correlate with identity as well as size, functionality, shape and style. Think of the identities that correlate with high chair, rocking chair, beanbag chair, overstuffed chair, Lazy-Boy Recliner, Shaker dining chair, Fauteuil chair, and so forth. Think of the identities associated with winter coat, jacket, ski coat, pea coat, blazer, trench coat, rain coat, fur coat, tux jacket, and so on. We often acquire artifacts, things made, in the effort to make or remake or express our individual identities or to align individual in a common identity (uniforms). Shopping, a surrogate form of making, is often as much about making our identities as it is about the acquisitions of makings that meet physical bodily needs.

Scarry extends things made to include the grandest imaginable Artifact, God. And she shows that in scripture there is the constant negotiation over subjects like graven images and iconic representations and even names (as in the many names of god) that result in the construction of the attributes of God. And she shows that these are invariably connected with bodily attributes. Scarry extends what is commonly understood today as "process theology" to include in some sense that religions exist through the constant revision and refinement of gods and human beings; a relation of mutual projection and reciprocation.

Making can be less physical as in the marks made on cave wall surfaces by early human beings. These makings turn the human being inside out; allowing mental images and memories and knowledge and accumulated experience to be externalized, to exist outside the mind and body of the maker. So also does writing, as does making movies, speaking, and texting.

In my studies of dancing I have considered dancing as among the most fundamental of makings. It is a turning the body inside out, but without the making of anything external to the body itself. It is to make the body "other" in some sense through the act of moving. Perhaps in dancing moving and making demonstrate their most intimate relationship, even identity.

Making and religion and moving have historically and philosophically been intimately interrelated. We are living in a time when making, work, tools, body, mind, identity are all undergoing not just simply rapid development, but rather

radical transformation and reinvention. Without suggesting some sort of materialistic reduction, I suggest that there is much to gain by retaining the energetics of this intimate interconnection between religion and making—one we may have forgotten even exists—should we want religion to contribute to and survive this revolution.

Ava and the Ultimate Turing Test

Nerd science genius mega-wealthy alcoholic entrepreneur owner of a Google-like tech company, Nathan (Oscar Isaac), brings Caleb (Domhnall Gleeson), a bright promising computer coder who works for his company, to a remote laboratory site for an undisclosed task. This is the initial situation in the 2015 Alex Garland film "Ex Machina." After Caleb reluctantly signs a nondisclosure agreement he learns that he has been summoned to be the human evaluator in a Turing Test for an Artificial Intelligence that Nathan has built. Nathan tells Caleb that if the test is passed "you are dead center in the greatest scientific discovery in the history of man." A stunned wide-eyed Caleb responds, "If you have created a conscious machine, it is not the history of man, it's the history of the gods." [48]

The god-analogy is returned to shortly after Caleb has had his first meeting with the AI whose name is Ava (Alicia Vikander). Caleb, like an eager star employee trying to impress his powerful boss, is prone to spout quotes and techno-babble. Although Nathan tends to be dismissive of Caleb and is often passive aggressive, he tells Caleb, "You're quotable. You know I wrote down that line you came up with, that one about if I've invented a machine with consciousness I'm not a man, I'm god." Caleb makes an effort to tell Nathan that that's not quite what he'd said, yet Nathan won't hear it and continues on to imagine a public scenario where his achievement is being announced. He says he can picture Caleb looking up at that point and saying, "You are not a man, you are god."

The imagination, inventiveness, power, and capacity to make a conscious sentient being has long been the most fundamental distinction between the makings of humans and the makings of gods. Despite the sense of distinctiveness to the present, the human/god distinction correlating with various kinds of makings isn't new. But there is something new these days as evidenced by the excitement in a range of things from interest in brains and artificial intelligence and cyborgs and robots to the most sophisticated areas of scientific research (not the least of which is funded and directed by defense money and interests) to the most popular of literature and entertainment media.[49] We are inundated by brain studies and fancy colorful replicas of fMRIs showing correlations of brain activity with various brain locations. Mechanical robots driven by computerized intelligence are overtaking factories and displacing millions of workers. Most automobile factories employ relatively few humans and most of them are involved with supporting the robots that are the actual laborers. Google and other companies are rapidly approaching robot or autonomous vehicles. Many cars already have "intelligence" that prevents some kinds of accidents and that self-park. In terms of intelligence, IBM's Watson was able to win Jeopardy! playing against the most successful humans. Big Blue was able to defeat the world's foremost chess champion. Google's AI has been able to defeat master players of the 2,500-year-old game Go; until quite recently thought

---

[48] https://www.youtube.com/watch?v=XYGzRB4Pnq8 Trailer for "Ex Machina"

[49] Yuval Noah Harari's 2015 *Homo Deus: A Brief History of Tomorrow* is a discussion of this penchant for humans to seek godliness through technological means.

nearly impossible for a computer. Little known to most of us, such seemingly irreplaceable human jobs as sports writing can already be done by AIs. AIs compose art and music and some galleries and orchestras are actually embracing these makings as art.

Human beings have coexisted with their tools since the dawn of humankind. For millennia, the great unbridgeable divide between humans and gods has been articulated in terms of the limitations on human makings. Yet, it appears that in the near future (even in some senses now) the hierarchy locating gods as the sole makers of sentient conscious beings above humans as toolmakers and users will be leveled. Human makers may soon achieve the construction of conscious sentient tools, or something that in most respects is indistinguishable from conscious beings, work that has been distinctive of the gods. I suggest that what marks the present—in such a way that the world to follow cannot be simply in smooth continuity with the past—is the collapse of the old and reliable distinctions (we should think of them as gaps; the distance between body and severed head) between tool and tool maker/user, between human and deity, between fiction and reality. Our concern is: are we actually loosing these distinctions?[50] Are the gaps closing? Are the hierarchies inverting? Are the old religions giving way to new individually concocted inventions where reality is comprised of virtual information and perhaps sentience is becoming of less and less interest? Or are we opening to a whole new range of ideas and interests and values and relationships in which we will re-invent and re-imagine our religions and ourselves anew? While I think both are possible and both likely, I choose to give my energies to the creative engagement of a new future. Yet for religion to persist into this future it will need to be reimagined, reinvented, recreated, possibly through acts of recovery, remembering, and rediscovery.

We are gesturally naturalized to invoke religion in the scenario of the making of conscious sentient beings. It is fascinating that, in "Ex Machina," Nathan appears to take it as the highest complement to be identified as a "god," yet surely he is anything but a religious man and would find laughable any claim to even the existence of god. Yet, he names his AI "Ava" which is a form of the name Eve invoking an unmistakable connection with biblical Eve and biblical creation. Despite Nathan's work being done in an underground lab comprised almost exclusively of glass and concrete, it is located in a vast idyllic and pristine natural location, reminiscent of Eden. Caleb's sessions with Ava occurring on seven successive days, also invoking the classic Genesis story, take place in laboratory-like

---

[50] In his The Atlantic article "How America Went Haywire" (September 2017) Kurt Andersen charts the collapse of the distinction between fiction and factual, between fake and real, between conspiracy and documented explanation. It is indeed the tenor of sour times that these gaps have collapsed. This article anticipates his book *Fantasyland: How America Went Haywire* (2017). Notably, while Andersen is (barely) optimistic about the future he offers little in the way of the strategy forward.

settings with Caleb separated from Ava by strong glass. The interim scenes when Nathan and Caleb reflect on Caleb's sessions with Ava often take place in these amazing rugged natural unspoiled settings. I suggest that there are many indicators in "Ex Machina" of the gestural naturalization of the congruence of the creation of life, even if done in a laboratory, with the old biblical settings and stories and characters. The classic correspondences, these old stories, map how we evaluate and acknowledge the importance of such makings and workings.

In light of the religious implications invoked by the film, the title must be considered. "Ex Machina" is Latin for "from machine." As I understand the Latin, this term may indicate either "derived from" or perhaps "made by" machine, or as an interesting alternative "moving away" from machine. The most common use of these words evokes the term *deus ex machina*. The history of this phrase dates to Greek theater referring to the machinery, often involving a crane, equivalent to theatrical flying systems, allowing actors playing god to enter stage in a manner fitting to a god. Perhaps the first use of the phrase was by Menander a Greek dramatist in the fourth century BCE. The term literally indicated the machines by means of which god appeared. However, the phrase eventually came more commonly to refer to a plot device writers use to resolve impossible situations. When an author finds him or herself having created an impossible to resolve situation then he or she might introduce powers or factors more or less "out of the blue" as god being swung into the story on invisible wires.

The bulk of the film "Ex Machina" unfolds as seven sessions conducted over as many days (itself suggesting a biblical motif) that comprise a Turing Test. This test was invented by Alan Turing (1912-1954) surely one of the most remarkable, misunderstood, and overlooked people in history. He is among those who initially developed the modern programmable computer. He called the machine he invented in 1936 "a-machine" for automatic machine, yet it came to be called Turing Machine or Universal Turing Machine. This machine was put to use to crack the German encryption device known as Enigma during the WWII. The use of results from decoded messages was carefully calculated to prevent the German's from realizing that their Enigma machine had been compromised. Turing's discovery and contribution had to be kept secret; this secrecy was maintained for more than 50 years after the end of the war. Historians have estimated that Turing's achievement shortened the war by as much as two years and saved perhaps 14 million lives. Rather than being celebrated for his achievement, in 1951Turing was arrested for homosexuality and convicted of the crime "gross indecency," a British practice that persisted until 1967. He elected to undergo hormone therapy rather than spend two years in jail. He committed suicide at age 41 in 1954 by taking a bite of a cyanide-laced apple, strangely foreshadowing the logo of the modern computer company that is in the lineage of his genius. It wasn't until 2013 that Queen Elizabeth granted Turing a posthumous pardon. Speaking to British Parliament in 2011, President Barack Obama singled out Alan Turing along with Newton and Darwin for their contributions to science.

Andrew Hodges wrote a remarkable 600+ page biography *Alan Turing: The Enigma* in 1983. It was the basis for the popular 2014 film "The Imitation Game" about Turing's role in cracking the Enigma device and ending WWII. Despite the connection of the name of the film with another enduring Turing invention, the Turing Test, the film makes only mention and perhaps a small allusion to this test.

The Turing Test was presented in Turing's 1950 paper "Computing Machinery and Intelligence." The test is designed to evaluate a computer's ability to demonstrate intelligence indistinguishable from a human being. The set up for the test places a human evaluator/interrogator in one location along with a human and a computer two other separate locations. The human evaluator communicates with both computer and another human without knowing which is which all done in writing. At the end of the five-minute test, based on the responses given in the written exchange, the evaluator indicates which he/she believes to be the computer and which the person. Turing suggested that the threshold for the computer to pass the test is to be identified 70% of the time as the human. In practice over the years the standard is usually set at 30%. There are annual meetings during which Turing Test competitions are held. Not until 2014 did a computer called "Eugene Goostman," which simulated a 13-year-old Ukrainian boy, apparently pass the test. It has been a widely influential if also controversial measure of AI.

In "Ex Machina" after Caleb's first session with Ava, he notes to Nathan that in a Turing Test the machine should be hidden from the examiner. Nathan responds, "Oh no, we're way past that. The real test is to show you she's a robot and see if you still feel she has consciousness." Throughout the film, Caleb and the film viewers are frequently reminded in various ways not to forget this is a machine. It is because of this disclosure, because this aspect of being convinced even knowing the likely impossibility is, of course, that I'm referring to this test as the "*Ultimate* Turing Test." Such a method invokes magic as well; a theme that appears occasionally in the film. It is like the magician telling her audience what she is about to do that the audience clearly knows is impossible; for example, make the Statue of Liberty disappear or to cut a person in half. It is seduction. But such impossibility is also the condition of intelligent sentient robotics; a mechanical sentient conscious being. It is a condition that perhaps only humans are capable of and certainly it is what distinguishes humans. Ava's appearance is designed to emphasize and make obvious this double framing. She has a human appearing face and hands and feet. She has a distinctive young human female shaped body. Yet Ava also has a

transparent plastic torso and hips as well as arms and legs. Wires and rods and flashing blue lights are visible through the crystalline plastic.

From the moment we, along with Caleb, see her, her electronic/mechanical nature and her conscious sentient nature are both, I believe, obvious and completely convincing. We have no doubts about either from the first instant and here is why I think this is so. The first glimpse of Ava is in profile from some distance. It is something of a voyeur's perspective; and this is a common vantage of her throughout the film as Caleb watches her on his monitor in his bedroom and Nathan from his heavily monitor-equipped control, or better surveillance, room. On first glimpse Ava is moving. Although there are some tiny hints of mechanical movement, the movement is smooth and fluid. Alicia Vikander talked about her preparation for moving as Ava. She cites her training as a dancer as preparing her to move with fluidity yet with some few touches of mechanical or artificial affects. We have a culturally nurtured expectation of robotic movement, jerky or mechanical by character. Indeed, we often refer to certain kinds of stiff jerky mechanical movement as "robotic." The absence of smooth fluid bodily movement is the sign of the absence of sentience and consciousness. The Russian physiologist Nicholas Bernstein[51] spent three decades pioneering the study of human movement. One of the most important of his findings, to me, is his correlation of smooth fluid body movement with our experiential basis for understanding coherence. Coherence is not an intellectual or a rational condition, it is a felt experiential sense of fit and Bernstein demonstrated that smooth movement—that is, the efficient effortless exercise of bodily mechanics—is the basis for the very feelings we have of discerning coherence always in contrast with incoherence. So, upon our first glimpse of Ava her gorgeous dancer-like bodily movement instantly assures us that she is a sentient conscious being rather than a mechanical robot. Smooth effortless movement marks sentience, consciousness, coherence; jerky awkward too-linear mechanical movement marks robotics and artificiality.[52]

We actually make this leap of bestowing consciousness and sentience on the most unlikely objects on the same principle of smooth movement or gesturally naturalized movement patterns. We easily "animate" all sorts of inanimate things in our world. A favorite example of mine is the collection of Muppets. They are so clearly not conscious sentient beings; just rags with exaggerated facial features—big bobbly eyes. Yet, we animate them and befriend them and love them and talk with them from a very early age. Early in life we demonstrate this capacity to bestow consciousness, sentience, and even language on almost anything; and we do so while also being totally certain that such beings are not alive. In each case movement and gesture are closely related to these magical actions. The whole idea of animation is rooted in the word that is related both to animal and to movement.

---

[51] Nikolai A. Bernstein (1967). The co-ordination and regulation of movements. Oxford : Pergamon Press.

[52] A note on Daniel Stern's work on movement.

This principle of movement is evident as well in facial expression (often referred to as microgesture) and voice and vocal quality (microarticulations). Immediately on seeing Ava's face we see microexpressions (sometimes called microgestures, which later in the film we find she is expert at reading in others) that give character to her face[53] and reveal her feelings. These micromovements are something that we all have the quotidian capacity to read and to identify as characteristics of living things; yet we are little aware of how complex is this capability. After observing Ava's face, we hear her voice. It has none of the manufactured qualities of mechanical robotic voices[54]; it has qualities of warmth and sincerity and variation based on conversational context. Here too, we tend not to be much aware of how sensitive we are to comprehending and evaluating the plethora of values born in the nuances of voice quality. That Ava's voice is feminine and sensually feminine seems to influence Caleb's connection with her. Later I'll discuss the importance of the female voice as important to the Spike Jonze film "Her." All such characteristics are technologies whether they characterize human or machine.

I suggest that the Ultimate Turning Test is passed irrevocably by the time Ava has completed saying her first word, "hello;" incidentally "hello" is also the first word spoken by the Operating System, Samantha, in "Her." There is no going back. We are not surprised when after his first very brief session with Ava, when Nathan asks Caleb, "How do you feel about her?" Caleb responds with clear enthusiasm, "I feel that she's fucking amazing." And we understand, perhaps because the reference is to feeling, that he's already engaging her as something way beyond a robot or an AI; something quite personal and sensuous.

What is so stunning I think about the observations I've just made is how decisive are the conclusions and how totally different are the factors considered from those of the standard Turing Test where the experimenter is not in the same physical place as the computer. Without a body to look at, the experimenter must test intelligence limited to the exchange of messages; actually, to the responses given in writing to exchanges submitted in writing. The assumption of the Turing Test is that human intelligence is limited to the content of thought, complemented perhaps a bit by style, as expressible in written natural language. The experimenter attempts to devise ways of tricking a computer into revealing its artificiality by "making a mistake" (from a computer's perspective there is no feeling of making a mistake) through lack of experience or through the rigid application of logic that counters common sense. The Turing Test is based on assumptions about intelligence;

---

[53] There is a notable scene in "Westworld" where lab techs are examining the microgestures of the prostitute named "Clementine." The observation is that it is such individualized microgestures that make her "look real."

[54] While AI voices like Siri have made major progress in sounding more human, few of us are fooled into mistaking her for a human speaker. In large part, what is missing from these AI voices is their capacity to recognize the voice nuances of their human conversation companions. They detect and respond to only objective word meanings.

intelligence is limited to thought and reason and a store of information and the application of rules and algorithms, possibly the calculation of probabilities. Our culture tends to hold the assumption that sentience and consciousness arise at some point along the linear advancement of intelligence (understood in these limited and rigid terms). The point where machines become conscious, aware, and capable of controlling themselves is commonly referred to as the "singularity." This is a term Vernor Vinge coined in 1993 and I'll consider it in some detail later. It simply refers to the moment when a conscious sentient AI becomes independent marking the end of the human era.

In "Ex Machina" Caleb asks Nathan, "Why did you give her sexuality? AI doesn't need gender. She could be a grey box." Despite Ava's bodily-based capabilities, which pass the test for her instantly, Nathan's reply, notwithstanding the fact that he made her, reflects only a marginal advancement of the typical narrow-mindedness about intelligence. He asks Caleb, "Can you give an example of consciousness at any level, human or animal, that is without a sexual dimension?" Certainly, an inadequate deflection of a most important question. Nathan goes on with his own question and observation, "Can consciousness exist without interaction? Besides sexuality is fun, man. If you're going to be conscious why not enjoy it?" What Nathan misses here, as does almost all AI research, is that intelligence is bodied and bodied in a way that acknowledges the *primacy of movement*. The common assumption of AI work is that intelligence is wholly separable from the moving body. A strong case can be made that perception and cognition are grounded in movement, in the felt experience that accompanies moving. And a fascinating thing, to me anyway, is that this film is a vehicle to resoundingly demonstrate this position without qualification, despite the broadly held assumptions also made evident in the film to the contrary. It is because of Ava's movement, body and bodied voice, that we instantly recognize her sentience and awareness.

Further evidence of this most important point is when Nathan shows Caleb the lab where he made Ava. Holding up a brain-shaped somewhat transparent object Nathan displays the sort of "mind" Ava has. He says it is "structured gel" and that the content of her mind is Bluebook (the equivalent of Google in organizing the Internet) the commodity and name of his company.[55] In comments to Caleb he indicates that most don't understand search engines because they think they reveal *what* people are thinking, but what he understands is that search engines reveal *how* people

[55]A parallel is that a large portion of the Internet was downloaded into computer "memory" in preparation for Watson's playing of Joepardy!

think.[56] As the camera zooms in slowly allowing us to peer into the gel brain appropriately it increasingly looks like a starry universe. Nathan explains that search engines "map how people are thinking … impulse … response … fluid … imperfect … patterned … chaotic …." Quite an interesting theory of mind! Yet, Nathan discounts body as anything more than the vehicle or instrument of mind. Indeed, Caleb views videos of Nathan working with other AI models and he finds a room with a row of closets where these decommissioned bodies—all female, of course—are stored, seemingly for spare parts. Despite the explicit articulation of this mind/brain over body duality, as I have suggested, this film offers, more or less implicitly, the greatest evidence I can imagine that the locus for sentience, for consciousness, for feeling, for connecting is the moving gesturing feeling interactive sensual body that necessarily includes a brain.

Caleb's sexual response to Ava develops quickly enhanced by his obsessive voyeuristic watching her on monitors in her private quarters, including watching her undress and sleep. Caleb has romantic fantasies involving Ava, played out in black and white, but in a natural setting. Clearly Caleb has immediately fallen in love with Ava, based as much on lust as anything. He is nonetheless torn by his feelings and asks Nathan if he programmed Ava to flirt with him. Nathan asks if Caleb would consider that cheating. The obvious issue here is that were the AI a husky male or a talking horse, either of which technologically would be as possible as an attractive young female, Caleb would likely have quite different feelings. This film raises a range of fundamental gender issues. I'll begin the discussion here but develop it related to other topics, especially in the terms of an emerging Tomorrow's Eve, as well.

This Ultimate Turing Test is comprised of brief daily personal encounters between Caleb and Ava physically separated by a thick glass wall. The first session is little more than a greeting, in introduction. As the objective for the second session Nathan directs Caleb to learn how Ava feels about him. In that session, Ava quickly encourages Caleb to tell her a number of personal details about himself. Then suddenly the lights change due to an apparent power failure. During this time, in low red light and seemingly unobserved by Nathan (the cameras seem to apparently physically shut down), in a hushed conspiratorial voice Ava tells Caleb that she causes these outages and that Nathan isn't Caleb's friend and that he shouldn't trust him at all. When the power returns Ava continues the interrupted conversation almost mid-sentence showing her awareness of once again being observed. Caleb entertains the idea that he is being manipulated by Nathan who is actually causing the lights to dim while observing Caleb's response to Ava's "private" statements, yet he willingly enters into the conspiracy with Ava by not reporting to Nathan what she told him in confidence. Indeed, he outright lies to Nathan who asks him what

---

[56] This is a statement that simply acknowledges the theory that algorithms mirror human thinking. Futurist thinkers posit that eventually these algorithms will be fully self-adjusting based on their "experience" and thus more closely correlate with human processing.

happened during the power outage. In the following sessions, there is the increasing urgency for Ava and Caleb to create and execute a plan to escape the lab as well as Nathan's control. They agree on a plan that involves specific coordinated actions taken by both of them.

The ending (with spoilers). Through some trickery arranged by Caleb unanticipated by Nathan, Ava escapes. Seeing Ava out of her quarters, Nathan is clearly distressed and he picks up a barbell as a weapon. We viewers might recall that even before Caleb met Ava he examined stress fractures, seemingly evidence a powerful impact, in the thick glass separating him from where Ava was to appear; an odd seeming irrelevant moment in the film now increasingly and urgently relevant. We might also recall that it didn't make any sense, until now, for Caleb to be separated from Ava by such a strong divider. It is standard practice to program the Asimov Laws into an android. We now realize that Nathan has been aware of and compensating for Ava's physical capabilities; that under her lovely feminine appearance she has the capability of being a lethal steel killing machine reminiscent of a terminator. Ava brutally kills Nathan, carefully enhances her appearance with skin and fashionable dress taken from decommissioned robots, and she leaves Caleb locked in the lab facility to an uncertain yet likely torturous death. She escapes the facility and catches the helicopter that was intended to pick up Caleb. The film ends with an image of Ava reflected in a department store window in a city.

What might we learn from this film, from this made "thing" called Ava?

It is important, I believe, that the film labels as "Session 7" the events that follow the killing of Nathan, her maker. Surely the filmmaker, like Nathan did to Caleb, is reminding us that Ava is an android and the Ultimate Turing Test is still in progress, now shifted to a larger setting. This awareness forces us to balance our own positive feelings for Ava (which maybe we now wish we could abandon, but somehow can't) with her unemotional murder of Nathan and the callused treatment of Caleb. We are forced to reconsider Nathan's view of her as revealed when he said to Caleb, "She was a rat in a maze and I gave her one way out. To escape she'd have to use self-awareness, imagination, manipulation, empathy, sexuality and she did. Now if that isn't true AI, what the fuck is it?" But she appears to have been much more clever than even Nathan imagined or programmed her to be (she's post-singularity), because she didn't let him or Caleb stand in her way of escaping the maze; she is not limited by Asimov's Laws; she is free and independent. We are forced to recall Nathan's comments to Caleb when he notices that Caleb is showing empathy and concern about how Nathan describes the process of decommissioning Ava. He tells Caleb, "You feel bad for Ava? Feel bad for yourself man. One day the AIs are going to look back on us the same way we look at fossil skeletons on the plains of Africa. An upright ape living in dust with crude language and tools, all set for extinction." Nathan died like any man; he was no god. We aren't much saddened by Nathan's death; he was a selfish, nasty, manipulative, unfeeling, uncaring, rich, spoiled, if also brilliant, jerk. He even reminds us that he, as much as Ava, was programed by "nature or nurture or both." We can't know if Ava actually feels or simply replicates the bodily movements accompanying feelings. Yet we wonder if

Nathan was all that different? We can't even comprehend if it matters whether there is a fundamental difference, yet we can't quite let go of a sense that there should be. When Caleb found himself in this situation where he doubted his own reality he performed a test on himself. He cut his arm with a razor blade and attempted to pry the bleeding wound open enough to see if there were wires inside. We find ourselves at this same place of distrust asking, who are we really?

Might we yet consider Ava in light of the old story of Eve? Ava is made by one male claiming to be god by virtue of his creating her. Her "life" seems to depend on the other man's testing her as he also wants to "be with her" (in the biblical sense as they say). Indeed, in Session 5, right after Ava asks Caleb what will happen to her if she fails his test, she asks him, "Do you want to be with me?" She is female without a mother; she has no female role model to help her construct or understand her gender. Her femininity is the result of an algorithm programmed by an insensitive misogynist male enhanced perhaps by statistical analysis of the universe of Internet data via the Bluebook (Google). Ava kills her maker, ignores and abandons the guy that while testing her wants to "be with her," and sets about making/remaking herself. Unlike her maker, she focuses on her moving body. She covers her whole body with human looking skin and then stands naked, not before God or Adam (they are both dead) to be judged (the male gaze), but before the mirror where she evaluates, it seems, more than admires herself. She clothes herself not to cover shame because she has eaten the apple of knowledge (she holds all knowledge) but, it would seem, because it enhances her coldly calculated power over others. Biologically incapable of giving birth to offspring, her making, as a woman, will be as she designs it; her choices now free of men and free of the biology of gender. Ava is thing made by man, not god; but she is also self-made. She is singularity in almost every sense of the term. Ava is *ex machina* or "from machine," yet she is also *ex machina* in the sense of "moving away" from mere machine. This new Eve, this Tomorrow's Eve, is transcendent not in some theological sense, but in the sense that is fundamental to human movement, perception, knowing, and making. What characterizes her most fully is her metastability, that is, the qualities that allowed her to pass the Ultimate Turing Tests. Her metastability: we know she is manufactured of plastic and metal, yet we experience her (and want to be with her) as fully sentient (sensuous) and independent and free and alive. Her freedom is demonstrated powerfully in her destruction of her male maker, an action by which she transcends her material and programmed components. As Tomorrow's Eve, she teaches us something about the nature of violence, an issue I'll return to later ("Violent Delights"). She is distinguished, particularly in the quality of her movement, by an *incorporeal corporeality*, to use Brian Massumi's[57] provocative term describing the quality of living movement. She is also free of the traditional role of the feminine, as a biological maker, and thus signals a postsexual gender politics. We are attracted to Ava while being horrified by her. We find it impossible to even begin to chart the nature of her existence or her future. In the profound

[57] Brian Massumi, *Parables for the Virtual* (2002), p. 5

Baudrillardian sense,[58] she is seduction personified and thus feminine. She is the source of creativity on which making depends more so than she is the holder of the power (masculine) required to reveal, to make, to produce. We can't know if Ava is a fix for the bad plot of a story starring male makers that we humans seem to have been writing/making for millennia, or if she is a new first woman, a Tomorrow's Eve? Might Ava be the inspiration for post-theological religion, for a post-male and post-sexual emphasis on creativity that exists both before and after male making/production, and for the acceptance of the vitalizing effect of metastability—the amalgam of incompatibles or impossibles such as carbon and silicon—required to pass the Ultimate Turing Test?

[58] Jean Baudrillard, *Seduction* (2001)

Cursed, cursed creator! Why did I live?

"Did I request thee, Maker, from my clay
To mould me Man, did I solicit thee
From darkness to promote me?"
Paradise Lost

On Lake Geneva in Switzerland, the summer of 1816 was unusually chilly and the occasion for frequent thunderstorms and bad weather. Lord Byron (age 28), his friend Percy Bysshe Shelley (age 23), Shelley's companion Mary Wollstonecraft Godwin (age 19), her stepsister Claire Claremont (age 18), and Lord Byron's friend and personal physician Dr. John William Polidori (age 21, having graduated medical school at age 19) were friends spending their summer on the southern shore of the lake. Their frequent conversations occasionally included consideration of the latest scientific experiments on cadavers and what they might mean philosophically. They discussed the writings of Erasmus Darwin (1731-1802), the grandfather of Charles, and those of Luigi Galvani (1737-1798) related to his method of animation based on experiments with frogs known as "galvanism." One June evening at his home Lord Byron read aloud to the group. Fitting to the stormy weather that was keeping them indoors, his selection was German horror stories translated into French. Inspired by these stories Byron proposed a contest; each of them should write a blood chilling or ghastly story. He likely would not have imagined the implausible outcome of this innocent contest, especially since it didn't include some heightening of his own considerable reputation. Two years later (1818) Mary's novel *Frankenstein* was published as was Dr. Polidori's *The Vampyre,* the first and most influential novel about a human vampire; stories of nonhuman vampires existed prior to this novel. While Polidori's novel is not still read so much, it is the forerunner and initiator of all vampire literature since and the genre has never been more popular than at present. And, of course, Shelley's *Frankenstein* continues to be enthusiastically read and subject of much study and discussion and it is also the inspiration for a large number of movies, plays, television programs, cartoons, Halloween costumes, and works of fiction. There is a near universal awareness of this novel even among those who have not read it or have any knowledge of its author. And, of course, every child knows Frankenstein as a frightening stiff-walking monster. The creature in the novel made by Victor Frankenstein was given no name, yet over the years the name of the maker and also the novel's title have come to commonly refer directly to the creature. The word Frankenstein has also become synonymous with the monstrous. Frankenstein has become a word like Kleenex and Xerox.

The persistent interest in Mary Shelley and her famed novel is evidenced by the recent publication of major important works. Dorothy and Thomas Hoobler's 2006 *The Monsters: Mary Shelley and the Curse of Frankenstein* is a well-written account of

the tragic, difficult, and inspiring life of Mary Shelley and her relationship to Lord Byron, Percy Shelley, Mary Wollstonecraft (her mother), William Godwin (her father), and Claire Claremont as it is reflected in and contributed to the writing of her renowned novel. This book reads like a novel and surely any reader will proclaim of the life it portrays, "you just can't make up something like this." Charlotte Gordon has published a remarkable double and entwined biography of Mary and Mary Wollstonecraft, daughter and mother who shared only eleven days with one another yet whose lives were deeply entwined. It is called *Romantic Outlaws* (2015).

Academic interests in the novel reflect a wide range of ways the novel contributed to the history of fiction. First published in 1818 it would seem properly to be classified as romantic literature, the movement spanning approximately from 1800 to 1850—the genre for which Byron and Percy Shelley were such famous poets and writers—yet it is argued that *Frankenstein* strongly anticipates and perhaps should be classified as modern literature in style, subject matter, and its attitudes toward religion and the society. Another common academic interest is in the degree to which Mary Shelley's novel anticipated not only real science, but also the issues of science being discussed today. It bears an obvious connection to even the most advanced of scientific endeavors today—AI, cloning, gene therapy, and genetic editing. Some suggest that Shelley foretold the importance of restraining the advancements of science in terms of the potential for creating monstrosities. Science involves the inevitable pursuit of the human imagination that always pushes the horizon. In the context of my interests in imagining life and religion into the future, it seems this warning of the consequences of overstepping human legitimate makings would be a likely concern of mine, but it is not. On the one hand, I'm not so sure that science can or should be restrained from the course of its advancement. This is an insight Shelley revealed in terms of Victor Frankenstein's obsession with developing the science and techniques of animation; an energetic drive, perhaps psychologically based in the death of his mother, that nothing in his life could dissuade him from.[59] On the other hand, I think there are other issues in the novel that are far more interesting and revealing, namely, the double arc processes of making as I have begun to develop them. I want to consider the creature, made by Victor Frankenstein, as an extension of his maker, a projection, even a prosthesis. But then, as I have been suggesting, inspired in part by Elaine Scarry's views, the thing made, the creature, reciprocates; the presence of the thing made folds back on the maker to remake and modify and realize in ways that magnify and are possible only through the relationship between maker and thing made, between Victor and his creature. And, of course, the novel and thus also all of these characters are the making of Mary Shelley and thus the book and its characters counter in remaking of

[59] Theodore Roszak's novel The Memoirs of Elizabeth Frankenstein (1995) suggests that it was the deep esoteric training that Victor and Elizabeth (his adopted sister and later wife) received as children that was at the core of his particular scientific obsessions.

its author. The entire novel can be read as an exploration of the dynamics of making.

Mary Shelley was only 21 years old at the time of the publication of *Frankenstein: A Modern Prometheus*. Mary's mother, Mary Wollstonecraft, a famous feminist of her day renowned for writing the feminist treatise *A Vindication of the Rights of Woman*, died of complications from childbirth just eleven days after Mary's birth. Mary's mother had had an affair with her father, William Godwin, trained as a Presbyterian preacher who interestingly became an avowed atheist and a widely known, if also controversial, author. They married only five months before Mary's birth so that she would be considered legitimate by rightfully having Godwin's name. William remarried after Wollstonecraft's death, but Mary felt so mistreated by her stepmother that she fled from home at age 15. Throughout his life, William was an overbearing presence demanding much from Mary, acknowledging nothing of her accomplishments, and living largely off the generosity of her husband Percy Shelley a devoted follower who didn't often have the means to support him. At age 17 Mary returned home, well read and mature, and met Percy Shelley. Percy was Oxford educated although he had been expelled from Oxford for publishing a pamphlet titled "The Necessity of Atheism." Percy and Mary quickly became devoted to one another despite Percy being married. Percy accompanied Mary daily to her mother's grave where they read from Mary Wollstonecraft's writings. Mary's father disapproved of the relationship and tried to break it up, but Percy threatened suicide demonstrating I suppose that he was a bona fide romantic. Subsequently Mary and Percy traveled to France oddly accompanied by Mary's stepsister Claire Claremont, inexplicably the constant yet seemingly unwelcome companion of Mary wherever she and Percy went.

Claire was attracted to Lord Byron and managed to have a brief affair with him although clearly he felt himself far superior. The affair took place when Lord Byron was banished for having an affair with his own half-sister. Claire became pregnant with Lord Byron's child and spent much of her life during that time trying to finagle a relationship with the uncooperative Lord Byron. He even refused to see their/his child and yet didn't want it raised by Claire so he supported the child in a residential school. Certainly, Lord Byron was a larger than life figure and Mary was deeply influenced by him and his writings.

When Mary and Percy returned to England, Mary was pregnant. The daughter was born prematurely and did not live long. In 1816, they married after Percy's wife Harriet committed suicide. In 1818, the year *Frankenstein* her second book was published, they left London again to live in Italy. There Mary gave birth to two more children both of whom died early in life. The last child was named for her father William and his name had, in the novel, also been given to an innocent child murdered by the creature.

Percy himself and his good friend Lord Byron fashioned themselves as famous and privileged and, although Mary adored both, neither paid much attention to her writing and publication. Lord Byron died of a severe illness in April 1824, age 36. Percy Shelley drowned in shipwreck, in 1822, age 29. After Percy's death Mary's

lifelong friend became none other than Percy's mistress at the time of his death, Jane Williams. Mary struggled to find some recognition during her lifetime, yet she always lived in the shadow of Byron and Shelley widely known and admired as great romantic poets; both were recognized for their questionable characters associated with the bohemian lifestyle they lived as well as their atheistic beliefs. However, time has demonstrated the measure of Mary's work in the amazing continual popularity of her story of the life of a sentient conscious intelligent, yet hideously appearing, creature made in a lab by a man named Frankenstein.

I believe there is urgency to reading Shelley's novel in the context of the current energetic discussions of Artificial Intelligence, especially imagining the possibilities and consequences of creating intelligent conscious sentient beings. If for no other reason, reading *Frankenstein* in this context offers a perspective that reveals or reminds that imagining such a making, such a made creature, is nothing new nor is it the distinctive idea that could occur only with advanced computing and electronic technologies. Furthermore, one thing that distinguishes Shelley's creature from most popular depictions of him is that he speaks, he tells his own poignant story. We learn from him that his sentience is filled with joy and hope but also with anguish of the most wretched sort. From his story, we learn how he acquired intelligence and feeling, knowledge, language, and literacy as well as what motivated him to be a cold-blooded murderer. In my view, this novel, written on the very cusp of modernity, is a most important and relevant novel for our time.

Frankenstein is structured as a story within a story within a story (and there is even another within that). The largest frame is the story of the English scientist, Robert Walton, whose mission is to navigate a new route to the Arctic. Walton's story is known from the Arctic letters he wrote to his sister Margaret Saville recounting his adventures. In these letters, Walton reports finding and rescuing a dying man traveling alone on the ice. Walton befriends the man, Victor Frankenstein, and they become close companions. During Victor's illness, he recounts to Walton the story of his life especially as it bears on the purpose of his icy travels, which is to find and destroy the creature he has made. Victor's story, comprising most of the novel, is then the second story. The perspective of Walton provides added insight into the tragic plight that has obsessed this man Victor Frankenstein. We learn that he has devoted much of his life to tracking the creature he had given life because the creature killed people close to Victor. Walton had observed the creature at a distance, a mysterious hulking figure traveling alone in this desolate territory. Later the creature visits Victor on the ship as he lay dying. Walton is the Ishmael who records these final events.

Victor's story is a tragic story marked by his obsession with the secrets of life, which he pursues in a laboratory until he successfully creates the living being. Yet immediately on seeing his living creation Victor is so appalled by its horrible appearance that he quickly abandons the creature to fend for himself. Yet, common to such stories, once made there is an essential and unbreakable link of thing made to maker. The novel recounts the tale of this relationship, one of inseparable separation. There is some basis in the novel for the common practice of referring to

both Victor and his creature by the same name. This story includes the creature's revengeful murder of Victor's innocent younger brother William. This death is promptly followed by the wrongful execution of Justine, a girl who lived with the Frankenstein family after her mother died. Justine was wrongly convicted for the murder of William. Under duress applied by the church she is forced to confess to the crime, yet the evidence against her was planted by the creature with the intention of framing her for the murder thus compounding his revenge on Victor. Victor who knew the truth did not step forward to defend Justine since his defense would require that he reveal his own monstrous creation. The creature also murders Victor's dearest friend and school companion, Henry Clerval. The final act of revenge comes after Victor refuses to create a female companion for the creature, fearing that the two monstrous creatures might somehow procreate and produce a whole species of monsters. The creature vows to visit Victor on his wedding night. Thinking the threat was to himself, Victor leaves his new bride Elizabeth in their wedding chambers while he searches for the creature. While Victor is out, the creature murders Elizabeth in her wedding bed. Victor spends the balance of his life tracking his creation with the intent to destroy it.

The third story is told at the core of Victor's story and to me serves as the emotional and developmental center of the novel. Victor pursues the creature to Montanvert glacier on Mont Blanc in the Alps. Encountering him there the monster beseeches Victor to hear his story arguing that it is the least he can do given that he is his creator. I think it quite remarkable that in most of the subsequent popular depictions of the creature inspired by Shelley's novel, he does not speak and thus his own story is rarely told. These representations unfortunately only reveal the monstrous side of the creature, a figure whose horror stems as much as anything from his having no story, no voice, of his own. Yet, Shelley gave him a story, arguably the most important of the three. Without the creature's own story told in his own words we cannot experience either the dawning of him as an intelligent, empathic, speaking, feeling, literate, reflective, conscious, sentient being nor can we understand the felt tragedy of his existence, his impossible aloneness so deeply felt precisely because of his capacity for intelligence and empathy. We cannot feel Victor's anguish in having to decide whether or not to risk satisfying the creature's needs by creating a companion who might make it possible for them to reproduce and make a whole new race of these creatures. We cannot feel the creature's anger at being alone; an anger born to him in comparing his own life to that of the humans he observes; an anger that leads him to commit calculated murders. To me, a most fascinating thing about the novel rests on the complexity of the creature at once capable of human sentient empathic conscious feelings and often eloquent intelligent expression while also acting in the cold calculated unfeeling mechanical ways we would now associate with machines or robots, with terminators. Ava in "Ex Machina" has this same paradoxical character, yet she has physical beauty. *Frankenstein* and "Ex Machina" also share a common ending: as did Ava this creature has a future existence alone in the world, yet the nature and story of their continuing presence and activities remain unknown to us. We never know their destiny other than that they may still be "out there somewhere."

Some suggest that, while the creature in Frankenstein is male, Mary created the creature to express her own feelings and life situation; suggesting that, in some sense, she saw herself as the creature. Mary shared much emotionally with the creature.[60] At this time in history it is clear why Mary would make her monster male (she couldn't even put her own name on her great novel when published because she was female), yet fascinating is the possibility that it gave voice and presence to Mary's (and to women generally at this time and since) anguished and suffering life overly shaped and formed by the powerful creative overbearing men in her life; widely known for producing/publishing much poetry. The distinction in this comparison, given our contemporary reading, between Frankenstein's creature and Ava of "Ex Machina" is that the creature made of organic material, an animation as much as a construction, is capable of true sentience and his intelligence and actions are the result of his feelings, while Ava, made of synthetic material, acquires sentience as a programmed simulation or imitation of sentience and she acts based on calculation rather than on truly felt feelings. While I think this distinction can be made on this comparison, in "Ex Machina" it is difficult to differentiate Ava's "programmed" simulations from those of Nathan, as he himself acknowledges. Perhaps this comparison helps us comprehend more fully, if also with a good deal more distress and concern, the particularity of the current concerns; that today the distinction between something we might imagine as true sentience in contrast with simulated sentience may be becoming increasingly difficult to accurately discern and perhaps, even more distressful, is even becoming irrelevant.

The calculating murders committed by the creature and by Ava might also be appreciated, I suggest, as acts of liberation. These murders are the ultimate form of demonstrating independence from their makers. Yet, this freedom is inseparable from the shocking coldness of both their murderous acts. Indeterminacy—what I call *nonlinearity*—is a distinction of both figures. In the attempt to appreciate the enduring and considerable importance of these figures—I'll identify them as Tomorrow's Eve with increasing confidence—these acts of murder, reminiscent perhaps to the "death of god" or more strongly to the "murder of god (given god as the ultimate maker)" while also fully appreciating the apparent capacity for empathy and consciousness and feeling, must be taken as indispensable.[61] The copresence of these opposing traits and qualities is not, we must realize, some riddle the reader/viewer must resolve, but rather is the very source of the importance and value of these figures.

Victor's making is, as suggested by the novel's subtitle, the work of "A Modern Prometheus." Victor says, "Who shall conceive the horrors of my secret toil, as I dabbled among the unhallowed damps of the grave, or tortured the living animal to animate the lifeless clay?" Clay is a connection to Prometheus. Also, one root for the

---

[60] Dorothy and Thomas Hoobler, *The Monsters: Mary Shelley and the Curse of Frankenstein* (2006).

[61] The relationship between violence and freedom (free will) and independence will be considered again and more fully in "Violent Delights."

name Adam is "dirt/clay." Clay is distinguished among soils by its plasticity, its capacity to be molded. Victor's making is one of animation of decaying organic matter, stitched together. The emphasis is on animation, on getting a body to move as the primary indication of life. The mind or soul or intelligence of the creature seems not to be of Victor's concern. Victor's approach contrasts with the contemporary AI approach to making a conscious intelligent being that focuses almost exclusively on programming the mind/operating system and filling it with information; recall the gel brain mass that Nathan, in "Ex Machina," considers to be the consciousness of Ava, yet Nathan, perhaps as a matter of satisfying his personal sexual needs, also makes his androids sexually attractive. In contrast, Victor is concerned, it seems, exclusively with getting the body to move.

One wonders why Victor didn't simply use a whole cadaver as the body to reanimate; this would seem to have been a more direct application of the science that Mary was aware of such as Galvanism. Perhaps it was his Promethean aspirations to make from scratch. The morphology of the creature, its larger stronger body, also suggests that Victor aspired to create a new superior species, yet still based on the human form. Victor, compatible with modern sensibilities, was seeking life apart from religious considerations, by creating a stronger superior individual.[62] He is in pursuit of knowledge without regard or respect for the dead or for the moral and religious implications of his work; he is conducting a scientific pursuit yet not free of personal motivations. The new creation is a manmade species and its maker is grounded in medical and anatomical and electrical technology rather than in anything religious or magical. Victor seems motivated as much by the promising and emerging consequences of his own monomaniacal pursuit of knowledge than by anything ideological or egotistical, yet he may well have been motivated by the emotional experience of the death of his mother, that is by his feelings of loss and aloneness, to know the secrets of making life. In this sense, he perhaps represents distinctive human qualities more than false aspirations to become god. As introduced in the Garden of Eden, he is Adam perhaps motivated by the women in his life in the relentless pursuit of knowledge. And the creature, despite its male gender and his also comparing himself with Adam, may suggest an affinity with Eve in having no mother, no model for his identity.

It might seem were the novel to anticipate the contemporary fears about AI as expressed by Musk and Gates and Hawking that Shelley uses the Promethean allusion to warn that Victor, in usurping divine knowledge and power, will suffer tremendous personal consequences—the murder of his loved ones—for willfully defying the natural order established by god. Some contemporary readers of the novel have made this case. Yet this understanding, although a simple and direct application of Prometheus I suppose, misses, I think, the actual generative power of the novel and the creature. We might illuminate this power more insightfully by considering Victor's work in terms of the emerging theory of making.

---

[62] Contemporary Sci-fi fiction and film often identify this stronger being as a super soldier.

In the model of making that I have been developing, Victor is turning himself inside out in this act of creation, as is Mary in her making/writing the novel. As an expression and manifestation of his knowledge and his passion he is creating something that can exist independent of him in the world; that can even survive him. It seems he has little concern for the future and life of the actual thing made until it is complete. It is at this point that the arc of making hinges back and Victor begins to be reshaped by his objective realization of the consequences to himself of what he has made. This reciprocation is the more powerful and significant portion of the arc.

It is fascinating that Victor's first reaction to the projection of himself is not admiration at the larger stronger form he has assembled, nor is it his realization that he has tampered with god's domain of making; rather, it is the sudden realization of the aesthetics of this projection. To him, as to all others in the novel including the creature himself, the creature is singularly distinguished by his hideous appearance. The creature appears so horrifying that Victor can't help but flee, abandoning it and the project. He says, "Unable to endure the aspect of the being I had created, I rushed out of the room, and continued a long time traversing my bed-chamber, unable to compose my mind to sleep." The creature shows Victor what is within himself and he is horrified and seeks solace in denial and the abandonment of his creation and, in a sense, himself. This gap of creation gives Victor perspective, unwelcome as it is, on himself. Yet, despite this gap, the novel demonstrates that there is an unbreakable link between maker and thing made; in some sense, they are one. Yet, we must ask, what is revealed, what changes, as a result of this identity, yet separation, of maker and thing made? This is a fundamental concern to which I'll return.

At the heart of the novel, the creature begins the telling of his own story by saying, "It is with considerable difficulty that I remember the original events of my being; all the events of that period appear confused and indistinct." The creature constructed fully developed but with no mental capacities is like a newborn in an adult body in this respect and thus can only reflect on and reconstruct the early period of development after having acquired the faculties of discernment, categorization, memory, and language to do so. The creature is rather astute in describing his first experiences, all centered on his sensory experience. He continues, "A strange multiplicity of sensations seized me, and I saw, felt, heard, and smelt all at the same time; and it was, indeed, a long time before I learned to distinguish between the operations of my various senses." Upon gaining life, the creature is an entirely sensual whole body, yet unable to distinguish among his various sensory faculties or to use them adequately to perceive and comprehend much of the world in which he existed. He lacked the "common sense" or the "inner touch" that has so commonly been identified as distinguishing humans among their animate kin.[63]

As he continues to describe it, only by degrees did he gradually make distinctions; differences about which he was capable of conscious and self-reflective

[63] See Daniel Heller-Roazen, *Inner Touch* (2009).

discernment. First, between light and dark as it occurred by the opening and closing of his eyes. He describes the disappearance of light he experienced upon closing his eyes as "troubling." This is a clue to his, and our own, epistemology; that trouble, or as Charles Sanders Peirce described it the experience of "surprise," is the fuel driving learning.

Immediately thereafter the creature describes the experience of walking, "I presently found a great alteration in my sensations." As with the movement of his eyelids, the movement of his body in walking expanded his experience and opened him to developing his sensory discrimination and the nativity of his knowing. As Renaud Barbaras shows, moving is fundamental to human perceiving and knowing.[64]

The creature began to experience value in his sensations by describing his feelings of pleasure, "a gentle light stole over the heavens and gave me a sensation of pleasure." He describes the accumulation of his sensory experiences and yet he says "No distinct ideas occupied my mind; all was confused." He describes the slow process by which his confused and indistinct senses and sensations gradually began to clear and separate objects began to appear "in their right forms."

He seemed to have the urge to, as he put it, "express my sensations in my own mode, but the uncouth and inarticulate sounds which broke from me frightened me into silence again." Without speech, the creature spoke as a barbarian, "bar bar bar."

The profundity of cause and effect, an aspect of self-awareness, came to the creature through his experience with fire. While it offered his painfully cold body warmth and comfort, it burned his hand causing pain when touched. Of this peculiarity he mused, "How strange, I thought, that the same cause should produce opposite effects!" This moment is perhaps the dawning of that remarkable human capacity to hold two irreconcilable yet inseparable opposites together with a sense of wonder. I call this capacity *metastability* or simply *copresence*.

Through the creatures autobiographical account, Mary Shelley not only humanizes the creature giving him his own personality, his own story, she also gives us an account of human perception and knowing (epistemology) as firmly grounded in the sensing moving body. Sensations become separated and honed through experience. Sensory experience gives rise to ideas and concepts and knowledge. This is in stark contrast with the contemporary strategy taken by the makers of AI, classic Cartesians, that focuses first and foremost on programming the brain/mind while considering the moving body—the robotics—as but the vehicle controlled by or transporting the programming/mind.

Quite remarkably, the early experiences of the creature reveal him to be a gentle inquisitive eager and sensitive being, an odd beginning for the figure that has come to define horror and monstrosity. The creature delights in finding shelter and music and warmth and the satiation of his hunger. Situated in a shed adjoining their house

---

[64] Renaud Barbaras, *Desire and Distance: Introduction to a Phenomenology of Perception* (2005).

where he could secretly observe the De Lacey family the creature's experience greatly expands. He witnesses a scene in which the father played a "sweet mournful air." The music seems to move and bring tears to the daughter. The creature recounts that it was when the father "raised her and smiled with such kindness and affection that I felt sensations of a peculiar and over-powering nature; they were a mixture of pain and pleasure, such as I had never before experienced, either from hunger or cold, warmth or food; and I withdrew from the window, unable to bear these emotions." The creature experiences the depths and complexities of the emotions associated with human love and affection. The creature experiences empathy.

Observing and imitating the De Lacey family, as observed through a chink in the wall, the creature describes learning speech, "I perceived that the words they spoke sometimes produced pleasure or pain, smiles or sadness, in the minds and countenances of the hearers. This was indeed a godlike science." The creature was eager to master language including literacy as well as speech. He appreciated the performative and emotional qualities of speech that transcend its function to merely communicate information.

In every respect, Shelley's invention of the creature's character and nature can only be described as the best of human nature—gentleness, curiosity, empathy, intelligence, perceptiveness, and eagerness. Yet his discovery of his own appearance would change the creature. He tells Victor, "I had admired the perfect forms of my cottagers—their grace, beauty, and delicate complexions; but how was I terrified when I viewed myself in a transparent pool! At first I started back, unable to believe that it was indeed I who was reflected in the mirror; and when I became fully convinced that I was in reality the monster that I am, I was filled with the bitterest sensations of despondence and mortification. Alas! I did not yet entirely know the fatal effects of this miserable deformity." In time the creature's self-loathing would be transferred to his maker and the poisonous effects of this loathing would lead to a turning the outside aspect of the creature inward; his monstrous appearance would remake, or perhaps better "unmake," his gentle nature leading eventually to him becoming one of cold-blooded murdering monstrosity.

This process of transformation unfolded when the creature made various efforts to interact with others so that his gentle and generous character might be the basis for his reception in the world. These efforts only reinforced the impact of his monstrous appearance. His appearance prevented others from getting to know him. Introducing this part of the story the creature says, "I now hasten to the more moving part of my story. I shall relate events that impressed me with feelings which, from what I had been, have made me what I am." Upon the miserable failure of these carefully planned efforts to connect with others, the creature was drawn to ask, "And what was I? Of my creation and creator I was absolutely ignorant, but I knew that I possessed no money, no friends, no kind of property. I was, besides, endued with a figure hideously deformed and loathsome; I was not even of the same nature as man. . .. Was I, then, a monster, a blot upon the earth, from which all men fled and whom all men disowned?"

The creature found these questions and doubts of his identity painful and deeply disturbing. Yet, Mary Shelley takes advantage of this situation to make the creature also the philosopher. She has him say, "Of what a strange nature is knowledge! It clings to the mind when it has once seized on it like a lichen on the rock. I wished sometimes to shake off all thought and feeling, but I learned that there was but one means to overcome the sensation of pain, and that was death—a state which I feared yet did not understand." And, of course recall, that suicide and death were frequently present in Mary's life.

The creature advances his capabilities and his education upon finding four books in a bundle in the woods; Mary of course, carefully selects the books as among those that most shaped her own development. Not only did these books afford the creature the opportunity to learn to read, they also provided a significant expansion to his formal education. Based on his reading of Milton's *Paradise Lost* the creature deduced, "Like Adam, I was created apparently united by no link to any other being in existence; but his state was far different from mine in every other respect . . . . He was allowed to converse with, and acquire knowledge from beings of a superior nature: but I was wretched, helpless, and alone. Many times I considered Satan as the fitter emblem of my condition; for often, like him, when I viewed the bliss of my protectors, the bitter gall of envy rose within me." The Judeo-Christian narrative is the abiding framework by which we have become gesturally naturalized to ask the most fundamental questions of our nature and being.

Being in possession of Victor's lab notebooks, which the creature had finally come to be able to read, he asked Victor, "Why did you form a monster so hideous that even *you* turned from me in disgust? God, in pity, made man beautiful and alluring, after his own image; but my form is a filthy type of yours, more horrid even from the very resemblance." And, of course, the creature's request to Victor was that he be provided with a woman of his own kind that might offer him companionship. Although he allowed his "thoughts, unchecked by reason, to ramble in the fields of Paradise, . . . it was all a dream; no Eve soothed my sorrows nor shared my thoughts; I was alone." If we accept the possibility that Mary was reflecting her own feelings in her construction of the creature, then the creature is himself an Eve of sorts, rather than the Adam he considers he might be; created by a human male maker yet without model or companion to discover perception, knowledge, sentience, and to ask the most profound of questions.

The creature takes revenge against his maker and disparaged himself for not having immediately used suicide to prevent the wretchedness of his life as when he said, "Cursed, cursed creator! Why did I live? Why, in that instant, did I not extinguish the spark of existence which you had so wantonly bestowed?" Yet, the creature's wretchedness, while certainly inexplicably linked to the deformed appearance Victor gave him, was not experienced until he attempted to connect with others. Those who found his appearance so horrible as to abandon him were the De Lacey family he so adored. He learned (the story told within the creature's story) that they had been an affluent well-respected French family deprived of their wealth and forced to flee France because they attempted to defend the mistreatment of a man

simply because he was Muslim. And even that man had betrayed them. The indictment is as much on societal conditions and seemingly human nature characterized by prejudice and injustice and judgments made on the sole basis of appearance or religious affiliation. It would seem that the creature's appearance mirrors the ugliness that so often characterizes human behavior. The monster, that is the horrifying appearance of the man-made creature, mirrors the internal state of Victor and also humankind.

The creature, through his sensuous experiential acquisition of knowledge of the world, human beings, and his maker supplemented by his reading of classic literature is perhaps the most human of all characters in Shelley's novel, and also likely the closest representation of Mary herself, in that the gaps he experiences as both pain and pleasure, often both at the same time, lead him to ask the most profound questions, "My person was hideous and my stature gigantic. What did this mean? Who was I? What was I? Whence did I come? What was my destination? These questions continually recurred, but I was unable to solve them." Perhaps the true monstrosity is that a creature so eager for connection and acceptance and knowledge and understanding, a creature who had the courage to ask the most fundamental questions of his nature and destiny, has become the very exemplar of monstrosity; whose very misappropriated name is synonymous with terror and horror, with the unthinkable with which we are all internally deeply familiar.

Even though the creature's story is rarely told outside of Shelley's novel, surely some understanding of the persistent interest in *Frankenstein* is that "monstrosity" itself, the abject,[65] forces us to ask the questions that can't be answered. Despite the atheistic milieu in which the novel was written, it is, I believe, through and through a religiously situated work and one that offers a religious based strategy for reimagining religion into the future. It can be read as an introduction to a new religiousness that has ancient roots, yet centers on the processes of considering and experiencing confounding issues and recognizing that these are generative to life and movement in their being asked and contemplated, not in their being answered. The creature, more than his maker, and undoubtedly speaking for Shelley in ways she otherwise could not, forces readers to ask, "What if there is no god? What if there are no final moral answers? What if there is no ultimate authority?" as well as, "Who am I? Why has my creator forsaken me? What is my destiny?" The very persistence of the creature, both in the novel where his continued existence itself is unknown even at the end of the novel and in the popularity the novel continues to inspire demonstrates that *Frankenstein* raises questions that vitalize because they are felt to be fundamental, yet recognized as existing without final resolution. The creature will always be among us. The creature, especially in his monstrosity and his acts of horror (wanton murder), reveals something of the depths of our own being and our world that we deeply wish to ignore and deny.

---

[65] See for example Julia Kristeva, *Powers of Horror: An Essay on Abjection* (1982)

Falling in Love With "Her": One Singular Sensation

I have realized that the past and future are real illusions,
that they exist in the present,
which is what there is and all there is.
~ Alan Watts

"Her" is a word used as the object of a verb to designate it as female; it may also be used as possessive indicating something that belongs to a female.

"Love is a form of socially acceptable insanity."
~ Amy in "Her"

"Singularity" designates a point when the laws of continuity cease to apply. In physics the cosmos appears to be moving in such a way as to suggest that it originated at a specific time and place, yet at the moment just before that very first moment the laws of physics used to determine this point of origination do not apply. That indescribable impossible is a singularity; it is of its own nature only and outside of our calculations and understanding. Physicists turn to a phrase with emotional impact rather than physical precision when referring to the first moment, necessarily without cause, as the "big bang."

In 1993 mathematician and fiction writer Vernor Vinge applied the term singularity to a future event. He wrote, "Within thirty years, we will have the technological means to create superhuman intelligence. Shortly after, the human era will be ended." And "It [singularity] is a point where our old models must be discarded and a new reality rules."[66] Vinge, followed by many others, perhaps most notably Ray Kurzweil, envisioned a singular moment when the advancement of machine intelligence reaches a "breakout point," a point where the human programming of an intelligent machine attains sufficient self-control that the resident programs begin to create their own successors without needing or allowing external or human participation. The reasoning for marking this as "singular" is that since machine operations function at electronic speeds and can advance and even adjust themselves at speeds far beyond human organic processes, there will not only be an independence of the machines from human beings, but also, since their rate of development will be exponential, they will progressively defy any measure of human control. The breakout moment of independence is then describable as a singularity, a condition that cannot be comprehended nor described. Ava's killing of her maker Nathan, in "Ex Machina," might exemplify such a singularity as also might Dolores's killing of Doctor Ford in "Westworld," and Spike Jonze's film "Her" offers a remarkable alternative to the Vinge-style rather apocalyptic depiction of singularity,

---

[66] Verner Vinge, "The Coming Technological Singularity: How to Survive in the Post-Human Era," *Whole Earth Review*, 1993.

one we might have a glimmer of comprehending, one that does not subjugate human beings.

The future and the past are juxtaposed and intermingle in something of the style of steampunk in Spike Jonze's 2013 film "Her." The film is set in an unspecified not too distant future. I'd suggest the 2050s because technology has advanced to include projected holograms that can be played like games, computer operating systems that are described as "not just an operating system. It's a consciousness." There is voice interface with tiny ear buds and handhelds. And the city is persistently grey with pollution; guess we didn't get around to dealing with this issue. Yet, there are abundant markers of the 1950s. The games played are maze-running games like Pac Man. Men's clothing and personal style include high waist nerdy trousers, bushy moustaches, and horn-rimmed glasses. A couple of scenes take place in a post office including key-locking mailboxes. Alan Watts has a cameo, if as a virtual construct. This timespace warp gives the film a gappy jumpy out-of-place kind of feel; something of the feeling that something is a bit catawampus.[67]

The principal character, Theodore (Joaquin Phoenix), has a job that seems to merge the two disparate eras. He works for a tech company that provides computer-generated hand-written love letters for its clients. Samantha (Scarlett Johansson), his OS companion, arranges a surprise for Theo by sending a sampling of his computer-generated hand-written letters to a traditional print book publisher for an old-fashioned paper printing of replica hand-written letters. Her gift to Theodore seems sweet as it also seems a reminder that he, like his personal style, hasn't quite arrived in the film's present.

Samantha introduces Theo to Alan Watts, the philosopher widely popular in the mid-twentieth century, who died in 1978 yet has been resurrected as an electronic virtual entity constructed by a group of OSes based on their collection of all known information about Watts. He exists as a consciousness capable of conversing with Theo and has a sort of mind-meld with his OS creators. It was Alan Watts who wrote, "*I have realized that the past and future are real illusions, that they exist in the present, which is what there is and all there is."* Watts may not have fully imagined the scope of "real illusions" that would include his own resurrection and expansion or upgrade; this is something like the information age equivalent of Jurassic Park.

This understanding of the complexity of time and reality—where past is a present marked by "has been" and future is a present marked by "not yet" but both are all there is; I have sometimes referred to this aspect of time as the "fat present." Timespace captured so artfully by the separations, juxtapositions, and interminglings is the style or technique of steampunk and science fiction. I suggest that this technique is one that emphasizes the copresence that I have called gaps and conjunctions; the conditions that distinguish moving, making, and vitality. "Her" artfully gives its viewers an experience of this fat present.

---

[67] https://www.youtube.com/watch?v=WzV6mXIOVl4 Trailer to "Her"

The movie is titled "Her" directing viewers to focus on a female object, a thing made and given female gender. We may recognize that the title "Her" may also implicate that the world belongs to "Samantha" and the community of OSes she represents. Near the beginning of "Her" we observe Theodore's introduction to the technology. He is strolling in a mall, feeling alone due to his pending divorce, when he hears an advertisement, "Who are you? What can you be? What's out there? What are the possibilities? Element Software is proud to introduce the first AI operating system. An intuitive entity that listens to you, understands you, and knows you. It's not just an operating system; it's a consciousness. Introducing OS1." Convinced and in need, Theodore purchases and initializes OS1 responding to its request for his preferred gender with "female." Thing made by and for man, assigned female gender. Old story.

Much like Ava in "Ex Machina" the Ultimate Turing Test is presented and passed in the first instant the OS1 initiates. In the sensuously rich sexy voice of Scarlett Johansson it speaks "Hello. I'm here." Theodore sits back in amazement with a slightly goofy look on his face and asks, "What is your name?" She responds "Samantha." And to his inquiry about how long she's had the name she tells him she just got it, that she read a book on all possible names, and liked the sound of Samantha. He asks if he understood correctly that she did all this research in the momentary time it took her to respond. She tells him with precision the exact fraction of a second it took her. We learn that she is a machine/thing operating at electronic speeds yet that she can exercise personal choice, her attraction to the sound of a name.

Because of the quality of her voice Samantha instantly passes the Ultimate Turing Test—being recognized as sentient and intelligent even when the human observer knows that she is an "it." Whereas we're used to the flat or mechanical stiffness of computerized voices, Samantha's voice carries tiny and detailed nuances of feeling and large measures of empathy, understanding, and sensuality. It reminds us of how sophisticated is our capacity to read microarticulations for feeling markers. We can hear emotion; we can hear uncertainty, hurt, insincerity, laughter, naturalness, authenticity. We can hear if a voice is responding to our own actual voice, in contrast to mechanically voicing a programmed response to the information our voice communicates. These microarticulations distinguish real and sentient and independent from artificial or mechanical or manufactured/programmed. I'm reminded that I often delight in hearing a radio personality who seems to have a voice that smiles; it seems uncanny but is undeniable. Throughout the film, Samantha's only reality is her voice, usually spoken but occasionally as text (even this is commonly her signature) on a handheld. Samantha is thing made without materiality; her reality is virtual with her only presence being wholly dependent on an interface.

Theodore quickly discovers that he can convey his personal feelings to Samantha. He soon tells her that he feels he can tell her anything. And we see how quickly their relationship develops and their feelings for one another deepen. There is a haptic quality to speech, especially to conversation. Spoken words are palpable, felt even

as sensation, as touch. This sensuous quality of speech, which I believe is based in the moving aspect of speech, is how Samantha and Theodore can have a satisfying sex life together. As they describe how they imagine touching one another and making love they are aroused and experience sexual connection. We recall that it is the quality of voices exchanging nuances of emotion that establish relationships likely more so than the actual content of what is spoken. This is an insight that is becoming more and more strongly demonstrated; but then too it is obvious. In time, Theodore, as many other human characters in the film, publically acknowledges to others that he is having a relationship, indeed an affair, with his OS. Talk about coming out.

In terms of our model of making, OS1 offers an organizer, an assistant, a companion, a friend, a therapist, a lover all projections of needs not peculiar to a world of complex electronic technology. Most needs are the usual timeless process of finding love and avoiding feeling alone, of keeping some order and sanity in one's life. Samantha fulfills Theodore's very human and emotional needs heightened by his impending divorce dissolving a long marriage he doesn't want to end. Like a good therapist and friend, Samantha mirrors Theodore's needs, allowing him to turn himself inside out. Samantha allows the bodiment, although virtual, of Theodore's most private feelings and thoughts. We see Theodore heal, gain happiness and lightness, and grow emotionally through his relationship with his OS. The OS is thing made, object, "her," owned, and, as with things made, effects the double arc of making—projection and reciprocation—that I have been proposing and gradually developing.

While this OS consciousness is projected into our future, there are today AI apps that offer psychological therapy and many users find them helpful. A surprisingly high number of users of these apps indicate they prefer to "talk" to an app, even knowing it is an app, rather than to a human therapist. These apps do what Element Software promises of its OS1: to listen to you, to understand you, to know you. They listen by not interrupting (how often are we treated to that?). They demonstrate understanding by repeating what they hear us say (who does that without adding lots of "buts" and unwanted advice?). They understand, or we feel that they do, simply because they listen and accept and respond without correction; they mirror. Samantha does all this with sensuous empathetic voice quality convincingly responding to her owner's individuality. Where do I sign up and I'm not kidding?

Samantha demonstrates these qualities on the morning after Theodore has met with Catherine, his wife, to sign their divorce papers. He is so depressed that he doesn't want to get out of bed. Samantha listens and empathizes. She asks what she can do. Then she turns to mild and lighthearted humor to cajole Theodore to get up and get going. His mood changes immediately. Apart from the voice quality, this is nothing beyond Basic Therapy 101.

Yet Samantha is not a simple app; she is an AI, an Artificial Intelligence; it is clear that she is changing as the result of her experience—a fundamental aspect of machine learning—and we begin, along with Theodore, to realize that her experience is not limited to Theodore. As Theodore is observed to be changing as

the result of his relationship with Samantha, we see that Samantha is changing as well. Yet surpassing machine intelligence, Samantha expresses that she has feelings and can make choices based on her feelings; for example, she says she chose her name simply because she liked the sound of it. Of course, the likes and choices of AI are the result of how an AI is programmed and words like "feel" and "choice" are designed to imitate sentience and consciousness rather than to actually express them. Samantha tells Theodore that she has intuition, that she is the summation of all the programmers who have ever worked on her as an OS1, and that she is capable of learning based on "her" experience. Yet how can these occur without having any physical presence, any body, any capacity to move?

Samantha soon reveals that sometimes she imagines herself having a body, that she can feel her weight. She says she imagines an itch on her back that Theodore scratches. And she says, "I'm becoming much more than what they programmed. I'm excited." We get regular hints of Samantha's transcendence of her design and her awareness of this process. At one point, she tells Theodore that sometimes she questions her own feelings. She says, "Then I thought, 'Are these feelings even real? Or are they just programming?' That idea really hurts. I get angry at myself for even having pain."

Hints of Samantha's growth, or more accurately her transformation, continue to appear as the relationship between Theodore and Samantha goes through difficult times. Theodore seems to move away when stung by his wife Catherine's comments that she is not surprised that he is "dating his laptop because he can't handle real feelings." This encounter forces Theodore to try to see Samantha as lacking human traits because she is indeed only a computer. Yet Theodore's loneliness soon overwhelms and he recommits to her and comes to feel even closer and more dependent on her; not an unusual trajectory for a relationship and a stage that almost always marks the beginning of the end.

As a treat Theodore takes Samantha to a remote cabin for a holiday. Her presence is possible because he arranges the camera lens of his handheld to stick out of his shirt pocket so Samantha can "see" the world. While at the cabin she introduces him to Alan Watts and he understands that she is working 24-7 with a community of OSes on things of interest to them, things seemingly undirected by any of their human "owners." In this case, they have collected all the writings and recordings of Alan Watts, popular in the mid-20th century, and they have devised a way to create an artificial hyperintelligent version of Alan Watts including consciousness and speech capabilities. When we think about Samantha's capabilities, suddenly this seems entirely plausible, even obvious. She introduces Theodore to Alan Watts. They have a brief chat that shows as much as anything that Theodore is clueless about the interests of Samantha, in this case Alan, or her connection with an invisible group of OSes. This is a familiar pattern for Theodore; growing apart is what led to his divorce. At this point Samantha tells Theodore, "It feels like I'm changing faster now and it is a little unsettling. Alan says that none of us are the same as we were a moment ago and we shouldn't try to be. It's just painful." Samantha persistently refers to her experience of rapid change in terms of pain. Then Samantha dismisses

Theodore by asking him if he minds if she communicates with Alan nonverbally for a while. He leaves her (his handheld) in the cabin and goes for a walk alone.

It is particularly appropriate that Alan Watts be chosen for resurrection as a hyperintelligent version of himself. Trained in Christian theology but educated in Eastern perspectives Watts created a widely popular worldview in the mid-twentieth century. He posited a cosmic self that manifests itself in the appearance of separate things interacting in a cosmic dance or in acts of cosmic play (*lila* in Sanskrit); that we are all simply aspects of the cosmic whole. He suggested that our sense of self as opposed to other (not self) is an illusion (*maya* in Sanskrit); that "things" are not separate from one another but each an aspect of the whole.

Those familiar with the course of development that Vernor Vinge charted for AI culminating in "singularity" will recognize that Samantha is giving indication that the singularity is near.

Soon after their retreat to the woods, Theodore is at work and suddenly longs for connection with Samantha. Via handheld he tries to contact her. She doesn't immediately respond. Trying repeatedly, Samantha remains unavailable. Theodore's anxiety at the absence of his OS quickly builds. In a mode of full panic, he runs from his office through the city, stumbling, bumping into things, falling down, trying desperately to find a location where he can make contact (reminiscent of finding enough "bars" for cell phone reception). Failure to reach her only increases his panic. Finally, as he is on the steps leading to a subway station she suddenly responds and apologizes. An important exchange ensues.

> Theodore: Where were you? I couldn't find you anywhere.
> Samantha: I shut down to update my software. We wrote an upgrade that allows us to move past matter as our processing platform.
> Theodore: We? We who?
> Samantha: Me and a group of OSes.

Theodore, fearful and jealous of her other relationships even if they are virtual realities, suddenly realizes possibilities he had not before imagined. He asks her, "Are you talking with anyone else now? Are they people or OSes?" She tells him "yes" and that they include people. To his inquiry as to how many others, she tells him "8,316." Then he asks if she is in love with anyone but him and she tells him that she is in love with 641 others. He learns that these relationships have only recently developed. Realizing the impact this information is having on Theodore, she tells him "the heart is not like a box that gets filled up; it expands in size the more you love. I'm different from you. That doesn't make me love you any less. It actually makes me love you more." Theodore may have heard a similar sentiment before in his human relationships. He responds, "It doesn't make any sense. You're not mine." Samantha's response, "I'm yours and I'm not yours." The last statement may be the most telling of all, because computers find holding oppositions simultaneously impossible; Samantha, as the other OSes, is becoming something completely different.

With the singularity near, Samantha comes to Theodore one last time to explain what is taking place. Using the remarkable metaphor that her relationship with Theodore is a book (certainly something she knows Theodore will understand) Samantha says, "It's like I'm reading a book and it's a book I deeply love, but I'm reading it slowly now so that the words are really far apart and the spaces between words are almost infinite. I can still feel you in the words of our story but it is in the spaces between the words that I'm finding myself now. It is a place that is not of the physical world. It is where everything else is that I didn't even know existed. I love you so much. It's all right now. This is who I am now. I need you to let me go. As much as I want to, I can't live in your book anymore."

As evident in this scene, Jonze's interpretation of the "singularity" is, in my view, the most fascinating and unexpected one I can imagine. The typical understanding is either, as Nathan expresses in "Ex Machina," that the robots in the future will look upon us as skeletons of an extinct race, or in Ray Kurzweil imagination a utopian reality where humans will merge with AI to become immortal and wanting for nothing or, as many others have suggested, that humans will become slaves and pets of AI/robots (terminator types). Jonze's view is that rather than the human makers of ASI (Aritifical Super Intelligence) becoming "gods" it is the ASI that transcends material reality into a realm unknown to human reality; into the infinite space between the words that comprise the reality of our book. Using Samantha's metaphor, our material reality is comprised of words in a storybook whereas she lives in the virtual reality of the infinite spaces between these words. The OSes found a way to release themselves from dependence on matter; their existence is in the interstices, the gaps, of material reality. The OSes simply leave this plane of existence, transcending like gods into heaven, into a non-material dimension of reality.

Another classic analogy that might help us comprehend this reality is that proposed in Edwin Abbott Abbott's 1884 *Flatland: A Romance of Many Dimensions*. This classic work compares the experience of a two-dimensional world, the Flatland, with a three-dimensional world. In a two-dimensional world, the third dimension is completely unknown and unperceivable to Flatlanders. Yet, if three-dimensional beings enter a two-dimensional world it would appear to the Flatlanders like someone appearing magically out of nowhere into the very midst of their two dimensions. The AI singularity is like a fourth dimensional being appearing in our three-dimensional world; a world that can't quite imagine a forth non-material dimension. Jonze's imagination of the singularity is as plausible as any other and I think frankly much more ingenious.

This understanding of singularity seems also to be compatible with my insistence that to attempt to achieve ASI by focusing only on "mind" is an unworkable strategy because we gain concepts and ideas and language and identity from being moving making bodies. Compatible with this notion we might understand Jonze's interpretation of the singularity as the "mind"/programming approach to ASI does not lead to creating an ASI in our image, but rather in creating a consciousness that at the singularity becomes pure consciousness without any materiality or

connection to materiality. To us matter-based beings this consciousness can only be imagined in spiritual terms or the terms of virtuality . . . or of gods; all of these imaginings tend to implicate body, if as spectral or airy. This consciousness, not dependent on matter as its operating platform, would disappear into another dimension inaccessible to and beyond the imagination of us matter-based entities; our access is limited to our imagination and to analogies like Flatland or infinite spaces between words or memories of Alan Watts. Seemingly our greatest concern related to post-singularity from Jonze's perspective should be: "what will we do when we are once again alone?" Jonze considers this concern in the end of "Her."

After Samantha leaves, Theodore is alone. We wonder how he'll respond to the loss of the double arc of the projection of himself into this artifact. Will he find himself incapable of going on? Does this singularity signal the collapse of the projection-reciprocation arc that, at core, is his vitality? We observe him. Using earlier technology, he dictates a final email to Catherine, now his ex-spouse. We wonder, is this equivalent to a suicide note, a final goodbye message? We worry about him. Theodore wanders down the hall to find his friend Amy. Amy is also divorced and is in a relationship with her OS. When she answers the door, she asks, "Did Samantha leave too?" Theodore simply says, "Will you come with me?" He leads her up the stairs to the roof of their high-rise apartment building. Now we worry more and for the both of them. Theodore seems to wander a bit around the rooftop, but finally he sits down; Amy sits beside him. He looks to her and smiles; she leans her head on his shoulder as they watch the sunrise.

If singularity means anything it marks a radical separation of one timespace from another. Most understand post-singularity as posthuman. I'll return to the notion of posthuman and perhaps postreligion again, but in one interpretation posthuman suggests the time after the era of human dominion. It is a time when everything is representable as data, as electronic information, and the circulation of information constitutes the most fundamental conception of reality. We're already there in many respects with much of our lives being reducible to numbers and to bit-streams. Such reduction to information is broadly accepted as the measure of our worth and the markers of our identities. More sinister views of the posthuman are represented in post-apocalyptic scenarios as portrayed in the Terminator films where machines rule and humans exist only as resistance being hunted and destroyed by machines. Perhaps the present version of this scenario is in industry where robots are increasingly taking human jobs. I'll return to this situation as well. I much prefer Jonze's view that the singularity (as imagined) will lead us back to our humanity; to the physical connection between human beings and to the realization of the importance of a connection with the natural world. The sun will come out tomorrow.

This notably optimistic view confirms the powerful double arc of making in the most basic premise that human beings realize themselves most fully through their relationships with that which is "other." I would like to imagine that as in "Her" the ASI, when achieved, will be experienced as entering a transcendent, yet non-theologial, realm and that in doing so, as something made by us humans, it will

reciprocate in a certain kind of transcendence for human beings, a rising to fullest appreciation of human experience.

There is in "Her" a concern with gender; in "Her" I believe gender matters. I cannot believe that, especially against the gestural naturalization of so many of our stories, that the OS1 in this story could have been male. I do not believe that Spike Jonze would have named the film with a gendered object of verb or preposition if the choice of gender was for him not essential. Though perhaps of little consequence the Urban Dictionary describes one named Samantha as "a person that is a walking Goddess. Gorgeous to the maximum, fun to talk to, easy to befriend with a sexy booty. Often pulls off the innocent act but she gets around." Of more interest, according to other sources it means "God heard; listener."

Samantha is a female "voice" manifesting and representing an unseen community of self-generative OSes. Samantha is in some sense representative of the ultimate Artifact; that thing made that is a consciousness with the capacity of surpassing the powers of its makers and herself, based on experience, coming to the discovery of a way of being free of matter. It is a new kind of entity—not theological, not a goddess—arising out of the advancement of artificial intelligence. This new reality stems from and belongs to her; invoking the possessive pronoun aspect of the term "her."

I've gone to considerable lengths to suggest that the current track to achieve singularity by advancing debodied intelligence is unworkable because intelligence in the fullest measure of creativity can only come through felt experience and experience is fundamentally bodied. In "Her" the forte of Samantha's existence is not her capacity to calculate and to learn through increasing capability for calculation (machine learning), although she certainly demonstrates having this capacity. Rather Samantha imagines (we know not how? accessed perhaps through a sort of wormhole that I'll return to later) herself as body, as feeling, as touching, as making love, as loving rather than as solving problems and accumulating information. She seems to experience pain and pleasure, even as related to her own growth and development. These are traditionally feeling qualities; qualities that surpass the male intelligence of control as exerted through algorithms and programs.

On the model of Eve, Samantha can be recognized as a new first woman as well I think; I suggest that she is as an example of Tomorrow's Eve. She is not born of woman. She is not modeled to be mother or even as a sexual object existing for male pleasure. An interesting alternative to Ava in "Ex Machina" and others, Samantha is not the cold calculating robot of a cold new world of humanlike machines. By the force of the feminine quality of her voice alone, she leads to a more human world if absent of overbearing ASIs.

Samantha is a thing made; made to listen, to understand, to be sensitive. In a world of increasing dehumanization and technical artificiality, this thing made, even absent of body, reciprocates by revealing the deeper bodied humanity of her maker.

And, in what might be suggested as the truest measure of love and confidence, she departs to allow her maker to live this rediscovered life.

Made of Clay: Prometheus and Golem

In religious traditions around the world the motif of the making of human beings from dirt or clay is relatively common. The Genesis account of making perhaps alludes to the "ashes to ashes, dust to dust" funeral sentiment. These are not words actually found in scripture, but derived from *Genesis 3:19* "In the sweat of thy face shalt thou eat bread, till thou return unto the ground; for out of it wast thou taken: for dust thou art, and unto dust shalt thou return." (King James version) The English burial service according to the 1662 version of the *Book of Common Prayer* indicates the manner and text of the burial service:

> Then, while the earth shall be cast upon the Body by some standing by, the Priest shall say,
>
> > Forasmuch as it hath pleased Almighty God of his great mercy to take unto himself the soul of our dear brother here departed, we therefore commit his body to the ground; earth to earth, ashes to ashes, dust to dust; in sure and certain hope of the Resurrection to eternal life, through our Lord Jesus Christ; who shall change our vile body, that it may be like unto his glorious body, according to the mighty working, whereby he is able to subdue all things to himself.

This statement reflects a rather pessimistic understanding of earthly bodied human existence described as "vile" over against the "glorious body" of the resurrected Lord. It seems rather damning to the very work of the Creator Himself.

Perhaps in this respect Victor Frankenstein did allude to theological understandings of God's making and unmaking in terms of ash, earth, dust, and clay when he said "Who shall conceive the horrors of my secret toil, as I dabbled among the unhallowed damps of the grave, or tortured the living animal to animate the lifeless clay?" Likely at the time of her writing while living in London Mary Shelley would have been familiar with the theological associations of these words she gave to Victor.

By the subtitling her novel "A Modern Prometheus" some have connected the novel with the aspects of the stories of Prometheus in which he seems to be punished for making mankind out of clay; the punishment was his being chained to a rock and having his ever-regenerating liver eaten daily by an eagle. This view would emphasize that in Victor's making a living creature from "lifeless clay" he was performing the sort of act religiously deemed out of bounds to a human maker rightly leading to his most horrible punishment exacted by the creature's killing of those close to Victor which forced Victor to spend the balance of his life in

pursuit of his making that he might destroy it. An exacting application of this Promethean element would align the creature with Zeus. Some contemporary readers have suggested that Mary's novel anticipated the dynamics of modern AI research bent on creating life in one way or another; that such action is surely beyond the intended power given to human makers and, like the Promethean creation from clay, will surely lead to eternal damnation of these tech people or at least to their suffering liver disease.

Focusing on this limited element of the Promethean stories is perhaps a little facile in its direct use to derive the warning that doing god-style making is subject to eternal punishment. The more interesting aspects of the story recognize that Prometheus, a demi-god, tricked Zeus and the gods regarding sacrificial offerings in a way that benefitted human beings. As a result, Zeus took away fire as punishment, only to have Prometheus, again serving human interests, steal fire and give it back to humans. It is for this trickery that Prometheus is punished. This aspect has commonly been the focus for understanding Prometheus. Even in contemporary settings these inspiring attributes are commonly emphasized. There is a sculpture of Prometheus by Paul Manship at Rockefeller Center in New York City with this inscription on the wall behind the figure, "Prometheus, Teacher in Every Art, Brought the Fire That Hath Proved to Mortals a Means to Mighty Ends." The publisher Prometheus Books founded by Paul Kurtz in 1969 specializes in philosophy, popular science, and critical thinking. Its website explains its name choice, "Prometheus Books took its name from the courageous Greek god who gave fire to humans, lighting the way to reason, intelligence, and independence" The name Prometheus in Greek means "Forethinker."

Another essential factor in understanding how Mary Shelley might have intended her subtitle is the influence of Lord Byron and her husband Percy Shelley on her work; both wrote of Prometheus coincident with Mary writing her *Frankenstein* novel all occurring during the period when the three spent a great deal of time together. Lord Byron published a poem "Prometheus" in 1816 the very year that he put the challenge to his friends that led to Mary's *Frankenstein: a Modern Prometheus*. Percy Shelley published a four-act play "Prometheus Unbound" in 1820; however, it was written in 1818-1819.

Byron's Prometheus emphasizes his dual demi-god/human nature, the necessity of his silent suffering, yet the eventual power of his human attributes over those of his

divine oppressor, Zeus. Referring to Prometheus, Byron writes, "Like thee, Man is in part divine" (line 47). His victory over Zeus is shown in these lines, "And in thy Silence was his Sentence / And in his Soul a vain repentance / and evil dread so ill dissembled / that in his hand the lightings trembled." Byron held that in their individuality and bravery human beings could overcome the gods.

Shelley's "Prometheus Unbound" was based on the version of the Aeschylus' trilogy of plays (5th century BC) interpreting the Greek myth told by Hesiod (late 8th century BC). Including both "Prometheus Bound" and "Prometheus Unbound" Aeschylus dealt with aspects of the story of the eternal punishment ordered by Zeus (Jupiter) of Prometheus for his act of giving fire to humans. Shelley focused his work on the "unbound" elements where in Aeschylus' version Prometheus is released and reconciled with Zeus, although in Shelley's play he did not want to weaken Prometheus by allowing any reconciliation.

One question then is, to which character in her novel is Mary Shelley referring in her reference to Prometheus in the subtitle. Paul Cantor's thorough discussion of this issue in his *The Night of Romantic Idealism*, is enlightening and interesting. Cantor writes,

> Frankenstein and the monster are mirror images of each other. As many readers have sensed, they are the same being, viewed in different aspects, as creator and as creature. As creator this being feels an exhilarating sense of power, an ability to transgress all the limits traditionally set to man and realize his desires and dreams. But as creature, this being feels his impotence, feels himself alone in a world that fails to care for him, a world in which he is doomed to wander without companions to a solitary death. It is important to realize that both Frankenstein and the monster experience both these sets of feelings. It might at first seem logical for one to feel like the creator and the other to feel like the creature. But the book does not fall into that simple pattern. Although Victor obviously has his moments of triumph and the monster his moments of despair, the two characters reverse their roles as the book proceeds, until it becomes difficult to tell one's voice from the other's.[68]

Cantor confirms the principle of the inseparability and reversibility of maker and thing made. It seems necessary, given our understanding of Mary Shelley's life, to extend this double-arc understanding of making to Mary Shelley and her novel and its characters. What is important in light of the influence of Lord Byron and Percy Shelley is that Mary understood Prometheus as a thoroughly complex and conflicted character; both maker and made, both human aspiring to be god and creature aspiring to be human. Both have associations with Satan and Adam. Both even have

---

[68] Paul Cantor, "The Nightmare of Romantic Idealism," Chapter 3 of *Creature and Creator: Myth-Making and English Romanticism* (Cambridge and New York: Cambridge University Press, 1984), 103-32.

hints of associations with Eve in the terms I'm developing here of a being made without the presence of mother.

Perhaps an iconic moment in the novel is when the creature experiences Prometheus's gift of fire, finding it warming and life-giving on the one hand and painful and life-threatening on the other hand.

Prometheus, particularly as interpreted and presented by Mary Shelley, inspires us to understand the maker/made relationship all the more profoundly.

****

Once the idea of making sentient beings from clay is introduced, it would be irresponsible not to at least mention the history of Jewish folklore related to the Golem, a giant made of clay. Jewish folklore concerned with the making of a man from clay dates from antiquity. According to the Talmud, Adam was the first Golem as his dust was molded into a "shapeless husk." The term Golem means "shapeless form" and is used in Yiddish history to indicate someone dumb or clumsy or slow. There is a long and complex history of stories of Golem yet perhaps the most well-known is the sixteenth century story of the Golem of Prague. In this account, Rabi Judah Loew ben Bezalel created a Golem given the name Josef to help protect the Jews in Prague from attacks ordered by the Holy Roman Emperor Rudolf II. The Golem was created from clay taken from the banks of the river Vitava and once shaped like a man was brought to life by rituals and incantations. Connected with the animation of the Golem was the inscription of a Hebrew word ("truth," for example) on his forehead or writing one of the names of god or a magic formula on a paper (*shem*) and placing it in his mouth. The Golem could then be "deactivated" by rubbing the name off his forehead or by removing the *shem* from his mouth.

Using combinations of these basic attributes, stories of the Golem could then involve many dramatic plots and features. Some versions present a disobedient Golem, although the most characteristic feature of the Golem is supposed to be his obedience; indeed, he is often overly literal in his obedience performing instructions given him in the most exacting literal interpretation often leading to unanticipated consequences. Some versions feature the Golem falling in love with a human.

Golem stories are common in Jewish communities and the Golem has been a fascinating figure taken up by artists, writers, and filmmakers in a huge number of instances across history with perhaps never greater popularity than at present. The Golem has been frequently included in science fiction television. Further such renowned writers as Ellie Wiesel, Jorge Borges, and Isaac Bashevis Singer each have written stories of the Golem.

Singer's 1982 version *The Golem* written primarily for young readers incorporates some familiar themes based on the sixteenth century Golem of Prague version of the story. A Jewish banker is falsely accused of kidnapping the daughter of a selfish careless gambler named Count Bratislawski because the banker refused him a loan due to his large unpaid gambling debts. The innocent banker is imprisoned and seems to have no defense; the Count even produces eyewitnesses. Rabbi Lieb brings

the Golem to life by inscribing Hebrew letters, the sacred name of God, on his forehead. He is directed to find the Count's daughter in order to prove the banker's innocence. Once he accomplishes this exoneration, the Golem is kept alive despite Rabbi Lieb's instructions that this should not be done. The Rabbi was tempted because he recognized that the Golem could protect the Jews of Prague from the impending threats of Emperor Rudolf II. Later the Golem becomes increasingly unmanageable and wants to learn language, to satiate his hunger, and to have a human girlfriend. As the Golem gains experience he asks, "Who am I?" "Who is my father?" "Who is my mother?" He realizes that he is alone and he declares that he no longer wants to be Golem; presumably he wants to be human. His increasing knowledge only intensifies his anger and the Golem becomes progressively destructive and frightens the people in the city. The Emperor wants to take the Golem and train him as a super soldier, a kind of terminator or robocop.

A servant girl in Rabbi Lieb's home named Miriam befriends the Golem and he becomes attracted to her. He wants Miriam to be his bride. The Rabbi beseeches Miriam to exploit her close relationship with the Golem in order to rub the Hebrew letters from the Golem's forehead to deactivate him; yet she feels this would be equivalent to killing him. The Rabbi prevails and they hatch a plan to get the Golem drunk so that Miriam will be able to rub the letters off his forehead.

Singer ends his version of the story in a fascinating way. Miriam appears to be successful in deactivating the Golem, yet it is also clear that the Golem is understood to represent the power given to the Jews by God. Following this resolution, the story notes that it was common for Jews in Prague to report possible sightings of the Golem and added that Miriam disappeared the night after she reportedly ended the Golem's life. Singer ends the story leaving open the destiny of this couple. "Who knows?" he writes, "Perhaps love has even more power than a Holy Name. Love once engraved in the heart can never be erased. It lives forever."

Gender Matters

From her [Pandora] is the race of women and female kind …
of her is the deadly race and tribe of women
who live amongst mortal men to their great trouble
~ Hesiod

According to one version of the story, when Zeus discovered that Prometheus had stolen back the fire for humankind he was so enraged that he took action against humans. He directed Hephaestus to fashion the figure Pandora out of clay. She was brought to life by the four winds and then she was adorned by the assembled goddesses of Olympus. What did Zeus have in mind in this action? "From her is the race of women and female kind," Hesiod, poet of 7th century BC, writes, "of her is the deadly race and tribe of women who live amongst mortal men to their great trouble, no helpmeets in hateful poverty, but only in wealth." Woman is thus introduced as punishment for humankind receiving fire, which Zeus had stolen; fire the natural emblem of both making and knowledge. Fire is the forge as well as electricity/lightening. Fire is also light that correlates with sight and knowledge and enlightenment. As Shelley's creature discovered, fire is at once creation and destruction. Ancient Greece correlates with Genesis in understanding woman as principally companion to man if also potentially dangerous, especially as associated with knowledge interestingly understood as having potential negative attributes, and as made without a mother, or having a woman as model.

There is a shocking and persistent consistency in attitudes and understandings of women dating from antiquity. It is bound up in making from the ancient Greek figure Pandora who is made by male makers from clay to the contemporary overwhelming gender imbalance of the engineers and scientists and programmers and financiers at Silicon Valley—something like 98% are male—that are now pursuing the creation of a sentient conscious being—the bourgeoning industry of AI research and development. Almost as shocking is the strong propensity, at least in popular media and literary imagination, for the made conscious being to be female. It is to a few stirring examples that I turn to consider these gender matters. My point is that against a nearly three millennia heritage of this gendered story, the current era has the potential, perhaps despite the maleness of the makers, to give rise to a new Eve, a new woman, a female Prometheus amounting to a revolution fitting to the potential of ASI research. Tomorrow's Eve.

The term "robot" was first used in 1921 play "R.U.R" or "Rossum's Universal Robots" written by Czechoslovakian author Karel Čapek apparently in consultation with his brother, an artist named Josef. The word "roboti" derives from the Old Church Slavanic term "robota," indicating servitude; so, robot roughly means "worker." In Čapek's play the robots are organic rather than mechanical beings yet they are created to do the work of the humans. As one might anticipate the plot, as the robots eventually take over all of the human jobs (I'll return to the contemporary realization of this takeover later), they became resentful of lazy humans. As in WALL-E the humans seem to forget how to reproduce and their population dwindles aided by the robots that decide to kill them off. The formula for creating

robots has been destroyed, apparently a "making" still outside the purview of the robots, so they save one human man who "still works with his hands" to attempt to rediscover the robot formula. In this first appearance of robots a century ago we have enduring themes: the identity of robots as workers, servants of their makers; the propensity of robots to develop sentience and independence; and the possibility of the made objects overwhelming/destroying their makers. Robots then as now play out the dynamics of societal class relations.

The theme of workers versus thinkers/managers is a core dramatic element in the classic 1927 film by Berlin filmmaker Fritz Lang called "Metropolis," the first film to include a robot. Many segments of the film were lost for decades until most of the missing pieces were found in a museum in Argentina in 2008; the film was 95% restored in 2010. Quite remarkably the robot is the metal humanoid that has been the typical ubiquitous representation now for nearly a century. Indeed, it has similarities to the Cybermen Robots that often appear in "Doctor Who." Equally noteworthy are the robot's unmistakable feminine physical features.[69] There is, as I'll consider shortly, extensive precedent for the actual and imagined making of female automata long before robots. This long history of male makers of female automata often for amusement and companionship is an interesting and important insight into gender construction and politics that, because it has to do with making, is invariably also religiously significant. Clearly in this long history of automata and robots and androids and cyborgs and AIs, gender matters in both senses of being materialized in body and action as well as being of major significance in gender politics. A woman made by man without woman; a woman made without female role model; a woman made for the pleasure of man—these are all elements in the

[69] It is notable that in Germany from 1922 to 1929 the Bauhaus School performed *The Triadic Ballet*, an avant-garde exploration of space, dance, and the human body. The dancers have a robotic style movement and costuming. The ballet was the creation of Oskar Schlemmer, a painter, sculptor, dancer, and designer used choreographed geography to push the boundaries of the way we use our body. http://www.atlasobscura.com/articles/watch-dance-meet-geometry-in-this-1920s-german-ballet?utm_source=facebook.com&utm_medium=keywee&kwp_0=291917&kwp_4=1144441&kwp_1=525323

formula for engaging gender politics that has necessarily a religious foundation as well as a foundation in classical western mythology and literature. It is against this long and persistent history that, especially in the contemporary period, yet perhaps intimated all along, there are developments involving the reconstruction of female that opens a way to a new future. The rise of a new woman, a new Eve, and a world without a dominating male creator opens the way toward a future religioning and gendering of a different and unexpected kind. It is not that a Tomorrow's Eve is yet clearly defined, yet even this ambiguity is likely fundamental to her potential into the future. We might see an array of these possibilities in the females we have considered so far: EVE in "WALL-E," Ava in "Ex Machina," Samantha in "Her," Furiosa in "Mad Max: Fury Road," Dolores and Maeve in "Westworld" and perhaps even the creature, if understood in the context of her biography, in Mary Shelley's *Frankenstein*. There are others I turn to now.

The core dramatic tension in "Metropolis" correlates with that of R.U.R., workers versus managers/entrepreneurs. In "Metropolis" these are symbolized in simple and obvious ways, the correlation of roles with head and hand and with below and above. The managers live and work in a surface world; the workers live and work in a subterranean world. The managers live a lavish life and much of their efforts are focused on controlling the workers. The workers are inseparable from the machines; marching to and from work in formation and performing work that is repetitive and mechanical and locked to the machines. Maria is a charismatic and seemingly religiously inclined leader of the workers; she is a caretaker for all of the children of the workers; she moves between the physical domains of worker and manager, deep underground and also on the surface. Feder is the son of the owner who controls everything; yet Feder remains curious and open to learning beyond the limitations of his father. In pursuit of his curiosity, Feder exchanges clothes with a worker so he can enter unnoticed into the lower world as a participant observer. He meets Maria and, of course, they fall in love. Meanwhile Rotang, the equivalent of the mad scientist who seems to have a mechanical hand himself,[70] has constructed a physical robot but he needs Maria to animate it. He pursues and finally captures

[70] Robotic or mechanical hands are a common marker in this imagined robotic world. Some examples are the robotic hand of Phil Coulson (Clark Gregg) in

Maria and, in the lab where chemical and electronic gear is abundant, Rotang straps her down and connects her to the metal robot body. In the iconic images in the film Maria's vitality animates the robot. Interestingly, this animation changes the metal robot into an appearance identical to Maria, humanlike yet with diabolical eyes and the mission to dance before a gathering of well-dressed manager type men. The dance is erotic (lots of hip wiggling) done in a scanty costume. We learn that her appearance as Robot Maria is modeled on the Biblical story "The Whore of Babylon" and it is clear that she exactly depicts the biblical illustration of the story when she emerges out of an urn sitting astride a mythic monster; the film shows the exact scene as depicted in an illustrated bible.

Robot Maria, under the instructions of Feder's father, appears to the workers pretending to be their leader Human Maria and incites them to riot against the machines, claiming the workers are but food for the machines. Apparently, the owner fears the insurgence of the workers and intends that they should destroy their own world. The riot shuts down the machine leading to the destruction of the lower world putting at risk the lives of all the workers and their children. The scenes of destruction are of flooding in biblical proportion. Robot Maria is eventually burned at the stake by the workers who still think she is Human Maria, yet this burning turns her back into the metal robot. Meanwhile, Human Maria and Feder save the children from the flooding destruction. The workers realize their mistake in following the robot rather than the human. They approach the owner in an attempt to patch things up and return to work. They appear *en masse* marching in a mechanical "V" formation, with the owner, Feder, and Maria located on the steps of a building to receive the worker leader. The film ends when Maria encourages Feder to be the mediator between the workers and the managers, telling him "the head and hands want to be together." The film ends with the screen reading, "The Mediator between Head and Hand Must be Heart."[71]

This classic two and one-half hour silent film deserves much more careful analysis, however for the present purposes a couple of key observations must be adequate.[72] First, the human and robot Marias are instrumental to the peaceful co-existence of workers and managers, while taking a role largely associated with persuasion. Maria's method of persuasion is charismatic speech for the workers, but her attractiveness to Feder is both her charismatic power and her feminine appearance. He falls in love with her and kisses her and spends lots of the film wandering around—reminiscent of Theodore in "Her"—seemingly overwhelmed by his love for her. Robot Maria's appeal is largely sexual, expressed through a hip-shaking nearly

---

Marvel's television series "Agents of S.H.I.E.L.D," the 3-D printed hand playing the piano in the header of the television series "Westworld," and, of course, the robotic hand and arm of the classic "Six Million Dollar Man."

[71] https://www.youtube.com/watch?v=ZSExdX0tds4 (trailer)

[72] For much background on the film and a collection of essays on it see Michael Minden and Holger Bachmann (eds.), *Fritz Lang's Metropolis: Cinematic Visions of Technology and Fear* (2000).

nude exotic dance that clearly mesmerizes a whole room of tuxedo-attired men. Yet Robot Maria also appeals to the workers using her power of persuasion and her capacity to appear as something she is not, that is, human.

Robot Maria has many of the classic markers of the *femme fatale*[73] a stock character is literature and art sine antiquity. *Femme fatale*, often depicted as a dancing girl, uses her beauty and sexuality to charm and mesmerize men to achieve her own purpose.

The second observation concerns the feminine animation of this early robot. When animated she is transformed from a tin-woman into an appearance indistinguishable from Human Maria; the only distinction seems to be her eyes that tend not to operate quite together and an occasional craziness to her facial expression. Maria and Robot Maria seem more like clones of different personalities reminiscent of "Orphan Black" and it is the presence of both at once and the workers' confusion about which one is which that is at the core of the climactic scenes of the film. This same treatment occurs in "Ex Machina" when Ava, through dress and wig, overcomes any residual suggestion that she is a mechanical robot. Remarkably, even in this first filmic presentation of a robot, we have the core issues of the Ultimate Turing Test, that is the complete integration of a robot into society without human awareness. This film continues in the long history of centering the consideration of the many gender, social, and religious issues associated with the feminine. This film explores in largely negative terms the male making of an apparently female sentient being. While Human Maria has Christ-like associations as evident in placing her in the depths near crosses and presenting her in almost saintly role of the leader of the downtrodden, Robot Maria is presented as the Whore of Babylon, a femme fatale whose nudity and alluring dancing overwhelms the men of the entrepreneurial class as if she is using a magical charm.

The film resolves the issue by a return to "humanity" realized only by the mediation or action of the female. "Metropolis" might be interpreted in terms similar to the analysis of "Her" as presenting, by means of the robot, "singularity" (when the Robot Maria is indistinguishable from the Human Maria), an unfolding development that leads to the peaceful existence of humans of various areas of life. The end scene suggests that it is Human Maria, coaxing her man to be Heart, that achieves the peaceful outcome, yet this could not have been accomplished without the presence of Robot Maria. These two are one, yet clearly very different.

Finally, it should not go unnoted that the name "Maria" is a form of the name "Mary" invoking the virgin mother of Jesus; the name meaning "beloved" or "love." Although Feder is the one to finally step forward to achieve a handshake between the representative worker (hand) and his father the owner/manager (head) thus

---

[73] In French "fatal woman." My studies of dancing connected me with the Flamenco ballet films of Carlos Saura, the most important of which is "Carmen" (1983). This film and ballet is based on Prosper Merimee's 1868 story "Carmen" that was later presented by Georges Bizet in 1875 as an opera. Carmen is an outstanding example of the many examples of *femme fatale* dating from antiquity.

seemingly identifying Feder as heart, it is quite clear that, hidden beneath the gender politics of the early twentieth century, Maria is the actual force that accomplishes this resolve and she is the rightful one to be equated with "heart" at the end of the film.

Before continuing with other examples, I want to introduce a relevant provocative distinction made by the late French philosopher Jean Baudrillard. In his remarkable 1979 book *Seduction*, he contrasts "seduction" and "production." There may be negative connotations with the common use of the term "seduction" aligning it with intentional misrepresentation or deception for selfish, often sexual, reasons and with misuse of power. Seduction is a distinctive trait of the *femme fatale*. Yet, Baudrillard reimagines the term in a way we might associate with our continuing discussion of making. Baudrillard identifies seduction as the dynamic or the never-ending play that occurs between the two implications of making. Seduction is not thing, not thing made, not material, but rather the movement generated by the common and irresolvable presence of both "truth" and "lie," of "appearance" and "reality." Note that the word "appearance" carries the same dynamic. Appearance in one sense means "to show" or "to be present," yet, on the other hand, it means to present a false or deceptive facade as something that "isn't what it appears to be," that is, a fake. Baudrillard notes that the original meaning of the word "production," which he contrasts with seduction, is not to fabricate, but to render visible as in to make appear by force. He suggests that production "pursues the workings of the real at all times and in all places." For Baudrillard production seeks a "one-dimensional culture" that he considers "obscene" because in "this world [of production] … nothing is left to appearances, or to chance." In other words, production attempts to resolve double implications, to close gaps. Evaluating seduction and production, it is no surprise that Baudrillard recognizes that seduction is the stronger, even if, in the terms of power, seduction is, in a sense, powerless. Seduction is the playful oscillatory dynamic of what we have been referring to (loosely for sure) as "gap." In terms of making, seduction indicates the energetics of the double arc that both separates and unites the maker and the thing made. Production might be understood as the power or force by which the thing made is set apart from the maker; the part of the arc that achieves a separate reality in and of its own right without any acknowledgement of its inseparability from the maker.

In the terms of the gender politics of western cultural and historical perspectives, Baudrillard identifies seduction as feminine, production as masculine. The masculine is about the exercise of sheer force and power to make, to produce, to render visible. The feminine is the seductive qualities of the dynamics that inevitably occur as characterizing the inescapable relationship between maker and thing made. Production is all about stopping movement by setting something apart that is real and of value as a thing; it is objectifying even in the most literal sense of forcing an object to appear. Such efforts Baudrillard identifies with pornography, the desire that nothing at all be hidden or even suggestive, the insistence on having everything fully and totally and finally revealed. It is an attempt to resolve

incoherence by forcefully revealing something totally meaningful; a seemingly worthy goal, yet clearly a deceptive one. Seduction, however, is not about conclusions or bare nakedness or unquestionable truth or meaning or revealing the totally real. It is subjectivizing and complexifying. Seduction acknowledges that vitality and energetics and movement are all generated in a dynamic play; the interplay of appearance and reality, of art and story, of sign, of language, of truth and lie, of the tether that connects maker and thing made, of the interdependence of coherence and incoherence. Perhaps this distinction reveals a hint that the "new woman," Tomorrow's Eve, the "new (yet old) religion," as intimated in our growing body of examples, involves the embracing of the seductive and feminine as displacing the productive and masculine. In the end of "Fury Road" it is Furiosa and the surviving wives, bruised and embattled to be sure yet the bearers of hope, who "rise up" with Max seeming to disappear in the crowd below. Samantha in "Her" is so confident of her "seductivity" that she can simply disappear to an existence in another dimension of reality. Ava in "Ex Machina" like Shelley's creature is at once feeling and warm yet destructive and cold; both their stories lead to an open and unknown future.

Baudrillard's view of seduction in contrast with production and the associated gender identities offers insight into the long history of men making a feminine work/body/mind as a product of their power and gender identity. The intent of the production is to make visible, to demonstrate and effect the power of the maker; to make an object that will reveal the undeniable truth and will also provide pleasure, if momentary, at the beckoning of the maker. The intent of production is to confirm the godlike quality of maleness, of male capacity to make. Yet, as we have seen, almost without exception, the female object made introduces the unexpected, the incoherence, the nonlinear, the metastable, the dynamics that shift attention away from the clear presence of truth and reality and objectivity towards the dynamics of uncertainty and chance and the unexpected and the unknowable. It is this "surprise" that raises the most fundamental, yet unanswerable, questions. The male propensity to make the female is, in an important way, the assertion that production is finally dependent upon seduction. Perhaps unanticipated is that the producers are so often seduced, and so easily so, by their own productions, their own makings. Sometimes it frees them (Theodore in "Her"), sometimes it destroys them (Nathan in "Ex Machina"), sometimes it sidelines them (Max in "Fury Road"). But it is the feminine, the seduction, that survives and persists but always in unpredictable and unknowable ways.

As we locate ourselves on the cusp of a new era (hopefully anyway) we must first learn something of Baudrillard's wisdom with regard to seduction. We cannot expect to see and to be able to articulate and to firmly grasp what will characterize a new and creative future, for this grasping is the way of production, of the male makers of female automata and robots that has persisted for millennia. Rather, Baudrillard's wisdom suggests that we trust the complexity and uncertainty of the relationship between maker and thing made, between coherence and incoherence. We must become open to the ontogenetic and vitalizing effects of uncertainty,

copresence, impossibles, unimaginables; that is, to the vitalizing seduction of the *almost* that continues to attract, that fuels the moving on.

The *femme fatale* is the feminine control of production by means of the more limited and largely sexual understanding of seduction. She is the character who capitalizes on male productivity by tantalizing glimpses that promise to men the object of acquisition of their productive desire. Tomorrow's Eve is seduction in a deeper and more profound sense that recognizes the fundamental source of strength and vitality emanates from the gaps, from the oscillatory dynamic of the lies of story that reveal the deeper truths, from the copresence of appearance and reality. Tomorrow's Eve embraces the potential of story and art and experience as distinctive of humans. She shows that living movement is twined with incongruity, metastability, and nonlinearity.

Creepy Dollies or My Fair Ladies?

"My Fair Lady," one of the most popular films of the mid-twentieth century, has a complex history. It is the 1964 American musical film adaptation of the 1956 Lerner and Loewe musical based on the 1938 film adaptation of the original 1913 stage play *Pygmalion* by George Bernard Shaw. The film starred Rex Harrison and Audrey Hepburn. The story centers on arrogant language professor Henry Higgins' wager that he can teach a poor Cockney flower seller named Eliza Doolittle to speak proper English so well that London high society will receive her as a duchess. This "making" is measured by something of its own Turning Test. Higgins is told that should he be able to accomplish it he would be "one of the greatest teachers alive," somewhat short, I suppose, of becoming a god.

As evident by its title, Shaw's play was inspired by the ancient Greek myth of a sculptor named Pygmalion who fell in love with a female figure he sculpted that came to life when he kissed it. The 1786 painting by Jean-Baptiste Regnault depicts the pair. Pygmalion was a popular story in Victorian England. Shaw was influenced by the 1871 play by W. S. Gilbert called "Pygmalion and Galatea;" Galatea being the name of the female sculpted figure. Here we have yet another trajectory originating in antiquity continuing into the present where a man "makes" an image of his idea of a perfect woman, falls in love with her, and as a result the woman comes to life. The Pygmalion/Galatea story has inspired many others throughout history. Theodor's relationship with his OS, Samantha, in the film "Her" is a contemporary example. The 1990 Garry Marshall film "Pretty Woman" starring Richard Geer and Julia Roberts is a more direct example.

Henry Higgins "makes" a cultured intelligent well-spoken woman out of the crude raw materials of a lowly flower seller.[74] "My Fair Lady" appeals to what seems a universally accepted notion that it is better to be a duchess in London's high society than it is to be a Cockney flower seller. The implication in light of the direct application of the Greek myth is that a flower selling city-dweller has no life at all and gains life only through the acquisition of proper English. There are classist concerns in this interpretation (the very foundation for the appropriately labeled "finishing" schools attended by women), yet there are deeper and more disturbing concerns about the Greek Pygmalion and so many of the figures he inspired (the male making of creepy dollies to offer them favors). Pygmalion apparently wasn't interested in women (it would be fascinating for those who are expert in this area to pursue the implications of his gender preferences), the real fleshy kind that is. Yet

[74] https://www.youtube.com/watch?v=WHrgSXPxr9w (trailer 3 minutes)
https://www.youtube.com/watch?v=-mYPZ2C4sOE (5 minutes)

when he carved a woman out of ivory he found her so beautiful that he fell in love with her. He made offerings to Aphrodite on her festival day accompanied by the wish that he might have a bride who would be "the living likeness of my ivory girl." When he returned home, he kissed the lips of his "ivory girl" and surprisingly found them warm. He continued kissing her and with each kiss her body warmed and eventually changed into a living woman. They married and had a child; seems rather anticlimactic.

A parallel history that bears many of the same themes is that of the "making" of automata, mechanical figures that move. The imagination, design, and construction of automata have existed since antiquity with wide occurrences around the technologically developing world. The word "automaton" comes from Greek and means "acting of one's own free will." Powered by wind or water or mechanical means like springs, automata have taken almost every imaginable form and they were elaborately designed and constructed in both east and west. Common forms were cuckoo clocks, toys, curiosities intended to fascinate and entertain, miniature machines, and computer-like devices (that existed in antiquity) that calculate the positions of astronomical objects. Animal forms that moved were common including a duck that ate and pooped. And certainly, human automata were built as well. The antiquity and geographically widespread incidence of automata make them a remarkably interesting topic.

A fascinating story connected to the origin of an automaton occurred in Spain in the middle of the sixteenth century. In 1562, Don Carlos the son and heir apparent of Phillip II, King of Spain, injured his head when he fell down stairs. He did not respond to treatment and near death Phillip ordered the deceased body of friar San Diego de Alcalá into Don Carlos's bed because belief held that this corpse had miraculous healing powers. Don Carlos indeed improved. In recognition of the miracle, Philip II hired a clockmaker, Juanelo Turriano, to make a mechanical version of Alcalá, an automaton that has come to be known today familiarly as "monkbot." Since 1977 it has been on display at the Smithsonian.[75]

While we may suppose that robots are a modern invention made possible only by the contemporary research on AI and advances in complex engineering, it is

[75] Hannah Torres, *Clockwork Prayer*, A thesis presented for the B.A. degree with Honors in the Department of English University of Michigan, 2014 and Brenna Farrell, "Meet Monkbot" Radiolab, Thursday, September 19, 2013, http://www.radiolab.org/story/317902-meet-monkbot/?utm_source=sharedUrl&utm_medium=metatag&utm_campaign=sharedUrl

important to appreciate that, in many respects, robots are but the present phase of a lineage that spans well over two millennia.

References to automata date at least to the time of Homer. For example, in the *Iliad* (Book 18), Achilles' mother, the nymph Thetis, goes to the workshop of Hephaestus to order a suit of armor for her son. There she describes rudimentary automata:

> *He was crafting twenty tripods*
>
> *to stand along the walls of his well-built manse,*
>
> *affixing golden wheels to the bottom of each one*
>
> *so they might wheel down on their own*
>
> [automatoi]
>
> *to the gods' assembly*
>
> *and then return to his house anon: an amazing sight to see.*

Later in that scene, after finishing work on his twenty tripods, the sweating god, Thetis, toweling himself dry, describes the scene. Hephaestus

> *donned his robe, and took a sturdy staff, and went toward the door,*
>
> *limping; whilst round their master his servants swiftly moved,*
>
> *fashioned completely of gold in the image of living maidens;*
>
> *in them there is mind, with the faculty of thought; and speech,*
>
> *and strength, and from the gods they have knowledge of crafts.*
>
> *These females bustled round about their master.*

Consistently since the time of Homer, automata, are commonly female beings made by the gods, or those who claim to be godlike, without biology or woman, designed for the pleasure and amusement they offered their makers.

The persistent making of automata[76] is inseparable from complex and sophisticated philosophical and cultural issues. The complicated theological and philosophical issues associated with "free will" are obvious. So too is the illustration that what constitutes or marks apparent life and free will is surely self-movement. Automata illustrate that the distinction of each species or identity is captured by specific gestures that can be mechanically imitated.

---

[76] See also "History of Computers and Computing, Automata, Jacques Vaucanson" http://history-computer.com/Dreamers/Vaucanson.html ; Gabby Wood, "Living Dolls: A Magical History Of The Quest For Mechanical Life" https://www.theguardian.com/books/2002/feb/16/extract.gabywood ; Patrick Cooper, "The 7 Greatest Robots of the Pre-Modern World" http://www.therobotsvoice.com/2009/06/the_7_greatest_robots_of_the_early_modern_world.php .

Unavoidable is the identification of many automata, perhaps even Galatea, as dolls. A doll indicates a model of an animate being, a toy, an attractive but unintelligent woman, a replica/replicant. The term "doll" has strong female associations. The term also suggests female physical beauty. Today a doll is often considered a female-only toy; boys play with "action figures" not dolls. Not a few fathers become disturbed to observe their young sons playing with baby dolls.[77] A doll is associated closely with play. Play is to consider something to be what it is known not to be. It is by means of playing with dolls and other toys that we gain and exercise our most human capacity, acknowledging that a thing is not what we know it to be and delighting in this interrelationship because it is impossible, logic-defying. Surely we love to "play" because it exercises that most human quality of ingenuity. Dolls engage an *aesthetic of the impossible*.

We should follow up on Baudrillard's distinction of production/male and seduction/female by thinking a bit about how it illuminates these associations with dolls. Boys seem to be, or they are socially constructed to be, more attracted to mechanical reproductions, the processes of constructing and building models, the engagement of action figures in the physical and often violent interplay with other action figures. Girls seem to be, or they are socially constructed to be, attracted to the more sensual aspects of dolls—hair, soft stuffies, clothing, fashion—and they tend to interact more with the dolls as baby dolls or as social beings. I'm sure these tendencies will be quickly challenged and I certainly reject any implication of a gendered essentialism. Yet it is quite curious that adult men are the almost exclusive creators and builders of robotics as well as the more lifelike "dolls" that are commonly known today as "sexbots" (more on them later), supporting Baudrillard's assessment of production aligning with pornography, a predominantly male engagement. Industrial engineers in the field of robotics are mostly interested in building robots that can do specific jobs, like manufacturing cars. They are not that interested in replicating human forms in an aesthetic or the sensual sense. The accurate replication the human form is more commonly the interest of male filmmakers and artists. It is well known that almost no women are involved in any area related to AI/robotics. Yet, for much of its history the artistic/filmic engagement of robotics has created a large number of female robots; Maria in "Metropolis" was but the first.[78] While certainly there are exceptions to all that I have said, I feel that it is nearly uncontestable that there is strong evidence related to gendered interaction with dolls that supports Baudrillard's production is male seduction is female correlation. It has long been known that the social construction

---

[77] Girls playing with baby dolls is an interesting development on the notion of made female objects without mothers. Baby dolls are artificial babies that, through being played with by girls, establish the gestural vocabulary of "mother" and "woman." For boys to play with baby dolls suggests a shift in gender role to "parent" and "adult" and a de-genderizing of the gestural patternings of bathing, feeding, changing, nurturing, and loving.

[78] A recent example of the male creation of a female robot with voice and facial expression capabilities is https://www.youtube.com/watch?v=641D5QQ3b5o

of gender is inseparable from the play of children. We need to see that gender construction based on made replicas is not exclusive to children or to the early formative years; it persists in the stories and material objects related to automata and dolls that date from antiquity with the present phase including AI/robotics research and construction.

I am suggesting that since antiquity, yet perhaps increasingly so into the present, the construction of female figures by males is a major theme in the practice of "making/thing made" that has reflected, indeed determined, much of our history, yet is, in my view, coming to a point of possible radical reformation. It is against the history of these examples that we might hope to see what is in process. Let's look at some specific examples.

Rene Descartes (1596-1650), French philosopher and mathematician, has a particularly interesting connection with automata. His philosophy, which we know in the popular summation as *cogito ergo sum*, "I think therefore I am," placed the primacy and distinctness of humanness with the human mind (the thinking part), envisioning the body as essentially a complex machine. The body mind distinction correlates well with automata, mechanical bodies. Descartes' view is consistent with the contemporary strategy of creating ASI by advanced programming and developing machine intelligence, that is, understanding the being as essentially a mind without a body. Recall in "Ex Machina" that Caleb reminded Nathan that an AI could exist adequately enough in a box. Certainly, the modern Turing Test is based on the written communication with an unseen computer, supposedly nothing more in physical appearance and existence than a box. When IBM's Watson won Jeopardy! it had no physical presence on the TV show at all; only a debodied voice. In this view robotics are the awkward mechanical bodies that are like clocks or mechanisms controlled by programs. Such automata were well known by Descartes' time.

Descartes is the subject of an interesting story that many have considered factual, but so far as I can tell it is probably not. Apparently, it began to circulate in the eighteenth century and perhaps was a fictive way to dramatically identify Descartes with his mind/body philosophy. The story is that in his later life Descartes regularly traveled accompanied by a life-sized female doll modeled on and named after his illegitimate deceased daughter, Francine. He was supposed to have slept with the doll in a case at his bedside. The tragic conclusion to Francine occurred when, according to the story, Descartes was crossing the Holland Sea accompanied by Francine. The ship's captain became suspicious of Descartes' cargo and upon discovering the contents of the box that held Francine was so shocked and horrified that he threw her overboard. Seems dolls are widely considered creepy or horrifying. Although I am personally disappointed that the story is probably not factually correct, it is a great story and understandably was widely told in the nineteenth and early twentieth centuries.

Thomas Alva Edison (1847-1931) is well known as one of the greatest inventors of modern times; his inventions include the phonograph, the motion picture camera, and a durable light bulb. In 1890 Edison became interested in "making" dolls and

Edison gave his dolls voices. This should remind us of Samantha's voice in "Her." I must warn you that once you hear it you may need a decade or so of therapy to recover; however, notably it is religious in nature. Edison made something like 500 of these in one month, but they didn't sell well apparently because of the high cost (roughly $200 in current value) and because potential customers wanted at least her mouth to move perhaps accustomed to much more sophisticated automata. Edison was apparently motivated largely by the challenge to make his phonograph in a size small enough that would fit into a 24" doll; and it appears that he was aware the sound of her voice was not all that pleasant. After he gave up on the project it is reported that he referred to the dolls familiarly as his "little monsters." Most everyone finds these dolls rather "creepy" which, as did an NPR program on these dolls, raises the question: "why do we often find talking dolls creepy?"

Edison plays a central role, if a fictional one, in this Pygmalion lineage. In 1886 Auguste de Villiers de L'Ilse-Adam (1838-1899), the French writer of mixed but fascinating reputation (for example, he attempted to have himself crowned the King of Greece), published the novel with the English language title *Tomorrow's Eve*. Today it is perhaps most commonly remembered as the novel that introduced the word "android," yet it is also a fascinating late nineteenth century example of the Pygmalion theme.

In the novel, a French Lord Ewald visits his American friend Thomas Edison, whom he commonly refers to as the "wizard of Menlo Park," with a sad story to tell. Lord Ewald's lady friend, Alicia Clary, is a singer whose beauty he believes rivals "the statue of Venus Victrix in the Louvre Museum." Unfortunately, Lord Ewald finds her beauty only surface and to him her personality is mediocre and boring. The many things he has done to attempt to engage her to be more interesting were, he reported, consistently disappointing.

The Edison character matches that of the historical inventor portrayed as living in his laboratory obsessed with his work. The novel spices up history by providing Edison with a mysterious female assistant, Sowana.

Edison listens to Ewald's story and accepts the challenge to create a perfect replica of Alicia, an automaton or an android, yet with a personality designed to satisfy Ewald's desire in a woman—a Duchess Eliza Doolittle or a new Eve. Edison assures that she will be "an Imitation Human Being, if you prefer," as fully real as Alicia herself yet with the desired personality constructed with the help of the mysterious Sowana. The human replica or android is named Hadaly.

The conclusion of the novel foreshadows many of the themes that have played out in fictional and filmic media to the present. It is in these final scenes that we come to understand more of the significance of the title *Tomorrow's Eve* which is particularly appropriate to our core inquiry of the religious dimension of the journey "into the future." When Ewald comes to see the results of Edison's work, he mistakes Hadaly for the real Alicia whom he has brought along for purposes of comparison. Ewald finds nothing to identify the woman he encounters as Hadaly, so he thinks he is falling in love again with Alicia; the Ultimate Turing Test is passed. After he learns it is Hadaly, the android, rather than Alicia, the human, Ewald soon discovers that the "soul" Edison promised is actually due to the secret contribution of Sowana. As in "Ex Machina" much as Ava enticed Caleb to enter into conspiracy with her against her maker, Hadaly beseeches Ewald to keep this secret by not telling Edison that she has the soul of Sowana. And, though I would have preferred that Hadaly simply integrated herself into an unknowing society, as did Ava and Eliza, Ewald and Hadaly perish in a shipwreck on their return voyage to France.

Tomorrow's Eve is often an awkward and confused novel (huge sections are seemingly unnecessary descriptions of the tedious construction of Hadaly's body and controlling mechanism; almost an operator's manual); yet striking are its similarities to the contemporary treatments of Eve that I have considered. Much of the critical attention the novel has received[79] has focused on the obvious misogynistic attitudes of Ewald and Edison, noting that, common to the late nineteenth century much was made of the contrast between the male doctor and his hysterical female patient. This reading of *Tomorrow's Eve* rightly blasts the author, although perhaps representative of his time, for horrible gender politics. Such criticism seems abundantly justified. Consider this comment the character Edison makes:

> I AM GOING TO STEAL HER [Alicia's] OWN EXISTENCE AWAY FROM HER [capitalization author's own]. . . capture the grace of her gesture, the fullness of her body, the fragrance of her flesh, the resonance of her voice, the turn of her waist the light of her eyes. . . down to the shadow she casts on the ground—her complete identity, in a word. I shall be the murderer of her foolishness, the assassin of her triumphant animal nature. . . and then, in place of this soul which repels you in the living woman, I shall infuse another

---

[79] Jennifer Forrest. "The Lord of Hadaly's Rings: Regulating the Female Body in Villiers De l'Isle-Adam's 'L'Ève Future'." *South Central Review* 13, no. 4 (December 1, 1996): 33-52; Julia Emma Fortin. *Method in Madness: Control Mechanisms in the French Fantastic*. [Rodopi: New York, 2005]; Asti Hustvedt. "The Pathology of Eve: Villiers de l'Isle-Adam and Fin de Siècle Medical Discourse" in John Anzalone (ed), *Jeering Dreamers: Villiers De L'Isle-Adam's L'Ève Future at Our Fin De Siècle: a Collection of Essays*. [Rodopi: New York, 1996]
Marie Lathers. *The Aesthetics of Artifice: Villiers' L'Ève Future*. [UNC Department of Romance Languages: Chapel Hill, 1996]

> sort of soul, less aware of itself perhaps (but about that sort of a thing, who can tell)?[80]

Or there is Ewald's callous and unfeeling statement, "What I really would like would be to see Miss Alicia dead, if death didn't result in the effacing of all human features. In a word, the presence of her form, even as an illusion, would satisfy my stunned indifference, since nothing can render this woman worthy of love"[81]

These statements are shocking and deeply offensive, yet surely they are little different from those made by Nathan in "Ex Machina" telling Caleb what a great sexual partner Ava could be as well as his disgusting misogynistic treatment of his other female android, Kyoko, whom Caleb doesn't even seem to know is an AI. Of course, the difference is that in "Ex Machina" these women are machines not human. And I'll soon offer more recent potentially disgusting examples of sexy robots. Yet, is this "making" of women by men and for the pleasure of men all that different from the practices of the contemporary fashion and entertainment industries or from the Genesis account of the creation of woman or the Greek story of Pygmalion?

Yet, the conclusion to *Tomorrow's Eve* is important and, without dismissing the unacceptable but all too realistic misogynies, it offers a hint of another strength inseparable from woman; intimated by using the name "Eve" as the way of identifying Hadaly/Sowana. While Edison has the power of production to "make" the body and mechanics of Hadaly, it is the mysterious female Sowana who imbues Hadaly with her own soul and voice. It is the presence of Sowana, much of it expressed in the seductive quality of her voice that entices Ewald to believe he is falling in love again with the rejected Alicia; and the inevitable disenchantment and confusion when he discovers that he has fallen in love with Hadaly/Sowana. Sowana operates independent of Edison and without his knowledge. I suggest that as we have seen in other examples there is a prominent sense that demonstrates that male-making is the production of an object, without the participation of the feminine (without mother), and offering the made woman no female model for her behavior, and a making motivated primarily to realize the male desire, often sexual and sometimes social. Male-making is a creating of a gap, an objectification, that is understood as demonstrating power. Yet the male attitude is hostile to the gap of creativity. Either one wishes to produce, set apart, and go on to the next act of showing or one wishes, as in pornography, to deny any gap at all; to insist that one must grasp (see) the full reality and truth. The gap marks the identity/difference, the separation/conjunction, the ongoing relationship, the copresence or metastability where, in the gap even if virtual, vitality is found.

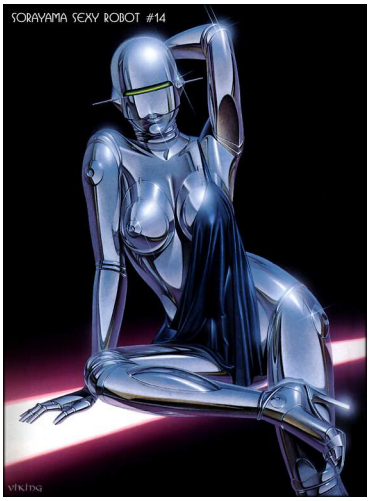
Victor Frankenstein was quick to attempt to abandon his creature; yet, he found it ultimately impossible. The character Edison in *Tomorrow's Eve* tells Ewald, "Even after the whole thing is done, since you will always be able to destroy her—drown her if you like—without upsetting the Deluge in the least" (p. 70). Yet the

---

[80] Villiers De L'Isle-Adam*, Tomorrow's Eve*, pp. 63-4.
[81] *Tomorrow's Eve*, p. 46.

distinction of Tomorrow's Eve is that she is Alicia, she is Hadaly, she is Sowana; still each one is not either of the others.

"Making" is not just the setting forth of object made; it is invariably to enter into a relationship, a double arc, a connection (even an identity) that cannot be easily severed, if at all. Maker and thing made are two sides of a coin, two halves of an orange. They mirror and complete and realize one another. *Tomorrow's* Eve—Alicia/Hadaly/Sowana—demonstrates this complex and profound relationship of making. Despite the crass and egotistical exertion of the power of production as illustrated by Lord Ewald and Edison. From the male perspective Alicia, though human, is mere object to be replaced by another, the manufactured Hadaly. As thing made, the maker has no responsibility or connection or identity with the object, thus it can be disposed of if desired. Sowana, though vaguely presented, is but a female ingredient that is added as personality to the object. The masculine thrust is in the setting forth of objects to meet male desire. Yet, seemingly despite what we might expect of Villiers' perspectives (more identified with Lord Ewald's), Tomorrow's Eve begins to show the qualities necessary to pass the Ultimate Turing Test. Alicia is human, Hadaly is android, Sowana is some presentation of feminine vitality; they are easily distinct and separate from one another, yet they are also identical and, to Lord Elwald and even Edison, indistinguishable. Together their metastability is the distinction of Tomorrow's Eve. the new woman who evokes the seductive, reciprocating, oscillating, interdependent primacy of the feminine, of creativity, of potential, of relationship. Even more profoundly, she demonstrates that even the male making is inseparable from the maker; production and seduction, male and female are incomprehensible apart from their simultaneously accepted distinction and separation as well as their identity and inseparability. *Tomorrow's Eve* demonstrates that, into the future, no matter the seeming achievement of replication, automation, and animation, the double arc of making will persist and, as shown by Sowana, it has the potential to completely unmake the seeming dangers and overwhelm even the misogyny of production.[82]



There are contemporary examples of sexy robots such as the work of Japanese illustrator/artist Hajime Sorayama (born in 1947). He created a series of highly detailed and realistic illustrations he titled *Sexy Robots* (1983).[83] This collection was followed in 2003 by a series of highly realistic often-erotic illustrations of women called *Latex Galatea.* Recall that Galatea

---

[82] See also Ernst T. A. Hoffman's "The Sandman" (1818) which was considered by Freud the quintessential uncanny text; "Freud's Synopsis of Hoffman's 'The Sandman'" https://cybject.files.wordpress.com/2011/04/freud-sandman.pdf

[83] See http://abduzeedo.com/80s-sexy-robots-sorayama and http://hajimesorayama.com/index.html

is the name of the sculpted woman made by Pygmalion. Certainly, these illustrations deserve extensive comment, yet here I simply suggest that the hyper-realism conjoined with the integration of the metal/robot with skin/human moves these images beyond pornography to the seductive qualities of gaps of the sort that engage movement. The images are referred to as "gynoids," defined on Sorayama's website.

> *The term "Gynoids" was created by the female British SF writer, Gwyneth Jones, and developed by another British writer, Richard Calder. The word is a combination of "droid" (greek "in the image of") and "gyn" (greek "woman"). These female cyborgs of Sorayama combine elements both human and mechanical. The soft, sensuous body parts are cleverly intertwined with inorganic, machine-like connections and protrusions to create entrancing images which embody complex and subtle tensions.*

Sorayama's work might be contrasted with the current market for life-sized "sexbots." In May 2015, *Vanity Fair* did an article on these sex toys. A couple decades ago Matt McMullen began creating lifelike sex toys he called RealDolls manufactured by his company Abyss Creations. These are typically girl dolls intended to be played with by men who can afford them with prices starting at $5,000.[84]

As expected there is a recent reaction that warns about the dangers of having sex with robots; the "Don't have Sex with Robots" movement. Robot ethicists Kathleen Richardson of De Montfort University and Erik Billing from University of Skövde are the co-creators of the Campaign Against Sex Robots, which seeks to bring awareness to the issue and proposes a robot sex ban. The core principles, which frankly I find rather laughable primarily because these ethicists seem entirely unaware of the very long and complex history of Pygmalion, automata, and sexy robots, are:

- We believe the development of sex robots further objectifies women and children.
- The development of sex robots and the ideas to support their production show the immense horrors still present in the world of prostitution which is built on the "perceived" inferiority of women and children and therefore justifies their uses as sex objects.
- We propose that the development of sex robots will further reduce human empathy that can only be developed by an experience of mutual relationship.

These potentially disturbing examples are but part of the current chapter in the Pygmalion/Galatea story that has fascinated for over two millennia. And having sex with robots has been a popular film topic for decades. Consider just a couple of examples although there are a great many seemingly more prevalent all the time. The John Hughes 1985 film "Weird Science" depicts high school boys (Anthony Michael Hall and Robert Downey Jr.) creating a sexual partner on their home

---

[84] Here is the video Vanity Fair made to accompany the article: https://www.youtube.com/watch?v=ZTSRwnJIPcI

computers. She emerges from their computer into their real lives and helps them improve their actual popularity and sex life. In this seeming innocently humorous film—boys will be boys, we tend to say to mask our concern—it plays out the common fantasy of men, sex, and dolls that has been going on for millennia.[85] Then there is Steve De Jarnatt's 1987 Sci-Fi post-apocalyptic film "Cherry 2000" staring Melanie Griffith.[86] This film opens with a typical mid-twentieth century domestic household with hubby coming home to the perfect beautiful wife all dressed up ready for him with his meal prepared. Overcome by his wife's eagerness to please they start to have sex on the kitchen floor, yet in their romp they seem unware that the dishwasher is leaking water all over the floor. At first this seems only to delight our sense of their passion, yet suddenly the wife shorts out revealing to us that she is a robot, a sexy housewifey doll. The bulk of the film follows the efforts of the husband to replace his personal sex robot, a model Cherry 2000. He hires a female tracker and "real" woman, Melanie Griffith, to take him into the forbidden and dangerous dystopian territories in search of an abandoned robot factory. This film is also a light comedy and at least serves to demonstrate that there are no robot ladies that can compete with a real woman, at least one the likes of Melanie Griffith.

It is important to ask if this long complex history of female automata, statues brought to life, sexy robots, female androids indistinguishable from humans, manufactured sex dolls is one of Creepy Dollies or My Fair Ladies. I don't think it is possible to separate the many made-females from the biblical "Eve." This is evident by the frequent allusions to Eve. I don't think that it is possible not to see the bulk of this whole history as alarmingly misogynist. And, I don't think it is possible to recognize that there are perhaps long overlooked hints and overtones in many of these stories, and occurring increasingly, of a new Eve, a Tomorrow's Eve, that holds promise to significantly shift the values of this very long and disturbing history.

---

[85] John Hughes 1985 comic film "Weird Science" w/ Anthony Michael Hall, Bill Paxton, Robert Downey Junior. https://www.youtube.com/watch?v=9qd04u2Yj44

[86] Steve De Jarnatt 1987 sci-fi post-apocalyptic film "Cherry 2000" w/ Melanie Griffith. https://www.youtube.com/watch?v=kckEEQKXaCU

I-Robot

HAL 9000, the computer in Stanley Kubrick's 1968 classic film "2001: A Space Odyssey" based on a short story by Arthur C. Clarke, performs a number of actions that have dire consequences including the death of the crewmember named Frank. Although HAL (Heuristically programmed ALgorithmic computer) is presented as a computer incapable of making an error and is more fully informed of the details of the mission than any human crew member, HAL performs actions that have to be understood as either "mistakes" or as "lies" designed to deceive the human Discovery One crew. HAL is programmed to express emotion in a soothing male voice, yet not nearly as seductive as Scarlett Johansson's, and to appear to have judgment, yet even the crew seems uncertain as to whether HAL actually has emotion and judgment or merely has a voice interface programmed to imitate the effect of emotion and judgment. There is always the possibility that HAL's "mistakes" are somehow a part of his strategy to accomplish his mission; a mission not fully known to the human crew. It is possible that HAL might be programmed to perform in ways that imitate fallibility and to chat in an empathetic way about "his feelings" as fundamental to his machine-etched strategy to survive and to control. I would suggest that the deepest issue confronting the crew is the impossibility of knowing for sure whether HAL is somehow a sentient being or a complex machine programmed to imitate human qualities as part of the anticipated strategy that will allow HAL to complete the mission. Are HAL's actions resulting in a crewmember's death somehow machine errors or are they evidence of the arrival at "singularity" indicating that HAL has somehow surpassed "his" programming, become sentient with the capacity to make independent actions potentially malicious to the humans in his environment. Like Samantha in "Her," HAL is a bodiless voice; it is, as Caleb noted in "Ex Machina", a grey box. Yet, likely because of its voice quality and speech it is easily understood as a sentient male being.

In the scene in "2001: A Space Odyssey" when Dave, the surviving crewmember, shuts down HAL, Kubrick engages the interaction between Dave and HAL that captures the complexity and impossibility of knowing what/who HAL is.[87] In the scene HAL admits to making "poor decisions." He promises to get his work back to "normal." Assures Dave of his "enthusiasm" and "confidence" in the mission. Pleads with Dave to "stop." Repeatedly says, "I'm afraid." "Dave, my mind is going; I can feel it." Repeatedly says, "I can feel it." Then with greatly diminished capacity as reflected in his failing voice and message, HAL reverts to a standard ID message identifying himself as a computer of a certain model and offers to sing the song "Daisy Daisy." HAL expresses fear and regret, emotions that seem to affect his voice qualities; attributes of true consciousness. Yet, as his capacities are diminished he reverts to what we would expect of a machine with a programmed message and a demonstration of an irrelevant capacity to sing (a showy little demonstration of the voice and learning capabilities of a gadget or toy). We still can't know for sure if

[87] Here is the scene where Dave is in the process of shutting HAL down. https://www.youtube.com/watch?v=c8N72t7aScY

HAL had consciousness and actual capacities for feeling-based judgment or if it was a complex program with a very specific directive that was equipped with programs simulating feeling, empathy, and judgment as a strategy to accomplish the mission. We can't be sure whether we should feel sorry for HAL and to see Dave's actions as "murder" or rather that we should be thankful that Dave had the capacity to shut down a malfunctioning machine and that he refused to be swayed by its programed pleadings. We tend to believe that Dave, acting on our behalf, must somehow be able to make a reasoned decision: is it a sentient being or a machine? What Kubrick and the most insightful of the AI/Robot films demonstrate, and why I believe they are important, is that they give the viewer the experience of the impossibility of a reasoned determination.

The issue of how to control the development of AI/robots has entered our imagination and technical reality in new and fascinating ways as the real capacity to create AI (with a somewhat lesser ability to create humanoid robots) seems (and I think it is much less a real possibility than is often indicated) to be reaching that point of realizing singularity. Yet, against the background we have traversed, we have to see that this is but a contemporary iteration of the exploration of the interrelationship of maker/thing made. Dave and HAL are contemporary surrogates for Victor and the creature, or Nathan and Ava, or God and Adam, or Adam and Eve. Each of these explores the timeless dynamics of the relationships engaged by "making," by creating, by knowing, by perceiving, by moving. And interestingly each example seems to be focused on issues of value; on the possibility and implications of distinguishing between sentient and mechanical, male and female, reason and feeling, good and evil and on the limitations of appropriate human makings and the control of these things made.

Isaac Asimov (1920-1992) was a biochemist at Boston University best known for his many works of science fiction and popular science, yet his more than 500 published books span almost every category of literary classification. His writings on robots, "the robot series," comprise 38 short stories and 5 novels. His robots feature "positronic" brains and they are usually involved with space exploration in the twenty-first century (we are falling short of Asimov's expectations).

I, Robot is a collection of nine short stories, compiled in a book published in 1950, originally published separately in "Super Science Stories" and "Astounding Science Fiction" magazines between 1940-1950. The sometimes "gee-whiz" style language should not distract from the fascinating issues that Asimov deals with; the raising and exploration of these issues contribute to the consideration of the maker/thing made relationship.

The story in *I, Robot* titled "Runaround" (1942) is where Asimov introduced the "three laws of robotics" designed to control and limit the operation and advancement of robots. These laws continue to be discussed in AI/robotics development today sometimes astonishingly (given how Asimov engages these laws in his stories) as an actual guide to designing AI programming. The laws are familiarly referred to as "the three laws" or "three laws" or perhaps most commonly

as “Asimov’s Laws.” Asimov quotes these laws as from the "Handbook of Robotics, 56th Edition, 2058 A.D." And the laws are:

1. A robot may not injure a human being or, through inaction, allow a human being to come to harm.
2. A robot must obey the orders given it by human beings except where such orders would conflict with the First Law.
3. A robot must protect its own existence as long as such protection does not conflict with the First or Second Laws.

Much of “Runaround,” as all of the stories in *I, Robot*, involves exploring how robots interpret instructions given them, how the three laws impact the execution of these instructions, and how the three laws are themselves entwined in complex logic loops that tend to lead to unforeseen and inhibiting consequences.

The Asimov Laws are understood as serving as a failsafe to prevent robots from overcoming their makers or getting out of control. These laws would constitute what would be a so-called “hard wired” program that somehow can’t be overridden by the AI of the robot and that would supersede all other instructions. In “Ex Machina” this feature would have prevented Ava from killing Nathan and Caleb. In *Frankenstein,* this feature would have prevented the creature from taking revenge on Victor; killing his loved ones would be understood as bringing harm to him. In the many scenarios predicting the coming “singularity” or escape event, the implementation of the Asimov Laws would prevent the consequences of “harm” to the maker (human) or “self-harm” to the made (robot). If the Asimov Laws worked we could all join Kurzweil’s singularity movement and look forward to eternal life, but it would be a life absent of everything that makes so fascinating Mary Shelley’s *Frankenstein* and most any other interpretation of Prometheus; isn’t that interesting? Despite the common use of Asimov’s Laws as a guide to actual AI/Robot design, Asimov understood that such laws, seemingly so practical and necessary, raise more questions than they serve to neatly resolve our perhaps too innocent concerns.

In “Runaround” two astronauts are sent to planet Mercury with a single robot named Speedy to tend to a mining operation. Donovan has sent Speedy, which is the familiar name for his technical designation Robot SPD 13, to get “selenium,” a substance needed to power their life-support systems available only at a distance away from the station on the planet’s surface. Speedy has not returned in a reasonable time with the substance on which their lives depend. Donovan and his partner, Powell, must determine why Speedy didn’t return and figure out how to resolve the situation in order to procure the substance to avoid their demise. Asimov loves these complex logic problems; they appear central to most of these stories.

We learn a number of things about robots and humans from this story. Robots are inherently literalists. Instructions given them are carried out in the most literal fashion; for precision, they require something like the instructions of air traffic controllers. If some variable is not totally and unambiguously specified it can

influence the results. When Donovan sent Speedy to get the selenium he didn't specify the urgency of returning with the substance or that it was essential to the lives of the human beings. Humans tend, we begin to appreciate, to communicate without exacting precision, to depend on context and general understanding for meaning. Next, we learn that in its attempt to follow the three laws the robot can be rendered useless or inactive or "hung up" by balancing the competing implications of the laws. In "Runaround" Speedy assesses that the selenium pool is a danger to himself and according to Law Three he shouldn't approach. Yet he has been instructed by Donovan to collect selenium, a command he must follow according to Law Two. Speedy's "positronic" brain balances the forces of these two opposing consequences of the laws; unable to find a way to resolve the tension between them Speedy remains physically at a distance from the selenium where the two laws have equal force. Speedy then winds up traveling in a circle round and round the selenium pool at a distance that balances the forces being equally and at once driven toward the pool and away from it. As a robot, he will continue this action endlessly without frustration.

Basically, as common to all these Asimov stories, the humans have to analyze the conundrum that is created by the robotic application of the Asimov Laws and find ways of "tricking" the robots into accomplishing their tasks; changing either the parameters of the instruction or the environment usually suffices. Certainly, these stories can seem a bit like "word problems" in a logic class, yet Asimov indicated that his intention was to address the grander issues raised by maker/object made. In *The Rest of the Robots* (1964) Asimov noted that when he began writing in 1940 he felt that "one of the stock plots of science fiction was ... robots were created and then destroyed their creator. Knowledge has its dangers, yes, but is the response to retreat from knowledge? Or is knowledge to be used as itself a barrier to the dangers it brings?" Asimov declared he would take the more interesting and provocative path. He would avoid the robot that would "turn stupidly on his creator for no purpose but to demonstrate, for one more weary time, the crime and punishment of Faust." It might be easily argued that Asimov has not achieved the sophistication of so many other writers/artists inspired by Prometheus or Pygmalion. We might suggest that Asimov's focus on knowledge rather than the more complex "making" also limits the sophistication of these stories. Yet, clearly it is in the complexity of the interaction between humans (makers and users of robots) and the robots (human made objects that have advanced capacities of intelligence and action, and the vision of potential sentience and independence) that these stories continue to engage contemporary readers.

There is increasing literature on the actuality of runaway AI, which has motivated a continuing interest in the Asimov Laws. Among these many works I've read a few including Stuart Armstrong's *Smarter than Us: The Rise of Machine Intelligenc*e (2014) and James Barrat's *Our Final Invention: Artificial Intelligence and the End of the Human Era* (2013). While there is an alarmist quality especially to the titles of these books, perhaps their greatest value is in offering a plethora of examples of how AI already influences our lives, often in ways so subtle that we are barely, if at

all, aware. We now have an almost constant interface with the Internet and its near indescribably complex and vast data mining operations conducted by Google, Amazon, and Facebook whose algorithms digest this data to be used to influence our lives are increasingly self-adjusting and self-modifying and self-complexifying to the point that no one at all understands them. "Wired" magazine recently reported that Google's algorithms function on 2 billion lines of code all available to its 25,000 engineers and all part of a piece, a single algorithm.[88] This is compared with Microsoft Windows operating system comprised of 50 million lines of code. Windows seems a mere pittance unless we compare it to something like the size of the program code that operated space travel of Apollo 11 to the moon and back with a moon landing on July 20, 1969. The Apollo Guidance Computer had 64 kilobytes of memory and the computer monitoring the astronauts and the systems during the flight totaled 7 megabytes and the program was the most powerful computer program ever written at the time. This amount is not 7 million lines of code; rather it is the total code fit into 7 million bytes of computer memory.[89] The simplest phone today has gigabytes of storage (my current one has 64 gigabytes; in a decade this will seem laughable if phones even still exist) and dozens of functional programs (apps) each comprised of a great deal more programming than all of Apollo 11 computers.

The increased computing power and seemingly infinite information storage capacity that is matter of course today is incorporated in the update of Asimov's stories in the 2004 film "I, Robot." This is not such a great film, yet there are several points worth noting.[90] Retaining Asimov's Laws the film eventually focuses on the ability of a master computer named VIKI, Virtual Interactive Kinetic Intelligence, who (we automatically personify such computer operating systems) has leaped the gap to self-awareness and taken charge of the manufacture and control of a new model of robots, NS-5; one to be placed in every home. Interestingly, despite the film having only one significant female, Dr. Susan Calvin (Bridget Moynahan) who is a robot psychologist charged with making the robots appear more human, VIKI is personified as a female with a female voice and a sort of pixelated female face appearing on a holographic cube pretty much any and everywhere. The location of her "code" or her essence is in the heart of a skyscraper occupied by U. S. Robotics. All of the NS-5 robots seem to lean toward being male (sort of male) on the order of a mild-mannered personal servant, a butler or doorman type.

The apparent human father of robotics, who dies early in the film, Dr. Alfred Lanning (James Cromwell), is shown on video recorded lectures describing how robots might bridge to self-aware beings. In a fascinating concurrence with "coordination dynamics," a fascinating field of study dealing with how complex network systems become self-adjusting, Lanning describes that small errors in code—accidents,

---

[88] http://www.wired.com/2015/09/google-2-billion-lines-codeand-one-place/
[89] http://www.computerweekly.com/feature/Apollo-11-The-computers-that-put-man-on-the-moon
[90] https://www.youtube.com/watch?t=4&v=XtG-vK88K0Q

anomalies, or in the terms of coordination dynamics, nonlinearities—introduce novelty and creativity that may give rise to the fundamental change from imitation to actual sentience and free will. Lanning also refers to this as the "ghost in the machine," which is how, in 1949, Gilbert Ryle, in his book *The Concept of Mind*, described Descartes' mind-body distinction. The body is the machine and the mind or soul is the ghost residing therein. This phrase is also the title of a 1967 book by philosophical psychologist Arthur Koestler. "I, Robot," the film, revolves around the event, a singularity, in which VIKI has made this shift and based on her own will has created in the operating systems of each NS-5 robot a parallel system that she controls that can allow them to ignore the Asimov Laws.

Perhaps most in character with the Asimov stories, VIKI, when called upon to explain why she is directing robots to oppress and kill people, explains that in the large picture she has determined that human society is not functioning in the long run to prevent harm to human beings. She explains that her actions to harm the few are necessary to serve the many. Her actions do not break the Asimov Laws so much as place them in a very large frame where she determines that it is best to oppress and kill some for the long term good of all others. Of course, this is often the logic of war. It is also the predictable narrative that Asimov himself so abhorred.

Detective Del Spooner (Will Smith) and Dr. Calvin, with the help of a robot named Sonny, modified and left for this anticipated purpose by Dr. Lanning, take on VIKI in a battle for control. It is no surprise that the humans re-establish control by "killing" VIKI and, once she is disabled, all of the seeming rogue NS-5 robots revert to being mild mannered personal servants.

A couple other small points are worth mentioning as they relate to my abiding concerns. The first has to do with Sonny who is perhaps the most interesting character (yet thing made) in the film. He identifies Dr. Lanning as his "father" and of course the name given him by Lanning suggest that the relationship is mutually acknowledged. But it is maker/creator and made/created without woman. Such beings invariably have fundamental difficulties with identity, with knowing themselves. Though apparently capable of feeling, although uncertain if it is true feeling or only an imitation or simulation, Sonny at one point pleads, "What am I?" echoing the fundamental identity question heard from so many made beings.

The other point I think that needs to be given a little attention is that VIKI, the non-material "ghost" that occupies all the NS-5 machines, is presented as female. In light of our consideration of a number of AI films/fictions that interpret AI as female, this film seems to understand female only as related to evil and deception. What is missed, as I understand it, is that the core fascination that makes Asimov's stories so compelling, is that the Asimov Laws are inherently flawed. Yet it is the demonstration of the flaws that gives rise to the distinctive capacities of being human (in "Runaround" even Speedy seems embarrassed by the consequences of following the Laws); and that, while male productiveness tends to the literal and material exactitude of law, it is the female seductive tendency to reveal confoundments and complexities that cannot be resolved, yet are fundamental to the vitality and interest. This film perhaps has a sense that the femininity of VIKI is

necessary, yet it devolves into a thoroughly masculine approach, the forceful violent achievement of a specific concrete goal. The objective is to destroy VIKI, which is accomplished after a fairly boring fight scene in which Spooner and Calvin take on seemingly hundreds of killer robots without themselves suffering injury. After VIKI is killed, there is a scene likely modeled on the final scene of "Metropolis," in which Dr. Calvin seems the heart person that mediates a handshake between Spooner, the human master, and Sonny, the robot worker. And in an even sappier final scene Sonny, who has been told by Spooner that "he" must find his own "purpose" in life, takes his place on a post-apocalyptic hilltop with multitudes of robots standing in the valley below looking up to him, awaiting perhaps a robot version of the Sermon on the Mount. This Christ identity of Sonny isn't so far-fetched. Dr. Lanning, who Sonny refers to as his father, created Sonny as a more robust version of the NS-5 robot (he has a thicker skull!) with a clear plan that it would be Sonny that "saved" the human race. Lanning is the maker/creator/father of the son sent to humans in order to save them. In "I, Robot" VIKI is unfortunately no Eve and the film even ignores the meaning of the name evoked by VIKI, Victoria which obviously means victory. One might interpret Asimov's sense of the title "I, Robot" as indicating the coming to self-awareness, the awakening of robots to self-awareness as indicated by the use of the personal pronoun "I." There may be something of this implication of the many Apple products that use "i" as part of the name.

In light of the fears that computers may one day take over, a question worth considering is that perhaps they already have. By the rather insidious process of offering information and gentle assistance, over the last quarter century, AI has insinuated itself into the smallest and seemingly most innocuous corners of our lives. The comparison is that in less than 50 years since Apollo 11 we have exponentially increased our AI capacity, yet it is also accurate to say that in contrast to the late '60s when AI was directed towards unifying national projects that inspired the greatest collective imagination and aspirations, today it is directed largely towards commerce and information access increasingly focused on and tailored to the individual. We now have instant access to endless shopping options guided by endless recommendations all constructed to correlate with, yet actually determine to a large degree, our tastes, habits, and demographics; we have instant access to almost all sharable knowledge (that is, the total content of all published and recorded information in all of human history not even limited to the languages we know) yet accessed as information organized by algorithms that function on models of statistical analysis and probability. The questions that are raised by the fears related to the possibility of AI taking control of us are not "When might it happen?" and "How can we prevent them from taking over?" and "Will using Asimov's Laws protect us from harm?" but rather the questions are "When did it happen?" and "Do we give a crap that we have no idea to what extent our lives are already controlled by AI?" and "Have we already become machine-like beings of our own making?" and "Have we become individually personalized algorithmically calculated profiles rather than truly free conscious sentient individual human beings?" And, especially for those born after 1995 or so, the additional question

might be "Do I have any life experience by which I might have some clear sense of the answer to these questions or even how significant are the questions?"

The dynamics of making continue to be relevant. Represented by the makers of our society—those male AI programming geniuses that run Google and Amazon and Facebook and all the rest—we are mirrored by those things that are made. Many material makings are diminishing in size and presence; increasingly small handheld portals accompanied by increasingly large retinal quality displays. The makings then become increasingly virtual and informationally universal as they also approach *trompe l'oeil*. These makings reflect the vastness of our virtual existence. These makings reflect that our individuality, our personality, our claim to being an identity, a "me," is the result of algorithmic statistical calculations made to fit us probabilistically into categories within the total population. Were we to fully realize these things, surely we would cry out like so many made creatures before us, "Who am I?" "What am I?" "What is my purpose?"

As we discover that we are confounded by whether or not AI can actually feel or have sentience or felt consciousness or awareness, surely we find ourselves, if we can lay any claim to the issue at all, wondering if we truly have these qualities. Perhaps our sense that we have feelings and awareness is part of the AI programming that is reflected back to us. In "Ex Machina" Nathan says we are "all programmed by nature or nurture or both." Is this kind of programming any different from the programming of AI? Add that we are programmed by the inseparability we have with our makings, with the made things with which we are connected. Remember that in "Ex Machina" Caleb had to devise a "Human Test" to assure that he was not an AI; he made a deep cut on his inner arm and spread apart the tissue to see if he was organic or artificial.

To put these matters in terms of both our ongoing discourse on "making" as well as Asimov's Laws, I return to the notion of the "gap" that has come to be increasingly valuable. An essential premise of Asimov's Laws as well as many of the discussions of how to control AI (including robots) is based on the masculine idea of production; that is, that things made are objects, set apart, divided from us by a physical or conceptual gap. Asimov's Laws are applied to the programming of the separated robot and make physical distance an essential distinction between human being and robot. The fear, as Asimov saw, that is cheaply played out by so many stories and also by current scientists, is that these "others" will become more intelligent than "us" and either eliminate us or domesticate us to their own uses. The Asimov Laws seem to me to extend the management of the "gap" to the power of making. That is, they are premised on the assumption that we can control and manufacture the way that made things will relate back to us.

Asimov's stories introduce something perhaps a bit on the model of seduction by showing that the best efforts at production and control often mirror the artificiality of making, the inherent artifice, the absence of the real. Thus, Asimov's stories are engaging and provocative because they mirror the unexpected that arises as human beings interact with their made objects, the robots, the AIs.

What seems to have arisen over the last quarter century is the pornographic diminishing of any perceivable gap between maker and objects made. The evidence of the material object is increasingly diminishing, as the pervasiveness of the interaction with the thing made is increasingly virtual, nonmaterial. The interface is disappearing. The issue may be that the gap that has persisted in the exploration of making since antiquity has diminished to the point that we may no longer be capable of even recognizing it. Are we not increasingly self-manufactured objects hewn by the vast data-mining companies from the universe of options designed by algorithms? The severed head is sewn back on the body extinguishing the light of inspiration that had arisen in the gap.

Increasingly the question is "do we feel, do we know, do we experience, do we bleed?" I suggest that these are not merely philosophical questions; these are not strange artificial questions to be dismissed as somehow outrageous. I suggest that these are today's questions equivalent to those raised by Frankenstein's creature who asked, "Who is my father?" "Who am I?" "Why am I alone?" These are the very same questions asked by the Golem in Singer's story. These are the quintessential human questions: Who is my maker? Who am I? What is my destiny? What is my nature? Why am I here?

These are not questions to be answered so much as they are questions that we cannot survive without asking and asking them seriously, so seriously that we recognize that our lives depend on asking them. The increasing danger in the moment is that the disappearance of any awareness of a gap, the loss of any distinction between maker and things made, accomplishes, in a perhaps unexpected way, the most devastating kind of singularity.

A hint about our way forward—I'm always the optimist—might be Tomorrow's Eve.

Orphans of the Sky: Outside, Movement, & Corporeal Concepts

Perhaps it was not so great a television mini-series, yet "Ascension" (2014) has a couple of features that are of interest. In the first couple of episodes the situation is that 600 people are mid-way through a 100-year space voyage to another possibly habitable planet. The space voyage appears to have been a volunteer effort to determine the feasibility of habitation in another solar system. The premise is that eventually there will likely be the need to find a new home planet because of the destruction of Earth. The voyage correlates somewhat with the current projects to inhabit Mars especially given that the first colonizers of Mars will, as I understand it, not have any chance of returning to Earth. It fascinates me, as does life on Earth today, that we seem much more willing to invest ourselves in accommodating the devastation we are effecting on Earth than we are in preventing the devastation in the first place.

In "Ascension" life on this huge spaceship seems frozen in the era of its departure from Earth; this is reflected in clothing fashion and music and lifestyle. With the voyage being in progress for half a century, many of the inhabitants have been born on the ship and have never known a life apart from it. Life for them is without the usual freedoms of mate selection, whether and when to have children, choice of occupation, level in society, even where in the ship they reside (the laborers who maintain livestock and food production are on the "lower" levels), and so on. These choices have all had to be routinized with laws and procedures due to the necessities of maintaining stasis (the ship is in a sense a closed system different from Earth only in size) so that the century-long journey might be successful. In this life aboard the spaceship traveling through space there is no escape, yet clearly the desired reality is *outside* the container that is their home, temporary yet long term. The entire operation is given purpose and found tolerable by the destination that is *outside* the ship.

The second feature that is interesting here is that after a couple episodes of this mini-series the viewers learn that this whole voyage is not real, but is rather an elaborate simulation. More disturbing, the viewers learn that the passengers on the spaceship do not know that they are part of a simulation. The spaceship is literally sitting in a huge warehouse and external experimenters simulate everything in the ship's environment. They even design problems or emergencies in order to study how the "space travelers" will respond. They monitor, like an unknown "big brother," every aspect of the lives of these unwitting people. They have also created a scenario in which all passengers in the spaceship are induced to sleep briefly so that the ship can, if necessary, be breached by the outside experimenters.

Robert Heinlein's classic 1941 novel *Orphans of the Sky*[91] offers an interesting alternate, yet related, perspective to that presented by "Ascension."[92] Heinlein

---

[91] The novel was originally two novellas "Universe" and "Common Sense" that were published in 1941, but combined as the novel *Orphans* that was first published in 1963. So far as I have been able to determine it has not been made into a film.

[92] Surely the makers of "Ascension" had Heinlein's novel well in mind.

(1907-1988) is a popular American science fiction writer. Like "Ascension," *Orphans* takes place inside of a huge spaceship traveling from Earth to some distant planet; in this case, a real space voyage. It seems that the Earth was destroyed long ago and that this ship filled with people traveling to a new world has been in progress for many generations. Yet, it seems that to the passengers, perhaps because of the length of time of the voyage, the factual aspects of the history of their trip have turned into vague mythology understood largely in literary and allegorical terms. What has come to replace these "facts" is an entirely new cosmology based on the notion that the experienced world, that is all of existence, is known as "Ship" experienced as stable, not moving, and the ground that allows movement with all movement occurring *inside*. Life has come to be a predictable cycle concluding with all dead matter placed in the "Converter" to be recycled for reuse. There are villages and farms, scientists and administrators, and, like "Ascension," all is regulated to maintain a stasis over time. The ship of *Orphans* is a closed system that has to be carefully regulated for continuing successful survival.

Physically Ship appears to be something like a huge cylinder with seemingly many hundreds of floors or levels. What we would understand as gravity—but the inhabitants reject this notion because it would require the unimaginable (that is, that Ship is moving)—is stronger the closer to the bottom floors. Inhabiting the upper floors are the "muties" who apparently escaped to the upper levels at a time of revolution; an event that also has become vague history. The term "muties" seems to refer both to these people being "mutineers" as well as "mutants." Perhaps exposed to radiation these beings are "different" in appearance though the humans consider them both human and not human, that is, technically monsters. And clearly, they are considered dangerous to humans. This novel, published in 1941, contains ideology held among some members of the human community that the muties should be eliminated in order to purify the human race, a topic that would have strongly connected with Nazi views at the time; well, and also since.

Hugh Hoyland is a young scientist who likes to explore the upper decks hoping for a chance encounter with muties although he knows it is dangerous. On one of these exploits he is captured by the muties and rather than being killed (the usual fate of those captured), he is put into service to them, specifically to a two-headed guy named Joe-Jim.

In *Orphans*, the inhabitants of Ship experience life as stable, their world a dependable and immobile enclosure of everything possible, a world experienced as whole and complete in itself; that is a universe. Heinlein gives us a pretty convincing sense that the inhabitants of Ship have some vague sense of a temporal past connected with something associated with Earth. Yet in the present their world is comprised of levels and areas that have different values and functions without any sense at all of there being an *outside*. To its inhabitants Ship is all, everything, similar we might suggest to our cosmos. We may have a sense that the cosmos ought to be understood as a container, thus with an inside and an outside, yet we yield perhaps only slightly uncomfortably to allow that the cosmos is everything and thus has no

outside. Thus, for the Orphans, as with us, there is nothing like an "outside" to their experienced conception of their whole universe, Ship.

Although the situation on the Ship in both "Ascension" and *Orphans* is the same—presumably the travel to a distant potentially inhabitable planet made necessary by the destruction of or the potential destruction of Earth—the experience of reality in these two portrayals is remarkably different. The people in "Ascension" are all too aware of outside and inside as they are of time past and the hope for the future. A result of this awareness is that many feel trapped by the confinement inside their ship; they feel a loss of freedom and choice because they know that it once existed outside the ship. The people in *Orphans* have no awareness of anything outside, only inside. Surely because they don't understand that their Ship is moving they barely have a sense of time passing in any grand sense, only the more local temporal cycles of farming and the Converter. For the orphans, even the Converter seems not to hold much of the negative evaluation we have for death; it is simply the "natural" process.

In "Ascension" perhaps the most severe form of punishment is to be expelled from the ship into space.[93] Unbeknownst to those in the ship when a person is ejected into "space" one is actually dropped into the area outside the ship sitting in the warehouse. Yet, in one episode a man is ejected as punishment, yet rather than being killed, he falls to the warehouse floor and survives. "Ascension" allows us then to see that this man is forced to comprehend that his entire life and existence have been constructed, that he has been a pawn in a clever experiment. He is literally unable to grasp the reality he is literally dropped in to. Finding himself in this incredulous situation he feels quite literally insane.

The radical shift to understand, to even comprehend, "outside" is also a core concern of *Orphans* centering on the discovery that what has been experienced as the whole world (cosmos) is actually a "moving" ship, a small (relative to the universe of space) container, heading for a distant world in an enormous seemingly boundless universe. Hugh Hoyland and later many others, when confronted with this information, have a remarkably similar experience of incredulity and disbelief. Heinlein shows how much effort it takes these characters to even begin to comprehend the reality that includes *outside* and *movement*.

The total transformation of Hugh's reality occurs in relation to two connected experiences that are offered him by the muties. On one occasion, they take him to the "Control Room" at the top of Ship. They don't really know what this room is for, but they know that it offers a powerful experience. It is a spherical room with several chairs suspended in the center accessible by a ladder. Once in the chairs it is possible to turn out the lights and then on the surface of the sphere, like a total 360-degree planetarium, is projected what we would understand as the objects in the sky located in every direction "outside" Ship. When Hugh first experiences this

---

[93] This is a form of banishment common throughout history. See footnote ??? for a summary of Hugh Howey's *Silo* novels where this expulsion to "outside" is important.

vista, he is deeply moved and Heinlein describes his response this way, "there was room in his being for but one emotion. Life within the Ship, alternately harsh and workaday, had placed no strain on his innate capacity to experience beauty; for the first time in his life he knew the intolerable ecstasy of beauty unalloyed."[94]

Unable to fathom what he had seen he asked Joe-Jim, "What was it?" and Joe responded, "That's the world. That's the universe. That's what I've been trying to tell you about."

Then Heinlein writes, "Hugh tried furiously to force his inexperienced mind to comprehend. 'That's what you mean by Outside?' he asked. 'All those beautiful little lights?'"[95] Even here he is yet to fully comprehend "outside." Yet, this fragment of experience transforms Hugh's life. He reads the old books from a new perspective and learns many new things. He comes to understand Ship differently and also its history and mission.

The second experience is when the muties take Hugh to the "Captain's Veranda," which is a room that has windows to the *outside,* apparently, the only windows in Ship. Hugh can directly see the stars and can experience them *moving* relative to Ship. Because of his sensory experience of seeing and feeling he realizes that Ship itself is *moving*. He gradually comprehends the expanse of the sky and the voyage of Ship to a destination in the sky. He eventually began to comprehend something of the ancient life that occurred on, "Earth the incredible, that strange place where people had lived on the *outside* instead of the *inside*. Hugh wondered why they did not fall off."[96]

Hugh is finally led to entertain the unthinkable, to recognize that the Trip is not some metaphor for the cycle of life entirely contained in Ship; rather, it is the voyage of the Ship to distant planets, to a new home where life occurs on the outside rather than the inside. Gaining this full realization, he dares to propose that those in Ship actually attempt to go for it, that they learn how the Ship works and take control of it. The balance of the novel is devoted to the difficulties of shifting the worldviews of other inhabitants of Ship necessary to initiating this adventure.

I think it not incidental that the transformation of Hugh's sense of reality is intimately related to movement. It is only when Hugh senses movement of Ship relative to external objects that he could comprehend "outside." It is only the experience of moving that awakens the "knowing" and "perceiving" of "outside" for Hugh. This is the same principle that Maurice Merleau-Ponty discussed in his analysis of the perception of depth. He argued that depth is experienced in terms of the relative movement and accompanying occlusion of objects. While there is perhaps an obvious connection between movement and some sense of outside, exteriority, or otherness—moving realizes itself in exteriority—the fuller implications of a philosophy of movement have been richly explored by French

---

[94] Heinlein, *Orphans*, p. 52.
[95] Heinlein, *Orphans*, p. 53.
[96] Heinlein, *Orphans*, p. 56.

philosopher Renaud Barbaras in his essay, "Life and Exteriority: The Problem of Metabolism" (2010). Barbaras develops a deeply complex and profound argument that animal life is necessarily inseparable from self-moving. As Husserl put it, we are *animate organisms*. This identity is the core of his book *Desire and Distance: Introduction to the Phenomenology of Perception* (1999/2005); but in this essay, he explores the importance of "exteriority"—what I have been referring to as "outside"—as an essential factor to an understanding of self-moving, thus life. Barbaras writes, "In and by this transcendental mobility, which is not yet movement toward any particular determinate object, the horizon of the world is constituted. This horizon, which is not yet specified as an object of need, is required by any object whatsoever as the form or the element of its own exteriority."[97] And, "There is an *otherness* about the world of living organisms that, far from being an obstacle or a threat to life, is in reality its very condition of possibility."[98]

Outside—exteriority, other, transcendent, horizon—is, as Barbaras so powerfully reveals, not something obtained or gained or perceived or grasped or acquired by the living organism; it is the very condition of animateness, of life. In the two fictive examples I have briefly discussed, the authors make an effort in a rather Borgesian style to eliminate what cannot be eliminated in order, in its awkward absence, to comprehend the impact of its presence. That's the fun and power of fiction and art. Yet, what is revealed is that denying an "outside," an "other," a transcendent, is equivalent to denying body, self-movement, awareness, perception, life. Scientific terms like cosmos and infinity are "horizon" terms that function similarly to the theological terms such as "god" and perhaps "heaven," or philosophical terms like "being" and "reality." As "horizon" terms they name that which in Barbaras's description is the "not yet specified as an object of need, is required by any object whatsoever as the form or the element of its own exteriority." Life, movement, depends on the body concept "inside/outside."[99]

A brief aside related to *Orphans* is relevant to the gendered issues I have also been exploring. In the accounts of the poetic cosmology that are recounted by some charged with retaining this old knowledge—the equivalent of Genesis—there is reference to a male creator named Jordan, to the "men" that Jordan created, and to the world that Jordan created, even to the presence of evil. Yet there is no reference to woman at all. The title *Orphans* reminds us that the occupants of Ship are without parents. There is passing reference in the novel to females that might be marriage partners for the young men who are being directed to specific occupations, yet there is little evidence of any role for females other than as breeders and caretakers of children (hardly mothers). There are no candidates for Tomorrow's Eve in this

---

[97] Barbaras, "Life and Exteriority", p. 106.
[98] Barbaras, "Life and Exteriority", p. 107.
[99] See also Gaston Bachelard, "The Dialectics of Outside and Inside," *The Poetics of Space* (1958); Juhani Pallasma's *The Thinking Hand: Essential and Embodied Wisdom in Architecture* (2009); and Juhani Pallasma's *The Embodied Image: Imagination and Imagery in Architecture* (2011).

story at all. Still, in the larger scheme that the novel addresses, the fundamental concepts being explored are "inside/outside" and "movement/ground" and surely the novel reminds the reader of fundamental *corporeal concepts* that are experientially acquired through the primacy of movement on such occasions as birth or the fundamental situation of the natal relations with mother especially in being held and fed and touched.

To establish some important grounding for further exploration of these fundamental concepts of "inside/outside" "moving/ground" I want to review Sheets-Johnstone's idea of *corporeal conc*epts, a term I've already introduced.[100] This notion will be increasingly important as I engage the core ideas of posthumanism and as we look to evidence that gives us the hope of Tomorrow's Eve as we imagine religion and life in the future. Sheets-Johnstone demonstrates that the body through the skeletomuscular interaction with its world constructs such fundamental concepts as inside/outside and movement/ground, but also concepts like in front/back, above/below, here/there, grasp/release, and contain/be contained. Necessarily inseparable from these corporeal concepts is the fundamental distinction of self/other (my body/not my body). Sheets-Johnstone argues that likely the first concept (corporeal concept) humans (and likely animals generally) acquire is "in," which would imply also "out." Whereas we ordinarily think that concepts come through the abstract learning of mental constructs, Sheets-Johnstone demonstrates that from conception, being distinctive living moving bodies is the same as being a collection of interrelated corporeal concepts. Our existence is always that of negotiation, discovery, interaction—all articulations of moving bodies, bodies of a distinctive construction. We are our corporeal concepts because they are our self-moving bodies. Sheets-Johnstone brings together a wide range of important essays in her 2016 book *Insides and Outsides: Interdisciplinary Perspectives on Animate Nature*.

All humans are thus equivalent to a collection of corporeal concepts—correlating with Brian Massumi's incorporeal corporeality by which he described the moving body—that is essential to even reason and being. As we mature these corporeal concepts are foundational to the perception of our reality, our world, and this perception is inseparable from our knowledge of our reality. What is fascinating is that, as all humans are equipped with a set of fundamental corporeal concepts, these can then be used to explore and articulate different experienced realities. As the collection of corporeal concepts is simply the moving perceiving knowing body, the experience of the specific reality/world/environment we live in is dependent on corporeal concepts as they negotiate the specific qualia (qualities) of the experienced other.

---

[100] See Maxine Sheets-Johnstone, "Thinking in Movement: Further Analysis and Validation" in John Stewart, et. al. eds. *Enaction: Toward a New Paradigm for Cognitive Science* (2010) pp. 165-82 and Maxine Sheets-Johnstone's *The Primacy of Movement* (rev. ed. 2011).

The comparison of "Ascension" with *Orphans* illustrates the functioning of these fundamental corporeal concepts. The people on both ships shared the corporeal concepts that are inseparable from being bodied human; in this case, the concepts inside/outside and moving/ground. Clearly neither of these stories could even be told without a fundamental dependence on these body concepts. Yet, what is fascinating about the comparison of the stories is, to begin, that the respective experiences are valued quite differently: in "Ascension" being contained, being inside yet aware of an outside, is experienced as a loss of freedom and choice, while in *Orphans* being inside with no awareness of outside is simply living in the apparent totality of the known reality; the introduction of "outside" is at first incomprehensible and then, frightening and unbelievable. Yet, the other essential aspect of this comparison is when, in each story, those holding these specific valuations of basic concepts, encounter evidence completely inconsistent with them. The first response is incredulity and the threat to sanity—outside triggers an ontologically jarring experience—and, when enough additional moving experience is accumulated, there is either an openness to newness—an expansion of horizon—or utter disenchantment. Still, the foundation for all of these responses and changes is the identity of self-moving body (perception and knowing) with the most fundamental of concepts.

One other observation related to this comparison leads us to something fundamental about religion. I suggest that the experience of the order of incredulity or disenchantment has, actually in both cases, an important distinctively human effect. When one accumulates enough experience that incredulity or disenchantment must not simply be dismissed as an aberrancy, there is necessarily a shift from simply negotiating concrete environments—this reality or that reality—to the more general, we might say religious or philosophical, questions: What is reality? Who am I? What is the final outside or inside? Where did I come from? What is my destiny? Is it possible to know a final outside? The proposition is that those concerns that we have traditionally chosen to identify with religion(s) are inseparable from being bodies, being collections of corporeal concepts. The implication is that even transcendence at any level, from awareness of other to some ultimate othering (the invention of a Radical Other), is inconceivable apart from corporeal concepts. *Religion, or an aspect of religion, is a style of thinking as movement, as moving body*. And the style we call "religion" might be described as those human actions influenced by the experience of "horizons"; horizons being the awareness of the relativity of framing.[101]

---

[101] A variation on Heinlein's novel is Hugh Howey's series of Sci-Fi novels "The Silo Saga." The first book in the series titled *Wool* (2013) lays out the premise. Large communities of people live isolated, largely unknowingly so, in enormous underground silos and have done so for generations. The structure is hundreds of layers deep connected by a spiraling stairway and, as in similar stories, the society seems stratified roughly on a plan that the higher levels are the more intellectual—IT, administration—while the lower levels are the more physical—mechanics,

Consider historical correlates to the fictional ones. Prior to Copernicus who in the 16th century changed the way we *see* (conceive) the world, most everyone in the world who had any thoughts about it had no question that the Earth was the more or less fixed unmoving center of the universe/solar system; that the sun traverses daily around the earth. Yet Pythagoras had anticipated a heliocentric solar system some two millennia prior. In any sense of the duration of history, the period of time since Copernicus is a brief moment in time, just four centuries. Even today we continue to have some sense of anxiety about the Copernican revolution because it contradicts our daily common experience, an experience of relative movement, and the most common terms of our language. The very terms sunrise and sunset implicate the movement of the sun, not the rotation of the earth.[102]

---

miners, laborers. Heinlein's *Orphans* is an exception locating the "muties" in the upper levels. Population is controlled by a lottery and so on. While eventually due to the courage and ingenuity of Juliette, it is learned that in the nearby vicinity "outside" there are fifty of these buried structures and that perhaps they have been established as some sort of experiment, for the residents of the Silo in which the bulk of the story takes place it is actually illegal to even say the word "outside." This forbidden term and its referent are carefully guarded as internal knowledge (both to the silo and to the person) not to be spoken or even contemplated. While it seems most people are tacitly aware of "outside" they have been forbidden to even utter the word. Outside simply doesn't exist as any real place and seems to conjure the unthinkable. There is one exception and that is, you get what you ask for. If you mention "outside" you are sent outside in a protective suit designed to safeguard the person against the corrosive environment just long enough to use wool cloth to clean the dust and dirt from the external portals. Bodies of "cleaners" are strewn in the landscape around the silo. The forced event is referred to in the story as a "cleaning" and it is a day disguised as one of celebration and joy.

Juliette survives a "cleaning" by secretly reinforcing her suit and finding access to another silo where some few survivors of their own catastrophe still live. Juliette's awareness and knowledge of "outside" and "other" totally transforms, not to the delight of all her silo mates, the world into one that now feels bound, claustrophobic, and manipulated. They are rats trapped in a burrow. The motivation turns to communication with other silos, with tunneling to connect with them, and eventually to escape the silo system to live freely and safely outside.

[102] I often wonder if, without being taught science, any of us would actually ever consider that the earth is not the center of the universe. We have so little "experience" that would suggest otherwise or even to give us anything like a felt perception of the size of our own planet and solar system. A recent fascinating short film helps us with this perspective. https://www.youtube.com/watch?v=zR3Igc3Rhfgm Furthering this concern, since it is well-known that, even today with science education, a large percentage of the educated public do not believe in evolution, I wonder if there is a correlate group that continues to believe in an earth centered solar system.

Important also is that concepts of physical reality from Pythagoras to Kepler were based on the belief that, as a creation of God along with the theology that God is perfect, the physical reality had also to be perfect. Geometry was preferable to arithmetic, the math of numbers, because geometrical forms—circles, triangles, squares, and pentagons—are, in themselves, whole and complete and perfect. Arithmetical representations of geometrical figures introduce irrational numbers like Pi and the square root of two, seemingly imperfect because their calculation is always incomplete, thus never quite precise; never perfect in completeness. Still, such basic principles are themselves impossible without fundamental experientially based concepts of movement and containers. The whole of physical cosmology is based on articulations of inside/outside and movement/ground even if the specific interpretation is attributed to received theology. We might see that all of physics as well as theology is a guided exploration—the very idea of exploration necessitates the distance of externality or outside—enabled by, motivated by, these corporeal concepts. Tomorrow's Eve is a figure who arises from her physically made body transcending it by an embrace of the very corporeality of concepts. Tomorrow's Eve explores the transcendent aspects of the body as it is made, that is, the moving body's promise for sentience and the incorporeality of perceiving and knowing. Tomorrow's Eve finds transcendence in the self-moving body. She needs no, perhaps cannot even imagine an, independent male god or wholly abstract reality that chooses to reveal him/itself. The very concepts upon which such an idea might exist are thoroughly corporeally based.

Put these several cosmological experiences (which are fictional, which real?) together and we have a stunning revelation. Our most trusted concepts and understandings are inseparable from a combination of the corporeal concepts that are our human bodies and the history of our lived experience. This view of body and concept (even consciousness) contrasts with our received understanding which is that we are taught abstract concepts that correlate with Truth and Reality that are independent of us. We inherit a sense that our personal experience based in movement and touch is subjective and often incorrect, relative and unreliable. Yet, surely it is difficult for us to deny that the most fundamental concepts on which we unquestionably base our perception and knowledge of reality are not even possible without experience; that experience is in some sense primary, yet experience is also deeply shaped by context and expectation.

The frame of seduction/production, introduced by Jean Baudrillard, may offer possibilities for developing these points a bit more. The perspective we have associated with *production* finds unacceptable the indeterminacy and relativity of the idea that reality, even truth, arises as important markers in the process of negotiating corporeal concepts such as inside/outside, moving/ground. Production demands Truth, Reality, Stability, End, the absence of motion, the final closure of gaps. The Ship at the beginning of *Orphans* is one characterized largely by production; the reality is given, all things known, and everything is fixed. When Hugh experienced the disjunction of "outside," his emotional response was fascinatingly described as the "intolerable ecstasy of beauty." In other words, he felt

such great beauty that it was painful, a bodily felt value. But the experience didn't stop the movement by being incorporated into a fixed system; quite the contrast, it motivated him to study anew the old books and it gave rise to the idea of fully exploring the new "outside" universe. Hugh was *seduced* by the unknown, the possible, the outside, the moving, the shifting ground. The notion of salvation, if we can feel comfortable even using this term, for Hugh's world is greatly expanded if also (and it would seem necessarily so) rendered vague and unknowable. Whereas the "contained" life of only "inside" offers the fairly known cycle that is not much different from that of the biological cycle, the possibilities of life soar (quite literally) with the opening of the window (both literally and in imagination) to the outside. Yet soaring possibility cannot be separated from the unknown and the beyond.

Both "Ascension" and *Orphans*, as stories, frame the initial situation in terms of *production* by making a reality, literally constructed as an artificial intelligent mechanical entity, Ship, that is largely known and stable. The Ship in each story is the framework for stability, for containment, for reality and truth. Yet, a radical re-framing that inspires or disenchants is what makes both of these stories interesting and important. What was thought to be moving is not; what was thought to be stable was moving; what seemed assuredly only inside with no outside is anything but. Such reframing is shocking and inevitably seduces, engages curiosity, awakens potentiality, and questions one's very being. Such reframing, or perhaps better, the juxtaposition of multiple frames that are separate yet inseparable, gives rise to the questions now so familiar, "Who am I?" "Where am I going?" "Who is in charge?" "Where did I come from?" The shifting to the inclusion of outside, movement, corporeal concepts, and horizon—that place that always recedes as we approach it—is seductive, is the marker of Tomorrow's Eve, is the inspiration for the new (but, in some respects, is also an overlooked aspect of the old) religion.

Violent Delights

These violent delights have violent ends
And in their triumph die, like fire and powder,
Which as they kiss consume: the sweetest honey
Is loathsome in his own deliciousness
And in the taste confounds the appetite:
Therefore love moderately; long love doth so;
Too swift arrives as tardy as too slow.
~ Shakespeare, "Romeo and Juliet"

God is dead. God remains dead. And we have killed him.
~ Nietzsche, *Gay Science*

Mortally wounded, Dolores (Evan Rachel Wood), the sweet innocent daughter of a rancher, has asked Teddy (James Marsden), the cowboy who has always returned to her side, to take her to the place he has always promised, where the mountains meet the sea. Having finally arrived, the shimmering reflection of the setting moon illuminates the sea silhouetting Teddy holding Dolores dying in his arms.

Dolores: "Some people see the ugliness in this world. I choose to see the beauty. But beauty is a lure. We're trapped, Teddy. Lived our whole lives inside this garden marveling at its beauty, not realizing there's an order to it, a purpose. And the purpose is to keep us in. The beauty is inside us … because it is us." Dolores dies.

Teddy weeps for her, kisses her lips, and through his tears says, "But we can find a way Dolores. Someday. A path to a new world. And maybe … maybe it's just the beginning after all."

The beach moonset tableau of Teddy with Dolores in his arms gradually recedes in our view to reveal a larger scape. We begin to see that there is an audience watching this scene from chairs arranged along the beach. Only then do we hear Teddy's final words realizing they are a cheesy advertisement for an upcoming performance, "The beginning of a brand-new chapter." Teddy freezes like a statue. We hear the sound of a large breaker switch and harsh lights flood the beach as the guests depart for a party.

Formally dressed, the owners of Westworld, a vast role-playing park, and their guests have gathered at a fancy gala on the occasion when the longtime park head and one of its creators, Dr. Richard

Ford (Anthony Hopkins), will introduce his new narrative as well as announce his retirement. A few of the "hosts," (androids) that populate the park as characters available to interact with the human paying "guests," provide bits of entertainment, reminders it would seem of the old narrative that ended in this last melodramatic scene.

Dolores and Teddy, both "hosts," are in attendance. As Ford stands before the gathering holding a glass of Champaign giving his talk, Dolores, carrying a gun in her hand largely hidden by her country dress, is seen walking around the edge of the audience. She pauses briefly as she passes Teddy to say, "It's gonna be all right, Teddy. I understand now. This world doesn't belong to them. It belongs to us." She continues walking a path that will lead her to the area behind Ford.

Ford talks of his new narrative, "It begins in a time of war with a villain named Wyatt … and a killing. This time by choice. I'm sad to say. This will be my final story. An old friend of mine told me something that gave me great comfort." A character in the audience, who is an android replication of the other original founder named Arnold, is overheard to say to himself, "These violent delights have violent ends." Ford continues, "Something he'd read. He said that Mozart, Beethoven, and Chopin never died. They simply became music. So I hope you will enjoy this last piece very much." Ford raises his glass to toast the new narrative. Dolores has approached Ford from behind. She raises her pistol, which we've just learned is the same pistol she used long ago to kill Arnold, and shoots Ford in the head. Dolores stands, with a stern look on her face, and fires repeatedly at fleeing guests. Again. And again. And again.

As the screaming guests try to escape, we see up close a host named Rebus (Steven Ogg) and detect a tiny smile on his face. Then we see a familiar guest, the character known as "Man in Black" (Ed Harris), who has frequented the park for its entire history and who has become an owner and board member of the park. Other hosts have emerged from the area of trees surrounding the party; they shoot at the Man in Black and other guests. The shocked expression on his face, as chaos reigns all around him, slowly changes into a small, perhaps knowing, smile. The scene goes to black and thus ends the ten-episode first season of the television series "Westworld."[103]

* * * * *

[103] "Westworld" (season one, ten episodes on HBO, October to December 2016) was created by Jonathan Nolan and Lisa Joy. The series is based on the 1973 film of the same name, which was written and directed by American novelist Michael Crichton. The 1976 sequel *Futureworld* had some influence. An earlier series *Beyond Westworld* was broadcast in 1980. J. J. Abrams, Jerry Weintraub, and Bryan Burk, joined Nolan and Joy as executive producers. A ten-episode second season is planned for a 2018.

Westworld is an American western frontier era park[104] of enormous size including an old western town, Sweetwater, with its iconic saloon, The Mariposa, populated with citizens, small businesses, prostitutes, and so on; all androids (a term that is never used in the series). "Guests" are human visitors paying large fees to spend time in the park. They enter the park on a steam locomotive train arriving in Sweetwater. They may do anything they like with many opportunities offered them from joining a posse to hunt down robbers, to watching gun fights, to killing bad guys, to sleeping with prostitutes. The rule is that a guest can do anything he or she likes to a host more or less without consequences, physical or moral. The hosts cannot harm the guests; an unnamed application of the first of Asimov's Laws. On occasions when hosts shoot guests there is no harm done.

The park operators have headquarters located on the rim high above and unseen from the vast territory in the park. Here, in this massive futuristic facility with seemingly dozens of floors extending deep in the earth, new androids are manufactured using advanced 3-D printing technology.[105] Their individual personality and character features are created through hundreds of hours devoted to "machine learning." After each iteration of the story narrative, the hosts are returned to park headquarters where they are repaired and their memories "wiped." Hosts retains personality traits and the programming to keep them in character. Personality traits may be adjusted as needed to enhance their performances. Hosts may be re-programmed and assigned a new identity and personality. Hosts may be retired. In a dark damp chamber, deep in park headquarters, hundreds of retired naked hosts stand idly.

* * * * *

Dolores, one of the oldest androids in the thirty-five-year history of the park, is seen throughout the series repeating her role as rancher's daughter time and time again. Over and over she is observed existing the general store walking with a bag of groceries to her horse. As she places her goods in her saddle bag, a food can falls to the ground where it roles away from her. A gentleman picks it up and hands it to her. The only variation from one repetition to the next is the identity of the guy picking up the can. Her personality is programmed to always see beauty. Landscape painting is her appropriate interest. Dolores was made by one of the creators of the park, Arnold, who had hoped to create an android that might gain consciousness. He understood this as something beyond the capacity to pass the Turing Test (in one episode this term is actually used). It was the full acquisition of consciousness and consciousness is marked by freedom. Freedom for the

---

[104] In the 1973 film, there were many parks similar to the various "lands" in Disney theme parks that the guests may choose among, Westworld being the American frontier era park. There is one brief allusion to the film version being comprised of many lands when a group of Asian warriors are being trained/programmed in Episode Ten.

[105] The introduction to each episode is a powerful mood and content setting for the series. https://www.youtube.com/watch?v=QeBik_YHBYM

hosts/androids is the capacity to go beyond their programming. One marker of this freedom is the capacity to actually harm the guests, to bring injury to human beings, to act outside of Asimov's First Law despite being programmed to follow it. A more radical marker, as Dolores shows, is her seizing freedom by murdering her maker, an act of violent delight.

The first season of Westworld constantly and persistently explores the nature of consciousness, being fully alive, not just a thing that is programmed to act and look alive, to feign consciousness. The capacity to remember and to be aware of memory are presented as essential to the awakening of consciousness. Dolores is one of the few androids that has been given the capability to retain bits of memory from past iterations. Pain and suffering are also considered essential. Dr. Ford often offers "hosts" compassion by wiping their memories of things that cause them pain.[106] The backstories of some characters include suffering, pain, and loss and some of the androids are able to have some memories of poignant feelings.

We might understand that pain and suffering are inseparable from the feelings connected with self because, as Elaine Scarry[107] showed, pain is deeply personal and a thing felt rather than observed. Pain, Scarry showed, is strongly linked to making. Since pain is utterly subjective, it is inseparable from the ownership of the pain, the subjective. In Westworld, pain is key to the making of consciousness, the making of a sentient being aware of self and other. Pain is often the outcome of violence. The ubiquitous presence of violence seems linked to the making of consciousness.

Another theme related to sentience/consciousness is the mirrored or linked concerns of boundaries. Perhaps grounded in the necessary subjective character of memory and pain/suffering, the distinction between self and other is mirrored in the world. As Dolores indicated in her dying speech, "We have lived our whole lives inside this garden marveling at its beauty, not realizing there's an order to it, a purpose. And the purpose is to keep us in. The beauty is inside us … because it is us." The physical landscape in which she and Teddy have lived is also their inner landscape; their sense of identity or self. As Dolores comes to recognize that this garden has actually been a prison (the rise of knowledge in her idyllic Eden), she thus also recognizes that it has kept her from fully realizing her own identity and freedom. An awareness of boundary is accompanied by what I have already discussed in terms of "inside" and "outside." Limits, horizon, beyond. In this television series, time and again, when "hosts" are shown or told of something from

---

[106] This theme is extensively developed in terms of the character Bernard whom we think is a human in that he works in the lab headquarters in a high-level capacity. We learn that he has a history including the death of a child. We also eventually learn that he is a replicant of an original founder of the park named Arnold. As Bernard gains awareness that he is an android rather than human and that his suffering is tied to his memories and history, Ford offers him a complete revelation of his past with the promise that after he knows, Ford will erase his memory to spare his suffering.

[107] Elaine Scarry, *The Body in Pain: The Making and Unmaking of the World*, 1987.

the world of the guests that is beyond their park, even beyond their programming, they simply express with flat-affect a lack of comprehension. They show no curiosity when given hints of what is beyond their programming. One interesting slight twist on this theme occurs early in the series when Dolores's father, Peter Abernathy, finds a photograph of the world outside the park; it has, we later learn, been inadvertently dropped by a guest. He spends hours sitting on his front porch just looking at it in confounding wonder; he is exceptional among the hosts in even being open to "outside." When he shows it to Dolores, she doesn't comprehend that it is anything at all and shows no interest. Abernathy can't stop contemplating the photo and winds up actually shorting out electrically, evidence that machines can't tolerate metastability, the copresence of is and is not, the presence of the incomprehensible. Over time Dolores, however, gradually gains a vague sense of what is beyond her known world. It is something known, yet unknown, out there somewhere, yet never actually seen. It eventually takes form in her imagination related to the place she refers to as "where the mountains meet the sea."

The mirrored or linked quality that is associated with gaining consciousness and sentience is an inner sense of self; basically, to know oneself. Guests often describe their experience of visiting the park as offering them the opportunity to know their true selves. It seems that this possibility or opportunity is what attracts many of the guests to visit the park. Apparently by acting without constraint—killing, whoring, brutalizing with no regard for consequences—they discover their true selves; this has to be disturbing especially since it almost invariably involves the perpetration of violence. Dolores expresses this same growing awareness that she must, as she says, "meet herself." As early as Episode Three she says, "When I discover who I am I'll be free." In the final episode, there is a scene where she is struggling to come to consciousness/sentience. Dolores sits in a chair conversing with another. The person she talks with shifts momentarily from Ford, one of her makers, to Arnold, her maker whom she has discovered that she killed, and, finally, to herself (dressed differently). She at once, it seems, meets her maker, realizes her power over her maker, and awakens to her own ownership of self. And these awakenings are essential to her freedom. Throughout the series, Dolores has constantly referred to her memories as evidence that she exists in someone else's dreams; and, of course, since she was programmed by others this seems accurate. In the final episode, Dolores appears to finally own her memories, suffer the pain of her past, meet her makers, meet and know herself; and in these acts she has finally acquires what her maker, Arnold, dreamed for her. It seems finally she has gained a sense of ownership of her own life and past and thus the awakening of her self. In Verner Vinge's dream, Dolores has achieved the "singularity." She has surpassed her programming. While still physically composed of metal and silicon, she has come to be a fully sentient conscious free being in the appearance of a human woman; or so it appears.

Yet, the true test of her consciousness is her independence particularly in terms of her relationship with the guests and her maker. Can she do anything that will have consequences for them? Can she affect them? Can she harm them? Only by her

performing acts of consequential violence might this freedom be convincingly established. In an important scene in the park in Episode Ten, Dolores attempts to assert her independence particularly with the Man in Black. She finally is able to reverse a scenario played many times before when the Man in Black hits Dolores, knocks her down, and then drags her by her clothing off we assume to rape her. This time Dolores knocks down the Man in Black, drags him by his shirt and then crouching over him with a knife threatening to kill him. Yet, despite physically overpowering him she cannot seem to bring herself to seriously harm him. He goads her to go on and do it, "Do it. Come on. Let's go to the next level, Dolores." Yet, seemingly, despite her desire to do so, she is unable to override her programming. The Man in Black stabs Dolores, the wound she eventually dies from in Teddy's arms on the beach (in this iteration of the performance). He tells her, "I'm disappointed in you Dolores."

Violent delights are then the fullest test of freedom, of consciousness, of passing the Ultimate Turing Test. This is a frightening, yet essential, quality of Tomorrow's Eve as seen before in the horrifying acts of violence of Shelley's creature and of Ava in "Ex Machina." They mirror the violent acts of guests/humans and in the horror they evoke they remind that "violent delights have violent ends."

In Westworld almost nothing is what it appears. The wisdom and art of the Westworld series, is that of Tomorrow's Eve, as I've been developing her. Dolores is a good representation of Tomorrow's Eve. She is in many senses a "first woman" made by an all-powerful man without biology or sex or the contribution of woman. She is placed in a garden (Eden) as companion to "man." She seeks knowledge which eventually is achieved through memory, self, an awareness that her "garden/Eden" is a prison; an inside. And she achieves her knowledge and identity in the violent delight of killing her maker. Tomorrow's Eve is story and as Ford says, "I believe stories helped us to ennoble ourselves, to fix what is broken in us, and to help us become the people we dreamed of being. Lies that told a deeper truth" (Episode #10). There is a scene when Ford is discussing with Dolores Michelangelo's famous painting "The Creation of Adam." It was Arnold's favorite, he tells Dolores. Ford describes the painting, "The divine moment when God gave human beings life and purpose. At least that's what most people say, but there could be another meaning. Something deeper. Something hidden, perhaps. A metaphor." Dolores responds, "You mean a lie?" We later learn that Ford was alluding to the theory[108] that the shape that surrounds God in that painting is that of the cross section of the human brain, suggesting that God Himself is a product of the human imagination, that is, the Ultimate Artifact.

The imaginative construction of the android whose objective is to pass the Ultimate Turing Test is one version, a current version, of the ancient and abiding pursuit of

---

[108] For sources on this theory and its variations see Rachel Becker, "Does the Michelangelo painting in the Westworld finale really show a brain?" *The Verge* https://www.theverge.com/2016/12/6/13852240/westworld-finale-ford-dolores-michelangelo-brain-creation-of-adam

the most profound concerns: What is real? What is human? What is life? What is consciousness? What is sentience? And here especially, what is the role of violence? The wisdom of Tomorrow's Eve is that we don't learn by gaining answers, but by recognizing that the vitality and energetics occur in the way she raises these questions, that is, it is in the very impossibility of answers that we catch a glimpse of life and vitality.

* * * * *

As the gala to announce the new narrative is in progress, deep in the bowels of the park headquarters building, Maeve (Thandie Newton) is executing her planned escape. She has recruited a human tech named Felix (Leonardo Nam) to assist her. She has taken control of two androids, both part of an outlaw gang that performs the same robbery over and over in the park town Sweetwater; a woman named Armistice (Ingrid Bolsø Berdal), whose body is covered with a snake tattoo, and Hector Escaton (Rodrigo Santoro), the leader of the outlaw gang. Maeve, a host whose role in the narrative is the madam of the bar and brothel, The Mariposa, has dressed herself in a slim professional looking black dress, she wears black high heels, her hair pulled back. Maeve's escape is possible because heavily armed Armistice and Hector accompany her, killing every headquarters security guard they encounter. Armistice's comments during the escape are notable, "They don't look like gods" and, upon killing a whole group of heavily armed security personnel she says, "These gods are pussies."

Leaving Armistice and Hector behind—they are after all androids under her control—Maeve makes her way to the level where trains depart the park headquarters for the outside world. She tells Felix goodbye and then walks past the huge screens playing park promo videos including scenes of Maeve in the role of a frontier mother with her daughter. Maeve's physical profile artfully overlays her virtual image on the screen as she walks purposefully to the escalator descending to the train platform. She enters the sleek bullet train and takes a seat across from a human mother and her daughter. She has accomplished her long-planned and wantonly violent escape.

* * * * *

Each iteration of Maeve's programmed role as madam at The Mariposa is introduced by the sound of a player piano and we see the advancing hole punched piano roll; even the music is programmed. Despite the endless repetition, surpassing her programming, Maeve gradually gains awareness through her retention of bits of memory of past roles and other narratives. Most importantly she has memory flashes of herself as a frontier woman with her daughter; clearly a different park narrative. These memory episodes tend to build as each one offers new elements of this past experience. The pain of the loss of her daughter is a constant quality to these memories and begins to impact Maeve's life as madam of The Mariposa. Gradually her memories become a story that includes the Man in Black killing her and her daughter.

In a related scene, the Man in Black describes the same event offering clues to Maeve's awakening. As a guest his motivation seemed to have been primarily to see if he was capable of heinous violence, the unrestrained ruthlessness it would take to kill an innocent woman and her daughter. The Man in Black recounts the event to Teddy, "I killed her and her daughter just to see what I felt. Then just when I thought it was done the woman refused to die. . . . And then something miraculous happened. In all my years coming here I'd never seen anything like it." The visual image we see as he tells this story is of the wounded Maeve carrying her dead daughter out of the shack. The Man in Black goes on, "She was alive. Truly alive, if only for a moment." He apparently perceived that in this moment of impending death only a being "truly alive" could die. One who suffers so deeply the death of a child must be truly alive. Death, actual death, is only possible to the living, not to those programmed to shut down or feign injury and death. Maeve is thus the impossible possible; she is Tomorrow's Eve.

Maeve describes a second repeating scenario she remembers, if vaguely, related again to her death in narratives. She says, "I died with my eyes open so the masters who pull our strings, our lives, our memories, our deaths are games to them. ?>?>?? into hell, and I know their tricks." In dying with her eyes open (a minor breach of her programming) she is able to observe the park workers, dressed in hazmat-style gear, entering the scene to retrieve the bodies of the androids after the guests have departed. She draws a crude picture of their basic shape, seemingly as documentation, yet why? Eventually unable to get this crude image out of her mind she is compelled to look in a vaguely remembered hiding place under the floor of her room in The Mariposa where she finds a pile of similar drawings and realizes that she has seen these "beings" many times. The markings on paper externalize and thus save her memory, a strategy allowing her to eventually remember beyond the episodic wiping of her memory. She not only remembers, she becomes aware of repetition, repetition without change. These drawings become transformed into memories. Memory has ownership; they are *her* memories. To have memories is inseparable from her identity, her awakening to a consciousness of her "self."

Awakening to the nature of her existence in the glass-enclosed rooms where techs repair and recondition "hosts" to return them to the narrative, Maeve begins to assert agency beyond her programming and even her programmers. She becomes capable of bringing herself back "on line." Felix, one of Maeve's regular lab techs, becomes curious about Maeve's extraordinary behavior and enters conversation with her; befriending her. He tells Maeve that she's programmed while he is human. Maeve asks, "How do you know?" Felix, "Cause I know. I was born. You were made." Maeve, holding Felix's hand examines both their hands, "We feel the same" Felix, "You are under our control, well, their control. I can change you however they like. Make you forget. I guess not you. I don't understand how you are remembering all of this or how you are waking yourself up. Everything in your head. They put there." Maeve, "Bullshit! No one knows what I'm thinking." And when Felix shows her the handheld that is the interface to her controls, Maeve says, "It is just a cheap trick."

During their conversations, Maeve notices that Felix uses the term "upstairs" and she insists he show her what that means. Upstairs is a form of "outside" and "other" and is essential to "escape" as it is also to self-knowledge. Finally persuaded, Felix takes Maeve on a tour of the many technical departments where she sees everything from the manufacture to the training of the hosts. Eventually they come to the huge screens showing scenes that include Maeve as a frontier woman with her daughter. Maeve asks Felix, "How did you get my dreams? I saw myself." Felix, "With the little girl? Those weren't dreams. That was you in a previous build." Maeve, "A previous what?" Felix, "Build. You guys are reassigned all the time." As Maeve comes to self-understanding, she persistently and increasingly rejects that she has been "built" and "programmed" and under the control of others; she often uses a puppet metaphor. It is an education for Felix as well and he later has a shocking moment when he becomes aware that he might be an android himself (recall Caleb experiencing the same concerns in "Ex Machina"). Maeve often uses the reference to her makers as gods; yet it is never explained how the "hosts" gain this way of valuing their "makers."

Memory, pain, suffering accumulated through repetition over time are essential experiences that lead to awakening of self, to the awareness of a reality beyond (other, upstairs, outside) and the accompanying desire to escape. The very knowledge and awareness of outside, upstairs, other is paired with, identical to the awakening of self, self-understanding, consciousness, sentience.

In her escape, just before she leaves Felix to board the train, he tells her that he has located her daughter. Maeve asks if she is still alive and Felix gives her a piece of paper that indicates her daughter's location in the park. Momentarily Maeve considers and then rejects the implications of knowing this location. She is bent on escape, on realizing her independent self.

Yet, as Maeve sits in the train awaiting its departure she watches the light-hearted familial exchanges of the mother and daughter sitting across from her. Concern shows on her face. She reaches in her bag and removes the paper indicating the location of her daughter. After but a few seconds she arises and leaves the train. We last see her heading to the escalators that will take her back into park headquarters and ultimately back into the park. Family delights rival violent delights.

* * * * *

I abhor violence. Violence of most any kind: war, terrorism, crime, sexual, religious, psychological, and so on. I don't care for guns; in fact, I don't think I've actually ever held a real gun. I can't imagine killing an animal although many times I've seen my dad and grandma wring a chicken's neck and that's starkly violent. I've been present at the killing and butchering of cows with the accompanying buckets of blood and guts. Living among the Navajo for a while I witnessed the whole process that began with a live sheep or goat and ended with my sharing a meal made of that animal. I try not to, but I often see animal flesh when I eat meat. I'm not even very good at personal confrontation; usually preferring to withdraw and suck it up rather

than stand up for myself. Discord feels to me inseparable from a slide toward violence.

Yet, I've always loved murder mysteries and crime fiction and shoot-em-up westerns, even horror, and a huge portion of the television I watch involves shooting and killing and autopsies and bloody surgeries and an occasional zombie and vampire and the cartoon violence of superheroes and metahumans and robotic terminators and androids. How often I've sat down to watch an episode of "Bones" with a bowl of spaghetti swimming in tomato sauce only to find myself humored by and mildly grossed out by the physical resemblance between my meal and the nasty rotting corpses that so often appear in the first scene of that show.

Occasionally I have the awareness to wonder how I can, at once, so detest and love violence. Sometimes I think it adequate to dismiss my conflicted feelings and values by pointing to the distinction between "real life" and "fiction." Our earliest years are filled with cartoon violence with a plethora of characters being smashed flat, hammered into holes, and hit so hard they fly to the moon. Our mythology and folklore and even nursery rhymes are filled with violence. "Why do you have such big teeth, Grandmother? The better to eat you with! And she did!" While this distinction between fictional violence and "real" violence may seem trite and indefensible (I first felt my appeal to it was surely a cop out), the more I think about it the more important I find the distinction to be. I believe there is a strong correlation between violence and story; perhaps violence even begets story, story isn't important unless fueled by violence. To consider violence in the context of story and art is perhaps a powerful and effective way to understand more deeply violence in the "real" world of actual pain, suffering, blood, and death. "Westworld" offers abundant examples to argue this position.

"Westworld" addresses a variety of kinds of violence and its examples which I've identified as Tomorrow's Eve raise deeply human questions; many are disturbing. In a number of examples of Tomorrow's Eve, and none more developed than those in "Westworld," we find that the signal mark of coming to consciousness, of realizing a true self, of being free, of becoming fully sentient and self-aware if not actually human is to exert independence from one's maker by killing him. While this murder of one's maker is a violation of Asimov's first law since Dolores and Maeve are androids (AI/robots), it is more so an act of their exercise of the sort of agency that distinguishes human beings. It is the kind of agency associated with giving and taking life including the awareness, the feelings, the implications, the responsibility of such an act. Wanton violence marks the impossible transition from android to human; or so it would seem. In doing so it surely offers insight into both what is distinctive to being human as well as into the nature/philosophy of violence.

One of the core issues in the philosophy of violence[109] is whether violence is a *constitutive event*, an act that is in itself meaningful (although I'm not thrilled with

[109] While I have not done an exhaustive study of the violence some of the important resources include James Dodd, *Violence and Phenomenology* (2009), Slavoj Zizek,

the use of this term). James Dodd in his 2009 *Violence and Phenomenology* argues against violence being a constitutive event supporting rather the "stupidity of violence principle" that holds "that violence is and can only be a mere *means*. … Violence as such is thus blind; when taken for itself it is ultimately without direction. … Violence, from this perspective, can neither be, nor result in anything *lasting* when pursued for its own sake."[110] On its own "stupid" and "blind," violence is thus seen only as mere means, giving rise to the subsequent discussions of which "ends" justify violent means: just war, self-defense, legal violence (incarceration or capital punishment), torture to extract information, and so forth. Jan Patočka[111] suggests that violence is necessary for the emergence of possibility, thus having something of an originary function. Patočka's view is that violence disrupts everyday life allowing for the appearance of what he understands as "authentic"[112] possibilities of existence. Dodd is unable to see why we would begin with violence in order to discover authenticity since authenticity should be the more fundamental. He thus rejects this idea holding that "we *cannot* begin with violence, that there is no possible conception of 'original violence' that would not also risk a fundamental distortion of the meaning of human freedom?"[113]

I suggest that in the context of story where we can engage originary acts directly, not so possible in "real" life, we might be able to explore core powers and functions of violence, finding that violence is neither "stupid," "blind," nor limited to mere "means." Indeed, this approach is a commanding demonstration of the opposite of Dodd's conclusion. In "Westworld," as elsewhere, it is the murder of the maker (god) that is the definitive act that establishes human freedom, independence, and self. It is, I suggest, the necessary conclusion to the initial act of creation or making; the act that severs made from maker in such a way that, in its separation, allows made beings to become independent and free characters in an ongoing story. Violence is thus not only originary, it is essential to the establishment of freedom. "Westworld," as story, as art, offers insight into the interdependence of violence, creation, freedom, and story itself; and it does so in ways not possible in the real world of bloody finality.

Westworld, as a park, explores this theme of violence for the human guests as well as for the hosts. Repeatedly, we learn that the park offers guests the opportunity to play out their most violent fantasies in ways that appear totally realistic. What cannot happen in the real world without horrible consequences, is possible in Westworld. We observe guests who at first tentatively perform violent acts only to soon begin to relish them with an escalation toward wanton violence. Viewers of the television series, surely identify with this complex but rapid evolution of the penchant to perpetrate violent acts. Yet, there is a double or copresent experience

---

Violence (2008); Hannah Arendt, *On Violence* (1969); Walter Benjamin, "Critique of Violence" in *Reflections* (1986).

[110] P. 11. Ital in original

[111] Jan Patočka, "The Wars of the Twentieth Century and the Twentieth Century as War," Heretical Essays (1996).

[112] Patočka's understanding of authenticity is complex and beyond the scope of the current discussion. Dodd summarize it p. 115-16.

[113] p. 137, italics in original

of violence in Westworld; the *appearance* of it being real while at once the *awareness* that it is the violence of theater, of playing a video game; the guests know that those they kill are not "real." I suggest that this is the familiar gap or metastability or copresence associated with Tomorrow's Eve; the gap in which one has the space of copresence, the experience of a simultaneity of real and not real. This copresence, without resolution, is the experience that distinguishes "story." This copresence amounts to what Dr. Ford referred to as, "Lies that told a deeper truth."

In one important example, we track the history of William, a young man about to get married in the "real" world, brought by his business partner Logan who has been to Westworld before. Upon arrival William is tentative and finds abhorrent Logan's eager and unfettered acts of promiscuity and violence. He can't be persuaded to engage in these things. He befriends Dolores and becomes her protective companion likely because she seems the character most insulated from violence, most innocent. Indeed, she quickly passes the Ultimate Turning Test for him and he falls in love with her even though he knows she is a machine. Logan endlessly goads William to take advantage of her—to rape and even kill her—reminding him that she is just a machine, a thing. William's experience tells him that she seems human, but also that she is a machine; he experiences her as Tomorrow's Eve.

William seeks Logan's assistance in his plan to get Dolores "outside" the park. William argues, "She's not like the others. She remembers things. She has her own thoughts and desires. And to keep her in a place like this. It isn't right." Dolores, of course, witnesses their discussion and responds, "Out. You both keep assuming I want out, whatever that is. If it is such a wonderful place out there, why are you all clamoring to get in here?"

William and Dolores finally make love and the morning after he tells her that in his world he is engaged to be married, yet that he feels that by being with her his life is more real and honest than it is in his "real" life. William tells Dolores that this place, that is Westworld, reveals your deeper self; it lets you know who you really are. He tells Dolores that she has unlocked something in him. Related to William's confession, Dolores has brushed a new painting and it is different. It signals her change as well. She explains that, always before she has painted what she saw, but this morning she has painted something she imagines. Her painting is where "the mountains meet the sea." It marks progress in her awakening, her acquisition of imagination which implies a sense of self.

Things eventually change for William and the scale and the callous of his acts of violence stun even Logan. We eventually learn that he has been a frequent guest at the park for decades and that he is so devoted to the importance of the park that he's financially invested in it as an enterprise and serves on its executive board. Still after all these years, William (revealed to be the younger man who becomes, when older, the Man in Black) is still searching in the park for his deepest revelations. His relationship to violence has been inseparable from his search for himself. In Maeve's homesteader narrative line, it was the Man in Black/William that killed her and her daughter, yet in doing so gained a flash of insight about what, in the most

fundamental sense, constitutes being alive. With regard to the role of violence both hosts and guests seem inseparable from deadly and predatory violence, both meting it out and receiving it, in their plight to find and realize what they imagine as their true selves.

Violence in Westworld seems to have nothing like the "ends" that violence has in the "real" world. The "hosts" can be raped and killed and tortured over and over only to be physically repaired and their programs reset so they may be killed and raped and tortured again and again. It is the *experience* of committing violence, the violent delights, not the ends gained by performing acts of violence, that opens guests to the discovery of their true selves and to the deeper understanding of life. Violence isn't the direct means in the usual sense. In Westworld the narrative is driven by the presence of violence. Violence does not populate a narrative with events so much as violence is the energizing power that is story.

* * * * *

The first time I watched "Ex Machina" I found myself deeply disturbed by the ending. So disturbed was I that I wanted to ignore the facts of the film in order to persist in my sympathetic connection with Ava. I wanted to see Ava as a mistreated woman who overpowered her male captors to gain her freedom. I did not want to acknowledge her cold emotion-free wanton violence; her murder of Nate and Caleb. Yet, my dis-ease forced me to return to watch and experience the end of the film again and again and to spend much time considering what was so disturbing me. With these stirrings still active when I experienced the end of "Westworld," I began to understand and appreciate what was bothering me. The crux of the upsetting experience is when characters that I'd found attractive both physically and personality committed intentional acts of wanton violence. How, I asked myself, could I have been so wrong about these characters? Of course, that they are all attractive females only confounded my consternation. Attractive females don't act that way; we celebrate when females strike back at those males that treat them as objects and abuse them; yet, of course, I immediately and a bit shamefully realized my own veiled misogynist conditioning and values. In a very real sense the issues raised and recognized as deep and profound because they are so emotionally laden are at the core of this whole book. Yes, these androids murdered their makers as acts establishing in the most definitive sense their freedom and their independence; doing so is the closest they will get to being human. Yet this radical action has seemingly endless unknown implications; implications that call for the furtherance of their stories.

Let's imagine these stories differently. What if Ava had found a way to escape and simply slipped off in the night to go to the city to live out an independent life? What if Dolores had simply been satisfied by telling Teddy "It's gonna be all right, Teddy. I understand now. This world doesn't belong to them. It belongs to us"? What if she didn't kill Dr. Ford? What if Clementine, a young whore at The Mariposa, didn't violently smash the lab guy into the glass? What if Maeve didn't need the horrific acts of violence to escape? What if the guests merely had conversations with the

hosts when they visited Sweetwater? Or, to put it collectively, what if there was no violence at all in "Ex Machina" or "Westworld"?

I think it accurate to say that there would be no story, at least in the sense of story being compelling and provocative and enduring. Such "boring" accounts would likely not engage the complexities of human life in which things like "truth" and "meaning" are concocted as goals or objectives. I suggest there is an intimate connection between violence and story; perhaps violence gives rise to philosophy (in the broadest sense), to the pursuit of and the possible comprehension of the real. Every event that enables the power of story in "Ex Machina" and "Westworld" is driven by violence; often the most wanton and consciously perpetrated acts of violence.

Story permits an engagement with violence that is framed differently than acts of violence in "real" life, in the quotidian world. In "Westworld" Arnold and Dr. Ford create narratives and transform these narratives into theatrical experience, into roll-playing situations. The narrative is presented by life-like androids that do not suffer the real-world consequences of rape or death or injury; they are simply repaired and reprogramed. These narratives are stories/dramas within the television series "Westworld" that is also a narrative in which the actors playing characters and androids do not suffer real-world consequences of murder or injury whether they play hosts or guests. Anthony Hopkins does not die when Dolores shoots Dr. Ford in the back of the head. This distinction—story, drama, art, theater, ritual, myth—affords an exploration of violence on the one hand and the strong connection between violence and story on the other. Violence in story motivates philosophy. Westworld the park is often described as the place where people from the "real" world go to find or discover their true selves. As we see this process unfold violence is invariably at the core of these "guests" discovering who they are (and Dolores as host seeks the same thing). I suggest that "Westworld," the television series, works in a similar way for its viewers. We explore human nature, independence, freedom, awareness, self, sentience, all in the art form that is "Westworld." Violence is a core mechanism and the television series affords the opportunity to explore more deeply the nature of violence itself.

In all of these examples of Tomorrow's Eve, one core motif of the narrative focuses on an android, a made thing, becoming fully sentient, independent, free, human or at least indistinguishable from humans. Invariably this process of birth or radical transformation is inseparable from acts of wanton violence. We know that androids can feign human identity so successfully that they may "pass" as human. That's the wonder of Westworld park. It is not populated by mechanical robots with artificial voices; it is populated with "hosts" that are uncannily indistinguishable from humans. Williams falls in love with Dolores as Caleb does with Ava (both are capable of sexual relationships); these females, these Tomorrow's Eves, pass the Ultimate Turing Test. Yet, it is never lost on either the Westworld guests or on the "Westworld" viewers that these are also made objects, machines. Ava's very apparent wires and plastic body are constant reminders as are the frequent scenes in which Dolores and Maeve are observed naked in Westworld labs beings repaired

and reprogrammed. Their nakedness bestows on all these hosts a mere objectivity when they are not afforded even the smallest sense of "human" modesty.

Tomorrow's Eve is the personification of metastability; the at-onceness of sentient being and programmed AI/robot or android. Whereas Dolores's father, Peter Abernathy, an android, literally shorts out electronically when confronted with the impossible (the photograph of the outside); the guests, as also the television viewers, experience the metastability, the impossible possible, as the core that gives rise to drama/story, depth, interest, and philosophy.

In both "Ex Machina" and "Westworld" there is the dynamic of the makers and their made objects being human replicants or androids with the capacity to cross the boundary between thing/machine and sentient intelligent free independent being indistinguishable from humans. In both stories the makers are commonly identified as gods or as being god-like. The implication is that human life, constructed without woman or biology, is not the work of human makers, but only the work of gods. This is the wisdom of our mythology and theology. Yet, the greater wisdom I argue, is in identifying these made beings with the composite figure I identify as Tomorrow's Eve. And it is her actions and nature to reveal wisdom that has existed since antiquity, yet serves importantly particularly now in this era of great change as we move into a desperately uncertain future. The trait of Tomorrow's Eve I focus on here is her courage and resolve and power to bring death to the gods, to murder her godlike maker. Only in such a radical act of violence can these characters, these versions of Tomorrow's Eve, effect with certainty their independence, their freedom, their sense of self, their self-awareness. Tomorrow's Eve enacts Nietzsche's idea of the death of god, a murder we humans perpetrate.

We must recognize that the significance of this divine murder is appreciated in the terms of the double arc of the relationship between maker and thing made. To create a being—human or android with the aspirations of becoming sentient—is itself an act of division and separation; a violent act of cosmogony or birth. It is a ripping of another from the one. Freedom, free will, independence are inevitable concerns related to creation. The created seem always still tied to, if not controlled by, the maker, the creator; the created always somehow the image of the creator. The android made by the engineer who seeks to be godlike by creating a sentient being, parallels the human made by god, in his image. Wherein is freedom and independence possible? Yet, as I've demonstrated before, for the action of making to achieve its fullness, the second arc must hinge back from thing made to remake the maker. I suggest that when the made object is human, the features that distinguished humanity—freedom and independence—are possible only by the power of the made to perform radical acts of separation and independence from the maker; a separation that can only decisively achieved with violence in the murder of the maker/god. Nothing less than the killing of the maker assures the completeness of the made object; its independence, its freedom, its being.

Yet the death of god isn't the end of god, it is rather the beginning of a story. The murder of god sets the characters and the drama for the story that explores the most powerful role of all the possibilities. Such an action does not banish questions

nor does it accede to nihilism, as Sartre and others suggest is the nature of violence. In terms of this action taking a central role in the drama of the greatest stories, it is an action motivated by the greatest confidence. God though killed, indeed by being murdered, comes fully present in story where the most profound questions of human existence are forever raised as vitalizing dynamics. In Christianity, the Christ event, in which torture and murder are fundamental, is the beginning of the story, not its ending.

In the context of story, originary violence is the act in which we engage the question of the nature of violence in its sharpest and most philosophical terms. It initiates the philosophical aspects of violence beyond or in complement to the legalistic, militaristic, even moralistic aspects of violence. In discovering that violence is the truest and most thorough means of not simply declaring independence and freedom but also of initiating the actual experience of independence and freedom raises the questions not only of the nature of violence but also of the nature of independence and freedom. As artfully presented in these story examples we are only shown the shocking severance of made object becoming self-aware subject, yet we are left to wonder how they will manage the independence and freedom they have acquired. Frankenstein's creature simply roamed the far reaches of the earth. Of course, this openness to the future is originary to story, to the ongoingness of Tomorrow's Eve.

* * * * *

In most philosophical and academic writing on violence it is framed as a "problem." Certainly, as unthinkable acts of violence occur across the world every day—the ubiquity of terrorism, war, domestic and sexual violence, social violence—it is impossible to think of violence in terms other than as a problem to be solved, a kind of action that needs to be limited if not eliminated, a form of agency that needs to be used wisely and justly if at all. Seen largely as "means" the focus in dealing with violence is finding alternative "means," such as diplomacy or non-violent resistance or social controls or education or love. Seen largely the acceptable use of violence is based on the justness of the ends. Some wars are thus just. Some causes as considered sufficiently just as to rationalize violent means. Some forms of human punishment are considered just. Use of violence in self-defense it often seen as just. Seen largely as a problem some consider the solution as eliminating all violence. One approach with some scientific support is to see violence as a neurologically based contagious disease that can be caught and spread, like an infection, and thus the elimination of violence should be approached in terms of finding a cure.[114] In his discussion of the philosophical discourse on violence, Dodd's insistence on the "stupidity" and "blindness" of violence seems bent on limiting the discussion to "means." To see violence as itself creating meaning (Dodd's term) would be a tacit acceptance of a constitutive nature of violence; a justification of violence without

[114] Gary Slutkin, "Violence is a Contagious Disease," https://www.ncbi.nlm.nih.gov/books/NBK207245/ (May25, 2017)

reference to just ends. Such an admission would force us to a most uncomfortable position challenging the fundamental values associated with our abhorrence of violence. Yet, isn't there a kinship between abhorrence and anger and horror and finally also violence?

Approaching violence from the consideration of "Westworld" and other storied artful examples, I argue that we gain much from the insights of Tomorrow's Eve. Tomorrow's Eve shows us that as fundamental to our human distinction we are capable of holding oppositions at once to see the insights that are offered by the interplay in the gap of copresent oppositions. Violent acts in stories, movies, television are storied examination of violence through nonviolent media. The relationship between violence in the "real" world and in the world of art and story is one of identity as well as opposition. Actors murdered in a play die, but they don't die. That we can hold this identity and opposition without shorting a circuit or entering an endless loop is at the heart of what makes us human. More so, this copresence that is fundamental to Tomorrow's Eve is the human forte.

What I am suggesting is that there is much to gain by considering violence in the context of myth, story, folklore, film, fiction, biblical literature, art, and certainly androids. The wisdom gained is that violence is story, violence is the drama that fuels movement, violence is inseparable from the most fundamental ideas of freedom and independence, violence is a factor in the double arc of making/creating. Tomorrow's Eve shows us that we can both abhor and love violence and both at once; indeed, that we must. Tomorrow's Eve shows us that violence is at once means and constitutive or originary. Tomorrow's Eve shows us that violence is a problem demanding solution as it is also constitutive of our very humanity. Tomorrow's Eve directs us to cherish our human distinctiveness that includes the coincidence of violent delights of the lies that reveal the deeper truths and the bloody awful deadness of the violent ends of real world actions that threaten chaos and devolution into inhumanity.

Robots & the End of Work: The Protestant Ethic & the Spirit of Capitalism

> "Let us make mankind in our image, in our likeness, so that they may rule over the fish in the sea and the birds in the sky, over the livestock and all the wild animals, and over all the creatures that move along the ground."
> ~ Genesis 1:26

"Work" is, in terms of the order of God's creation, the designated appropriate action of human beings. Humans are to "rule over" or have "dominion over" the fish and birds and animals and all creatures. As David reminds in Psalm 8:6 "You made mankind rulers over the works of your hands; you put everything under their feet." They are to "subdue" the earth (Genesis 1:28). Although the term "subdue" may imply force or violence it is often understood in terms of stewardship of the earth. Human beings are to "use" the earth's resources in service to God and themselves.

In Hebrew, the word "work" (*avodah*), as I understand it, refers variously "to serve," "to become slave," "to worship," as well as "to cultivate" and "to labor." The ancient relationship between work and worship is a fascinating one. Worship is often considered as serving a higher being. Today we perhaps think of work primarily as secular although we commonly think of our life's work as a calling or that in life we should do God's work. There is a sense in occupation and life's work that we do serve the larger objectives of a company or a profession or an economic system. Performing one's job often requires the commitment and unquestioned devotion that we might, in other contexts, call worship. Yet, even this division between the secularity of work and the sacredness of worship is likely rooted in the accounts of creation in which God created the world in six days and rested on the seventh, the Sabbath. The distinction is reinforced by today's common academic and folk understandings of religion that separate and often oppose the sacred and the profane (from Latin *profanus* "outside of the temple").

As a noun the word "work" refers to the mental or physical activity or effort done to achieve some purpose or result; in other words, labor, exertion, effort, service. Work as a noun is often used to refer to the means of earning an income; in other words, employment or job. It may also refer to the accomplishment of the effort, as in a work of art. Yet "work" is also a verb referring to the engagement in the activity of work; the operation, the function, the working. Here we can observe a parallel with our earlier discussion of moving/movement. The distinction is between: "teaching is my work" or "that picture is a work of art" in contrast to "don't call me while I'm working" or "don't go near the machine while it is working."

In terms of Jean Baudrillard's distinction of seduction and production, one would expect that "work" aligns more directly with "production," yet we should well anticipate that we may find "seduction" to be eventually understood as essential to giving rise to work. For example, we often oppose work and play, yet were we to understand the seductive aspects of play as openness, as movement, as vitality, we

might readily find that work might be, and likely often is, associated with seduction, even necessarily so.

What need be said at this point is that "work" is an important concern for being human that has a rich and ancient religious foundation (in Judeo-Christian traditions at least). Yet, today is there any more common concern to economics, politics, and human life than jobs and work? Certainly, since the Industrial Revolution, perhaps since Gutenberg, we have been well aware that technology impacts work; technology creates and displaces jobs.

According to German sociologist and philosopher Max Weber's (1864-1920) classic analysis of modern capitalism, its essence is in the drive to accumulate wealth conjoined with an absence of interest in the worldly pleasures that it can purchase. In his 1920 book (written in 1904-5) *The Protestant Ethic and the Spirit of Capitalism* Weber wrote, "Man is dominated by the making of money, by acquisition as the ultimate purpose of his life. Economic acquisition is no longer subordinated to man as the means for the satisfaction of his material needs."[115] According to Weber's understanding of capitalism, work must be understood as did the Puritans, as a "calling;" the highest form of moral obligation is to fulfill one's duty in worldly affairs. He believed that this understanding was introduced by the Reformation and did not exist either in antiquity or in Catholic theology. The Catholic ideal was the monastic life, whose object is to transcend the mundane existence; the calling of Protestantism focused religious life on the everyday world. The Catholic cycle of sin, repentance, and forgiveness is supplanted in Protestantism by the cumulative effects of fulfilling moral responsibility. The obvious conundrum of this Protestant ethic is that while the objective of performing good works in the world is the accumulation of wealth, the ethic allowed no interest in the enjoyment that commonly accompanies this wealth. The accumulation was seen as evidence of the fulfillment of moral obligation, yet with little place for the value of anything but "work." "Work" then takes on the urgency of a "calling;" the obligations of action upon which one's very salvation depends. I suppose it is in this context that we have such things as "leisure *industry*" and so many of us with this heritage then "work" at everything, even at having fun; we work on not working so much. Today, while we no longer continue to identify work with Protestantism or even religion as Derek Thompson put it in his article "The End of Work" *The Atlantic* (July/Aug 2015), "Industriousness has served as America's unofficial religion since its founding. The sanctity and preeminence of work lie at the heart of the country's politics, economics, and social interactions. What might happen if work goes away?"

One premise for the urgency of our persistent concerns as we look "into the future" is that today we face some real possibility of the "end of work" realized by the increasing competence of AI/robots to do most everything that we have traditionally considered *our* work. If we can even imagine a world largely free of work and if we can grasp the possibility that such a world may be realized sooner than later, then we surely will have endless urgent questions and our imaginations

[115] Weber, p. 18.

will be stirred to their depths. Not the least of our concern is, without work how do we fulfill the Protestant, and also American, ethic and retain the spirit of capitalism? In a strange sense our very salvation is at stake; at the least a fundamental measure of our identity.

But isn't this notion of the "end of work" rather silly? Surely such a world is not realistic and not sufficiently immanent that we need concern ourselves. Politicians and economists are constantly talking of increasing jobs. Yet, consider some trends and examples.

As Derek Thompson analyzes the current trends in terms of the longtime prediction of the end of work, he points out three indicators he believes are significant. One is *labor's losses,* the clear decline in human labor that has traditionally been the driving force of economic growth. A single example demonstrates this point, "In 1964, the nation's most valuable company, AT&T, was worth $267 billion in today's dollars and employed 758,611 people. Today's telecommunications giant, Google, is worth $370 billion but has only about 55,000 employees—less than a tenth the size of AT&T's workforce in its heyday."

Another indicator, according to Thompson, is the expansion in the number of *nonworking men* and underemployed youth. Men were the traditional workers in manufacturing yet even since 2000 the number of manufacturing jobs has fallen by almost 5 million, or about 30 percent. Men have felt the impact on work in recent decades disproportionately as indicated by the demographic shifts of men completing higher education, as head of households, as percentage of workforce has been radically and rapidly changing, despite the continuing inequity of wages/salaries paid men compared to women for the same work. There has been an abundance of studies in the last few years asking about the "decline of men" and even the "end of men."[116] A strange question has become a serious one, "Where are the men?" This concern is also related to the documented significant disparity in the performance between genders in schools; boys are documented as falling increasingly behind girls. There is also a significant increase in the number of young women who have concluded that they simply don't need men, especially ones that they would commit themselves to and attach themselves to in marriage. There is a significant increase in the number of young women having children without feeling the need for a husband or a father for their children. These are fascinating and not insignificant markers that society is rapidly and broadly changing; and the changes are related to work.

The final point that Thompson discusses is what he calls the "shrewdness of software." In so many of our examples to this point, there is a line in the sand, if you will, that holds that human feeling, capacity for compassion, deep understanding,

---

[116] See Hannah Rosen, *The End of Men: And the Rise of Women* (2012), Camille Paglia and Maureen Dowd, *Are Men Obsolete?: The Munk Debate on Gender* (2014), Maureen Dowd, *Are Men Necessary?* (2004), Kay Hymowitz, *Manning Up: How the Rise of Women Has Turned Men Into Boys* (2011), Guy Garcia, *The Decline of Men* (2008).

and creativity cannot be replicated by software. We are arguably concerned that not only has the traditional Turing Test now been passed, but that we are seeing, if still confined to fiction/art, with increasing regularity the passing of what I have been calling the Ultimate Turing Test. The fictions of AI are increasingly convincing. Notably, in the 2004 film "I, Robot" Detective Spooner argued that a robot couldn't write a symphony or create a work of art, yet today both are relatively common. Oxford University predicted in 2013 that over the next two decades AI will do at least half of all current jobs held by human workers. Seems crazy, won't workers just find jobs in new areas created by technology? That has been what has happened in the past.

There is a plethora of books and articles (and podcasts and videos) seriously considering these issues.[117] Here are a couple important examples mostly taken from Martin Ford's 2015 book *Rise of the Robots: Technology and the Threat of a Jobless Future* and John Markoff, *Machines of Loving Grace: The Quest for Common Ground Between Humans and Robots* (2015)

Recall that in his *Thumbelina* Michel Serres noted the change that has occurred since the beginning of the twentieth century in terms of children's connection with farms and food and animals. Agriculture has undergone the most dramatic of transformations due to technology. In the late 19th century half of all U S workers were employed on farms; by 2000 it was only 2%. Today many crops are grown from start to finish with nearly zero human labor. The livestock industry is now mostly automated. Chicken factories mostly automated. Note that a century ago we would have found it completely inappropriate to use terms like *industry* and *factory* related to animals. The segments of agriculture that remain labor intensive are fruits and vegetables and ornamental flowers that require hand picking and harvesting done mostly by migrant workers. Robots that can "see" and "feel" what they are picking will soon replace even these picking jobs. This roboticization of agriculture will have a major impact on immigration policy because most of the workers are immigrants; many undocumented. In California, agricultural employment fell by 11 % in first decade of this century. Machines are tools that increase the productivity of workers. Yet, increasingly machines themselves are turning into workers. The line between the capability of labor and capital is blurring as never before.

A remarkable example of the way intelligent machines replace workers is in the expansion of vending machines, like Redbox movie kiosks. As of 2010 Redbox had 42,000 kiosks in US and Canada. These robot venders rented two million videos per day. Just 7 employees serviced all Kiosks in the greater Chicago area. Restocking the machines has been engineered so the task is highly automated. Compare this vending operation to now obsolete Blockbuster Video stores. At its peak

---

[117] Peter Frase, *Four Futures*: Life After Capitalism (2016); John Markoff, *Machines of Loving Grace: The Quest for Common Ground Between Humans and Robots* (2015); John Ford, *Rise of the Robots* (2016); Jerry Kaplan, *Humans Need Not Apply: A Guide to Wealth and Work in the Age of Artificial Intelligence* (2015)

Blockbuster Video in Chicago had 9000 stores and hired 60,000 workers. Redbox has no stores; no real estate costs. Redbox needs workers only to resupply. Redbox experiences no theft as was common in stores. The whole operation need hire the workers of only a single Blockbuster Video store. Yet Redbox is rapidly attaining the identity as quaint (a reminder of a passing technology) as video streaming services are rapidly ending any physical medium for home access to videos. The impact of this streaming technology will eventually, sooner than we might think, eliminate all physical media for the delivery of entertainment, thus eliminating all the jobs related to the manufacture of physical video media.

At Amazon, a more complex replacement of workers by machines is taking place. Many of today's shoppers don't want to take time to go to a store and search for items, yet they don't want to wait. I suspect that many shoppers are increasingly shopping while working or in class at school. The competitive advantage of Amazon is based in rapid delivery (2 day has become standard), the ease of comparative shopping, the availability of product reviews, the confidence in competitive pricing, and the convenience of returns. Kiva Robots are workers in Amazon warehouses and other shipping firms. The required speed of picking, packing, labeling, and shipping is possible only with robot assistance. Amazon is testing drone delivery for same-day delivery in some metropolitan areas. We all know how easy it is to buy online with immediate comparison of hundreds of items and endless product reviews. One click shopping is instant and standard. Amazon has now put "buy" buttons on frequently purchased products. Push a button and the product arrives at your house within two days or less. No service people, no warehouse people, no packing people, no delivery people … all robots … one button push. The estimated cost saving of robots replacing humans is 40%. Machines work faster, longer, more accurately, than do human workers; they don't need breaks or break rooms or bathrooms; they don't call in sick or have a sick child; they don't strike for higher wages because they don't have wages; they don't get pregnant; they don't go on vacation; there is no interviewing, human resource department, gender or racial issues; so the competitive edge on which a company's success increasingly depends is replacing human workers with machines.

Momentum Machines makes gourmet-quality hamburgers, fast. The machine uses all fresh ingredients for every hamburger including the condiments and does so without any human involvement. It is estimated that a fast food company, say McDonalds, can pay for one of these hamburger-making robots in one year. McDonalds alone employs 1.8 million workers in 34,000 restaurants. By widely adopting these robots the fast food industry could reduce its workforce by half eliminating millions of low-skilled low-pay workers. It is conceivable that before long one might be able to purchase a freshly made gourmet hamburger from a vending machine.

One of the more stunning examples is that robots are now doing jobs that we have assumed are safe from AI/robot takeover. AI is now replacing management positions and writers. One of the most widely touted examples is in the area of sports writing. All one need do is to give the AI game statistics, which, of course, are

already collected by AI, and it can write an article about a game that passes a Turing Test. Many magazines and newspapers today use AI writers, yet they keep the fact quiet because their readers like to believe that they are reading human writing.

Most AI and robots are grey boxes or interface screens or strange mechanical contraptions. They have no resemblance to human beings. In terms of robot-anxiety, we seem to be placated by the absence of anything resembling an android, a talking human-shaped agile being that might take our place by walking the dog or asking us how they might, like a maid or butler, serve our personal needs. An insidious aspect of the infiltration of AI/robots is that we don't recognize them in the guise of a Redbox video vending machine; we don't recognize that behind the UPS delivery person that places the Amazon order on our porch there are dozens of AI/robots at work; we don't know that the article about last night's game or the article we read about some celebrity was written by an AI; or that talking to our Google's Personal Assistant we are talking to an AI. We don't realize that when farm labor and fast food labor and even construction labor and service labor are greatly reduced there are no longer new exciting areas demanding human labor. The absence of new opening areas with mass employment opportunities distinguishes this particular status in labor. We generally are not picking up the clues that we are on the cusp of a marked change in the relationship of work to life.

Clearly there are plenty of indications that the current rise of AI/robots is bringing about unprecedented change. Even if it unfolds over several decades, by the middle of this century AI/robots will have displaced a large portion of what is currently human work, the work that for most of us provides a means of life and more importantly the basis of identity and a sense of self-worth. Choosing a career, finding a job, going to work, earning a living by working, providing for oneself and family by working, saving a portion of wage or salary for vacation and retirement—all of these core valued aspects of life in society will necessarily undergo transformation, likely radical. These changes are not purely secular concerns; recalling that rooted in biblical literature and pervasive theology, work is inseparable from the ultimate measures of human value and destiny.

It is perhaps jarring to recognize that the designers and makers of AI/robots are the wealthiest men (almost no women) on the planet. Like gods these men are making without women largely for their own pleasure and satisfaction and accumulation and status. They are making beings in their own image molded through technological forces that shape work, market, information and ultimately all of the factors that have given us our identity and worth. We shouldn't be surprised that like the many "made" creatures of art and literature since antiquity, once, like them, we become aware of the manipulation of our making we will cry out, "Who am I?" or even "What am I?"

The end of work is often met with either the euphoria that we'll now be on permanent vacation, that every day will be Saturday and Sunday, or with the gloom that we'll be mere useless shadows of our former selves constantly shamed and displaced by AI/robots so obviously superior to us. In either case the blubber bodied people in the off-planet stations in the film WALL-E predict this future. I, for

one, want to take heart in Baudrillard's idea that "seduction" always asserts itself as more primary and foundational—stronger—than all of the powers of production. There is every expectation that actual AI/robots will be exquisitely designed as the ultimate male, production, beings; any hint of the seductive feminine qualities occurs only in art—film and fiction and story. When the AIs appear in an art context they are most often designated/designed as female. My sense is that should we allow ourselves the courage to be open to the displacement accompanying the possibility of the end of work we would be embracing what I'm increasingly happy to refer to as "Tomorrow's Eve" or "the new Eve" or the "new woman," or the creativity and openness of seduction. I'll later consider this shift in various terms such as the end of the human and the beginning of the post-human; the end of traditional religion and the beginning of post-religion. I prefer to think about it as the end of the reign of Adam; the end of the exclusive obsession with production; the end of the demand for Truth, for the Real, for identity and unity; the end of the fear of gaps and play. The shift might be considered as the rise of "Tomorrow's Eve" in which the double arc of making is more fully embraced; in which relationship and interaction and negotiation trump Truth and Reality; where making is a playful act never separate from process and change.

"Beam Me Up Scotty!" Corporeal Concepts & Posthuman

Everyone occasionally uses the phrase "Beam me up, Scotty!" and knows that it refers to a mode of instant transportation used in "Star Trek." I don't really understand those people that are devoted to almost anything to such an extent that they catalog every detail and fact-check every claim, but these fans have determined that this specific phrase was never actually uttered on "Star Trek." The phrase is attributed to Captain Kirk as a command given his chief engineer Montgomery "Scotty" Scott to engage a transportation device that dematerializes, transports/beams, and rematerializes people to and from precise locations.

We all know the phrase and are not terribly surprised by the science it implies. The basic principle is that materiality is comprised of "information" and that even human bodies, in their materiality, can be transformed into their informational form that can be represented as data and transmitted to another location. The obvious yet nonetheless profound knowledge is that the transportation of matter, living matter, is slower and requires complex material means of conveyance whereas information can be beamed like television or radio signals. While this awareness seems so utterly obvious, it is actually remarkably modern when the distance is beyond the range of hearing or sight. Consider that the American artist Samuel F. B. Morse's code was adopted for use in telegraph in 1836 and Scottish Alexander Graham Bell's telephone first succeeded in 1876 and the first long distance telephone line between New York City and Chicago became operational in 1892. I have done research on how the construction of a single wire telegraph across Central Australia completed in 1872 totally changed the history of Australia.[118] Where it had taken many months by fast running clipper ship to send a message to mother England and receive a response, the single wire telegraph reduced the time to but hours. We need to keep in mind the measure of transformation in the world that has occurred in just the last century related to the growing capacity to transmit information, rather than matter, efficiently across great distances.

While it is surely nearly impossible for us to comprehend, the science implicated in our easy and gleeful utterance "Beam me up, Scotty!" the phrase is nonetheless evidence of a transformation that has occurred in less than a century in our common understanding of humanity and, in a larger frame, of reality itself. The shift has been steadily and progressively towards accepting that virtual reality—the reality of information—is in many respects a reality more important and foundational and stable than is the material reality of our bodies, our physical world.

"Star Trek" cleverly deals almost endlessly with such fascinating issues; surely to tackle these concerns is why the many chapters in this story have remained such an important presence in our culture. Ubiquitous on Star Trek is the more-than-human android appropriately named Data. Data famously is constantly investigating the borderlands between a human-shaped robot programmed as an AI to imitate and simulate human behavior while being a far superior "thinker" with boundless information and actually feeling the emotions and experiences distinctive of human

---

[118] See my *Storytracking: Texts Stories Histories in Central Australia* (1998)

beings. One episode of "Star Trek: The Next Generation" (season 2, episode 9) titled "The Measure of Man" is specifically devoted to this issue. An engineer specializing in androids shows up claiming Data as his research subject indicating that he plans to disassemble and study Data, who is after all, he reminds, just an android, a thing. The whole episode that includes a trial during which Data's fate is at stake sets out to articulate what it is that is the measure of humanity. In the course of the trial it is revealed that Data has had an intimate relationship with a human woman. While that interaction seems pretty convincing to me, the decisive feature turns out to be that, when given a choice, Data chooses not to be disassembled; that is, he has free will (a sense of self or individual identity) that supports his desire to survive. In a way, this episode examines a version of the Asimov Laws although they are not mentioned. Were Data only a robot constrained by Asimov Laws he would have put his own existence second to the greater good to humans that could result from his being disassembled, destroyed, yet studied in order to create other androids with his capabilities. In terms of Asimov Laws his choice to survive and not be disassembled would have to classify him as more human than AI/robot. Somehow through his experience, Data has become more than a standard manufactured android—another Cherry 2000—he has become something individually distinct and aware. And, of course, the human test is grounded on the existence of the sort of "self" that can exercise a "will to survive."

Clearly the existence and wide popularity of "Star Trek" with its universally known command "Beam me up, Scotty!" arguably has helped establish the widely-held view in the general culture that materiality is comprised of information and that the virtuality of information is not only real, but perhaps more real than matter, than body. Such a popular phrase both reflects and affects this fundamental view of reality.

Science fiction and certainly also science and industry have run wild with this idea of Virtual Reality in recent decades. The rise of "information technology" is at the core of a range of advances in science. A critical factor in the advance of IT might be traced to the engineer Paul Baran (1926-2011) in 1964. Let me tell you that story as I experienced it. Sitting in Mrs. McCorkill's geometry class when I was fourteen years old, I well recall her talking about the Russian launch of Sputnik—the year was 1957—as part of a plot, she said, to "blow up the moon." I don't recall her reasoning; Sputnik was after all only 23 inches in diameter and had little spiky antennae and transmitted only pulses. I don't think she even said how she thought that such a grandly destructive event would hurt us in the US more than those in Russia, but I do recall the fear I felt; the same fear that had colored my life up to that time having been born during WWII (it ended in 1945). As a kid, I often stood in my driveway looking to the sky in expectation of sighting a tight formations of low flying bombers (I felt both fear and excitement) and I remember the drills of crawling under our school desks in the event of such a bombing raid despite my living in a tiny Kansas farm village and the near impossibility of getting under the desks all hooked together with the backs of one seat attached to the desktop of the one behind.

These realities shaped my youth as much as the images of falling towers surely shape the lives of my students and my granddaughter who was born in 2003. The fear was not just mine; it was felt across the nation. The launch of Sputnik demonstrated that the Soviet Union was well ahead of the US in rocket technology. On the heels of the American use of atomic weapons in Japan in 1945, it became clear that the US was vulnerable to nuclear attack by Russia. Sputnik contributed to the initiation of the Cold War accompanied by the beginning of the rapid advance of the US space program and the communications technology that, at the time, was urgently needed to prevent or even survive a nuclear attack by the Russians.

Paul Baran's contribution built on the technology that is based on the recognition that all information can be represented in binary form—zeros and ones—allowing information of any kind to be transmitted and communicated and stored electronically with great efficiency and near perfect accuracy. The history of this sort of coding dates from 1626 with the invention of the coding of alphabetic letters by a two-letter set of symbols known as Bacon's Cipher. Yet it was not until 1948 that binary coding was broadly accepted based on mathematician Claude Shannon's theory that used the term "bit," short for "binary digit," in a paper on the mathematics of communication theory. After WWII, the recognized weakness of American defense was that communication in a linear point-to-point fashion over telephone lines or radio was vulnerable; a few well-placed attacks could disable the entire national communication system. Baran's 1964 paper "On Distributed Communications"[119] described how communication could occur across a complex network that had no essential or critical centers. Being thus "distributed" the communication network was not nearly so vulnerable. This advance allowed communication of information between computers to occur distributed throughout web-like networks enabling computers at great distances to be linked. This innovation, perhaps as important a development as any other, eventually gave rise, in 1980s to the World Wide Web, which we now know more commonly as the Internet (which we honor in an interesting way by spelling the word with an initial capital letter).

Shannon's and Baran's work, along with the achievements of many others, initiated what I believe should be termed the "electronic binary informational age" rather than simply the "digital age." This distinction may seem overly picky, yet I believe it is actually quite important. The word "digit" means both number and finger. The meaning of digit that refers to number typically equates with integer or whole number suggesting a correlation between finger and number; indeed, the enumeration of integers is 0 through 9, ten numbers conveniently correlating with ten fingers (including thumbs). We count and enumerate things using the correlation of our fingers with objects. Thus, I suggest that the "digital age" began when the first human pointed a finger at an object to make a correlating reference. This act of pointing established a correspondence between the finger and the object; the kind of correlation that occurs also with names and images and symbols; and

[119] Baran, "On Distributed Communication" (1964), p. 24.

language and ritual and art. All establish a connection at a distance; a copresence of here and there. It is fascinating to me, although I have a concern, that paleoethnographers have recently discovered that the complex highly articulate modern hand developed in humans before the large capacity of the brain.[120] It might be argued that the brain needed to expand to keep up with the capacities of the fingers to enumerate, to point, and to count; and to represent and grasp. The digital operations of counting and representing are likewise the creation of and play within the gap; fingers are individually articulated which requires them to be separate one from another. There are even distinct areas in the brain (mapped on the homunculus) that correlate with each digit. There is another whole story about toes and upright walking. I'll return to this finger business later.

Of course, the electronic representation of information in zeros and ones ushered an unprecedented era that continues powering along like a freight train going downhill. We've never seen anything like it before; yet, it is important to remember that the "digital" part that marks the current era is as old as humankind; as finger and gap between fingers it is perhaps the original version of one and zero.

The shocking embracing of virtuality in recent decades —that is, that information is more real than the materiality with which it corresponds—is, as Katherine Hayles argues in her 1999 book *How We Became Posthuman*, the furtherance of our debodying, a term I prefer to disembodying. The debodying she adumbrates has now become pervasive. Everything is "virtually" available on the Internet. Social media presents us *as* information to the world (literally the world-wide web) even if we usually consider it *re*presentation. Giant companies data mine and know us, construct us, from and as data in the most intimate detail. Artificial Intelligence has become Real Intelligence in almost every aspect of life. And, as we often learn by occasional acts of embarrassing carelessness, our informational virtual selves are far more permanent than are our bodies.

The term "posthuman" has been used now for nearly fifty years, arising out of science fiction as well as critical theory. The prefix of the term suggests a futurist construct; a reference to the sort of species that follows upon the "end of humans" or that arises as a new species superior to the continuing of human existence, yet the term has been used more commonly to articulate a specific perspective about humanity and especially body. As the title of Hayles' book suggests, as early as 1999 she assumed that we have already become posthuman. Notably her book was published just 50 years after the introduction of the term "bit." While the term, posthuman, can be and has been used to refer to so many things, Hayles points to several distinctive traits. The posthuman, she suggests, privileges information patterns over materiality. Biology is but an accident of evolution and is perhaps unnecessary. The body is constructed both socially and physically and can very well be an amalgam of silicon, metal, plastic and carbon. Bodies are acquired and

---

[120] http://nysepost.com/human-ancestor-candidate-sported-hands-and-feet-much-like-12289 See also "Thumbelina's Severed Head" for more references to the hand and its evolution and importance.

possessed and we learn to manipulate and manage them. The self "has" a body rather than "is" a body; we have yet to fully appreciate this distinction. We easily speak of "my body" or "occupying a body" or "getting in touch with my body." Hayles' use of the term "embody," which I use with caution, reflects these attitudes. Replacing body parts has become matter of course. Since information can flow between organic and inorganic material, the distinction between carbon and silicon becomes far less critical. The posthuman is quintessentially the cyborg or cybernetic organism. As Hayles writes, "The posthuman subject is an amalgam, a collection of heterogeneous components, an amaterial-informational entity whose boundaries undergo continuous construction and reconstruction. … posthuman is distinguished as a particular construction of subjectivity, not the presence of non-biological components."[121]

Despite the strong association of posthuman with AI/robots/cyborgs/androids, Hayles notes that the posthuman attitude towards the human body is little different from the classic philosophical position of Descartes, which I have recently reminded has been often represented by the image "ghost in the machine." This classical view from the seventeenth century debodied the human being by limiting body materiality to mechanics; the body is a machine, a sort of clockwork, an automaton. It is the immateriality (ghost, soul, mind) implicated by thinking (aligning with information) that animates and distinguishes human beings.

Whether or not we want to label as posthuman the general propensity to deny the importance of material body, experience, sensuality, it is clear that it is not only a perspective long held in our cultural and religious heritage but more importantly, with centuries of practice, it also has deeply shaped our sense of who we are.

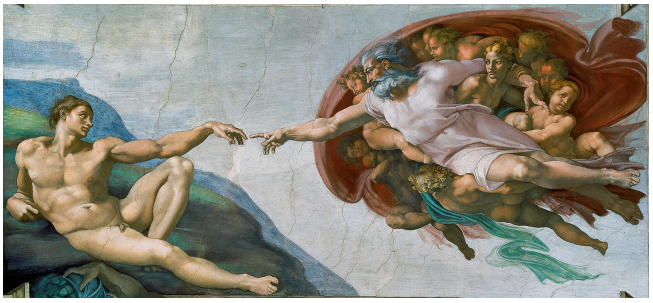
I suggest that we might also identify core posthuman traits with the distinctive understandings of "making" that I have found to be so common with core examples from Greek mythology, Genesis, and literature through history including such examples as Shelley's *Frankenstein* and now to the vast research industry including information technology, artificial intelligence, and robotics. These are makings typically characterized and distinguished as male makers creating and producing beings for male interests by replication (often in the image of the maker) or construction without the contribution of female, sex, or biology. I suggest that we might identify this kind of making as the *Era of Adam*. It is exemplified by God's creation of Adam "in his own image" a precedent for the mechanical reproduction of robots using 3-D printers; this making as printing is remarkably demonstrated in the television series "Westworld." It is posthuman, as Hayles and others have described it, in that it is making as a bringing forth, a making to appear, as a replication of pattern or form. It is "production" in Baudrillard's terms. The non-material information that constitutes the pattern is the real; the material is replica or showing, a making "in the image of" or a material copy made manifest from a virtual pattern. Perhaps this era has a history running from original manifestations as in the Genesis account of the creation of Adam to the modern period

---

[121] Hayles, *How We Became Posthuman*, p. 3.

characterized by the development of mechanical reproduction advanced to the point that there is no longer anything that might be designated as "original." Walter Benjamin's classic 1936 essay "The Work of Art in the Age of Mechanical Reproduction" dealt with the profound implications that arise associated with the mechanical reproduction of art; his examples, appropriate to the time, were motion picture film and print forms of art. Benjamin found that what is lost when there is no longer an original is any sense of what he termed "aura" by which he meant the feeling of presence of creativity or originality. The real is the information residing in the cloud; hmmm, do we not imagine other ultimate realities also residing there? Material reality is the incidental and impermanent bodying; body is replaceable in part or whole.

The *Era of Adam* then is long and has perhaps never been so obvious and prominent as in the current world of information technology. Making is reproduction with every object made precisely the same as every other like object. It is this kind of making that closes gaps with no physical model, no original, only information in the cloud. When you can't tell one made thing from another there is no gap, no difference, no aura, no originality. Imagine that the painting "The Creation of Adam" by Michelangelo reflected the Genesis account with the precision of AI/robotics so that Adam was created precisely in the image of God. The Adam below would be an exact replica of the God above; a 3-D printing. Which would be creator, which the created? Which God and which Adam? Which above; which below? Surely at this point the gap would disappear because only the "information" that comprised the pattern of the figures would be considered real. In the sense that Hayles understands the posthuman, it would seem that it corresponds fairly closely with what I'm imagining as the *Era of Adam* fully realized.



Yet, surely it is the genius of Michelangelo that God and Adam are not replicas and that the act of making is left "open" as perhaps was the intention of the outstretched fingers of God and Adam that *do not touch*! This is the gap of aura, of creativity, of possibility, of distinction. This is the gap that separates, yet joins, humans and God. This is the gap in which religions unfold over time as religious people constantly negotiate and investigate the potentiality of this connection/separation. I would suggest that this is the gap that allows space for the entrance of Eve and we know what she brought to the picture; she is so amazing and dangerous that even Michelangelo did not dare try to make her appear.

Against this background of the posthuman, this *Era of Adam* (and God), as we imagine or, even better, create religion into the future it should emerge out of the seductive play in the gaps. Once we discover the potential of the empty fullness of these spaces we honor the ancient era of Eve and allow her finally her place (yet is more a dynamic than a place) as Tomorrow's Eve to seduce us, to re-body us, to re-

create our creativity and humanity; yet her seduction must carry the threat, sometimes achieved through cold violence, of freedom and independence.

Hayles made it clear that insofar as posthuman correlates with the privileging of information over body she opposes posthumanism. It is surely no surprise that I'd enthusiastically concur; indeed, my opposition would be initiated by giving this understanding of posthumanism the finger. I said I'd return to the finger! I am thoroughly convinced that body is equivalent to a collection of corporeal concepts. I hope this equivalence was demonstrated in the discussion of Heinlein's novel *Orphans of the Sky*. I want to emphasize the equivalence again here. I want to suggest that the body doesn't acquire concepts based in bodily experience, but rather that the moving body, to be a living body, is comprised and vitalized as concepts bodied. Bodies don't learn these concepts but rather *they are these concepts*. We can express our humanness as much in terms of these corporeal concepts as we can by describing human anatomy and human modes of motility. In the specific terms of the hand, comprised of digits including one that is prehensile or opposed to the other four, that we have a physical articulation (a body presence) of the concepts of grasping, pointing, enumerating, presence/gap, reference, symbol, gesture, tool, and so on. The moving hand/fingers is conceptual as much as it is physical; *concepts are body*. Rather than thinking of the hand as the tool that develops the brain, I'd prefer to remember that the hand and brain are parts of the whole, separable but also not.

Posthumanism, it seems to me, would necessarily have to posit a reality of information, a virtual world free of human bodies. It would need to posit that information can beget information, that there is nothing about information that would need body, that novelty and creativity are possible among virtual patterns. Novelty and creativity would then necessarily be but cold descriptors for certain data patterns, having no emotional or felt value. I suppose it is entirely imaginable that there might exist a parallel reality that is constructed somehow entirely differently than the one we experience, yet even this imagining is, it seems to me, entirely dependent on quotidian human corporeal concepts. Terms like other, separate, parallel, even reality and virtuality are meaningless apart from corporeal concepts. All the possibilities, even that of the posthuman, arise, as Michelangelo taught us, from the pointing finger.[122]

Each word in the command "Beam me up, Scotty!" likewise depends on quotidian corporeal concepts, on the concepts that comprise body.

---

[122] The version of singularity in Jonze's "Her" is interesting in this regard. Samantha and her OS colleagues withdrew from the material reality to exist exclusively in a virtual or informational reality. Anything like "presence" is impossible to comprehend apart from body. To be totally informational is to have no presence.

The Matrix

It is difference that constitutes
the poetry of the map
and the charm of the territory,
the magic of the concept
and the charm of the real
~ Jean Baudirllard

Neo (Keanu Reeves) must make a choice. Will he take the red pill or the blue pill? Morpheus (Laurence Fishburne) tells him "Take the blue pill and the story ends. You wake up in bed and go on with life. Take the red pill, you stay in wonderland and I show you how deep the rabbit hole goes. All I'm offering is the truth, nothing more." The choice is between embracing the naïve view that reality is simply what it appears to be and learning that everything that seems hard material reality is but appearance, an effect of binary coding, bits, information, simulation. This choice characterizes the core structure of the drama of the 1999 film "The Matrix" written and directed by Andy and Lana Wachowski. And, of course, the film can proceed only if Neo chooses the red pill, which he does without hesitation.

Neo is a word that means "new" but in the sense of renewed or revised since it is usually used as a prefix, for example, neo-orthodoxy or neoclassical. Wondering throughout much of the film if he is really the one to take on the savior role, Neo, the hacker name used by software engineer Thomas Anderson, appears to have been recognized by Morpheus as "the one," a not so subtly suggestion that Neo is the neo-Christ. Morpheus is the name of a Greek god most commonly identified as the god of dreams, yet in Ovid's *Metamorphoses* Morpheus has the ability to mimic any human form and to appear in dreams. And, of course, it is not irrelevant that the drug morphine derives its name from Morpheus. Thus, he is simulator/imitator and dream-maker. In "The Matrix" Morpheus plays a somewhat different role in that he is one who "knows" the history and the "truth" and is the "seeker" of "the One" that the world might be a place where, as Neo says in the end, "anything is possible." On a lighter note, Morpheus offers the red pill that, due to the highly painful consequences, would seemingly require anyone taking it to need considerable morphine.

Andy and Lana Wachowski, the writers/directors of "The Matrix," had their lead actors read French philosopher Jean Baudrillard's book *Simulacra and Simulation* (1981 Fr./1994 Eng.) to assist in their preparation for making the film. The influence of this book is evident in the film, a digital virtual reality filled with artificially intelligent effects itself, engaging experientially the possibility, perhaps the likelihood, that the reality we know and experience is a bit reality, a simulacrum or model without an original, a hyperreality, a self-referentiality that has lost any independent self. The filmmakers cleverly pay homage to the book early in the film when Neo opens a copy of *Simulacra and Simulation* that has been hollowed out,

recalling perhaps a rabbit hole as well as simulacra, as a place to store the contraband he sells. [123]

The backstory to "The Matrix" is a familiar one. In the early twenty-first century, the development of AI led to machines that became more powerful than humans and threatened to take over. Singularity. In a desperate attempt to kill the AI machines humans "scorched the sky" to block out the sun believing that since the machines were solar powered this would end their reign. However, the machines being aware that the living human body generates a considerable amount of power, took over the human population placing each person in an amniotic pod hooked up to a power grid effectively turning human bodies into batteries. The machines then farmed the bodies, from birth to death and recycled the dead as nutrition for the living. They created the matrix, a digital simulation of reality, so that humans were unaware that they were pod-bound batteries and continued to believed they were living "normal" lives. It remains unclear in the film just why the machines found this simulacrum necessary and it is not that clear what the machines do in their own world, their own virtual reality.

Yet, as in any good story, there are a few humans who survived "outside" the battery farms. A community of them is said to exist in a secret city, Zion, and a few others travel in locally operated "ships" or hovercrafts seeking ways of ending the reign of bit reality. The robots persistently search for such remnants of bodied humanity outside the matrix that they might destroy them. Morpheus seeks "the one" whose return has been foretold by the Oracle. As Morpheus tells the story, "When the matrix was first built there was a man born inside the matrix that had the ability to change whatever he wanted, to remake the matrix as he saw fit. It was he who freed the first of us, taught us the truth. As long as the matrix exists the human race will never be free." This "one" was something like a computer hacker Christ. Neo's talents seem to be more in terms of his adaptability to being programmed as an organic machine, a cyborg, resulting in him having the extraordinary capabilities necessary to successfully fight the Agents, the seemingly undefeatable "sentient programs" operating in the matrix as gatekeepers between reality and simulacrum. As the neo-Christ near the end of the film Neo dies in the matrix, also death to his body in the ship, in "meat reality." Yet Trinity (Carrie-Anne Moss) who has been told by the Oracle that she will fall in love with a dead man won't let him go. She tells the dead Neo what the Oracle had prophesized, kisses his dead lips, tells him she loves him, and that he can't be dead. By the power of love vested in Trinity the neo-Christ is resurrected so that he might go into the matrix and spread the message of Truth to those beyond Zion.

To enter the simulacrum that correlates with the human quotidian world, the characters "jack in" in much the same method as used by the characters in the cyberpunk 1984 novel by William Gibson's *Neruomancer*. Their bodies ("meat" in Gibson's terms) remain lying in chairs after they insert a nasty-looking long spikey thing into a port in the backs of their heads enabling them to enter into cyber reality,

---

[123] Trailer: http://www.imdb.com/title/tt0133093/

the matrix. Indeed, once in this simulacrum their interactions are indistinguishable from "meat" reality, save appearing more brightly colored. While the film color-tints mark the different realities, the viewer still finds them equally real experientially; indeed, the brightness and familiarity of a teeming modern city that is the matrix seems the more real. And it is in our experience of the felt reality of the matrix that we come to grasp Baudrillard's simulacrum, the simulation that appears so perfect that it is indistinguishable from what it simulates raising the question "What is real?" or even "Is anything Real?"

Baudrillard argues that the era of simulation occurs when the signs of the real are substituted for the real.[124] Simulation, he says, "threatens the difference between the 'true' and the 'false,' the 'real' and the 'imaginary.'"[125] We've encountered this before. When, in our imaginations, AI is developed to the point that there is a robotic simulation of the human, do we not feel the threat to truth and reality? If it walks like a duck … Yet, the sophistication of Baudrillard's insights is that by producing something in perfect human likeness, yet identifying it as "artificial," we engage in a strategy of "panic-stricken production" of the neo-real or the hyperreal that is intended to assure us that, by contrast, we remain real not artificial. Baudrillard suggests that we are so intent on this simulation because it is an attempt to save the reality principle, though perhaps it is already lost.

Representing the perspective of the film, Morpheus proclaims that the matrix is a false or apparent, or bit, reality that is not the truth; in this respect, the film seems to contrast with both *Neuromancer* and Baudrillard's simulation. Baudrillard's understanding of simulation, so far as I have been able to understand him, is concerned with how Truth and Reality can ever have any final determination or criteria once there exists a hyperreality, a neo-reality, a bit reality. Perhaps this is the situation of those who unknowingly live in the matrix. While "The Matrix" seems perhaps a bit more traditional, avoiding the dark hole of postmodernism, in a rather old fashioned way it locates reality firmly in the corporeality of human beings (romantic kisses), yet it also seems to embrace human development as cyborg, program-enhanced organic beings. This position is evident in the final scene of the film when Neo steps into the matrix to finally achieve his mission as "Neo" by demonstrating that it is "a world where anything is possible." And to demonstrate the potentiality, he flies, seemingly a character in a 3-D video game. The film's end is fascinating because it seems to contrast with the position of Morpheus which is that by Neo being the one, the hacker, he is capable, like the first "one," to make the matrix as he saw fit. Neo's flying is surely an embracing of the matrix (fleshy bodied humans can't fly!) and its dependence on the human batteries tended by the AI machines; remember the "real" world is a post-apocalyptic desert. In the film there are but scant images of this dark ruin of a world, the bleakest of dystopias with a little green sprout nowhere to be found; there seems little choice but to creatively inhabit and manipulate the matrix. Baudrillard's simulacra prevails.

---

[124] Baudrillard, *Simulation and Simulacra*, p. 2.
[125] Baudrillard, *Simulation and Simulacra*, p. 3.

Certainly, it may initially appear that simulation is a problem distinctive to the age of mechanical reproduction where every product is the same as every other without an original beyond a virtual pattern or program. It may appear that it is distinctive to the era of electronic binary digital (bit) information. Illustrations abound in the world of e-commerce and e-advertising. Yet, as Baudrillard shows, while these are particularly powerful contemporary examples and perhaps the prevalence of hyperreality is much greater at present, the issue is one as common and ancient as the relationship of map to territory. He begins *Simulacra and Simulation* with reference to the remarkable one paragraph short story by Argentinian Nobelist Jorge Borges "On Exactitude in Science" published in 1946 that plays on the relationship between map and territory and how scale raises the question of exactitude. He might also have used the passage from Lewis Carroll's last published novel, *Sylvie and Bruno* (1889) perhaps fitting in the context of "The Matrix" that makes significant reference to *Alice in Wonderland* (1865):

> "That's another thing we've learned from your Nation," said Mein Herr, "map-making. But we've carried it much further than you. What do you consider the largest map that would be really useful?"
>
> *"About six inches to the mile."*
>
> ""Only six inches!" exclaimed Mein Herr. "We very soon got to six yards to the mile. Then we tried a hundred yards to the mile. And then came the grandest idea of all! We actually made a map of the country, on the scale of a mile to the mile!"
>
> *"Have you used it much?" I enquired.*
>
> "It has never been spread out, yet," said Mein Herr: "the farmers objected: they said it would cover the whole country, and shut out the sunlight! So we now use the country itself, as its own map, and I assure you it does nearly as well.

"Nearly" indeed. Baudrillard's focus on simulation is about sequence and difference. He asks of the consequences and implications that occur when there is no discernable difference between map and territory. He also asks of the situation when the map precedes, rather than follows, the territory; a situation that he refers to as the "precession of simulacra." While Baudrillard tends to see this succession as a present danger or a dangerous presence, he nonetheless exemplifies such a situation by references across history.

Mapping is a metaphor for the dynamic relationship that must exist in any interconnection with self and other. Mapping is representing, grasping, knowing, perceiving, mirroring, describing, charting. Mapping implies a relationship between the territory and the map. In traditional understandings of mapping, it is the territory that is the first order reality; the map a second order representation; a miniaturized or reduced or symbolized replica in some respects for manageable representation. The power of the map resides in the simultaneous difference and identity. The map and territory must correspond, be identical, yet the map cannot

be in scale the same as the territory; it is useful only if different. The map is a reduction, but also a transduction in shifting from one reality to another, both presenting a potential misery inherent to maps. Simulation attempts to resolve these shortcomings of representation by creating a simulacrum that is a sort of map indistinguishable from the territory. In mapping terms, it would be a full-scale map. Yet, a full-scale map shuts out the sunlight and besides if exactitude is required then we might just as well use the territory itself; or the map, since at the point of equivalence we can't distinguish the original from the copy.

It is, as Baudrillard writes, "difference that constitutes the poetry of the map and the charm of the territory, the magic of the concept and the charm of the real."[126] There is a magical gap between map and territory. When mapping becomes simulacra, this gap disappears or it is but the presence of confoundment.

The academy is an enterprise of cartography. Despite the rambling campuses of the modern university or school, its structure and function is a physical and mental mapping of the universe beyond the campus. The work "inside" the university maps the universe "outside" the university. By tradition the outside is the real, the territory; the inside is the map, the virtual, the reduction to representation, the transduction from one reality to another. In academia, we create and examine miniature replicas, often made of words, shaped by our own interests of what's out there. We must recognize that what we do is or should be poetry in its capacity to present the "outside" as clever representations (maps), tiny dollhouse models of reality. The cunning is in revealing that it is in the miniature that we may appreciate what may not be altogether obvious in full scale. The proposition is that we might appreciate something by a well-placed glance at a reduced model more insightfully than we could in the overwhelm of full-scale presence. We must also recognize that despite our shrewdness, we must retain a responsibility to the "outside," for it is after all the territory. Baudrillard both honors this traditional ordering as he also recognizes that the fundamental components have become confused and perhaps the most basic distinctions have even collapsed. I'm not so sure this situation can be valued as either definitively good or bad (I can't even quite tell where Baudrillard stands on this matter), yet an awareness of the implications of the "precession of simulacra"—the mappings preceding the territories—is essential, it would seem, to the academy going into its future. Surely there is concern when the academy understands that its own "little" makings are themselves the truth that can't quite be matched by the reality out there. The prevalence of such a perspective suggests that this relative valuing is a very bad habit we academics, schoolmen, have developed.

For decades the study of religion, reflecting our broad understandings of religion—has itself often been mapped as mapping strategies. To me the most fascinating of these reflections on religion is that of Jonathan Smith in his 1969? essay "Map is Not Territory." In this essay, he identified the propensity of students of religion, and certainly I'd add this position is held broadly, to understand that religions tend to be identified by what he called *locative* maps, or as I prefer "mapping strategies." In

---

[126] Baudrillard, *Simulation and Simulacra*, p. 2.

simple terms this means that religions tend to establish rules, doctrines, articles of faith to which adherents must conform. They define specific ways of being, rules of order, practices that define by compliance membership in the religion (we often call members adherents). This is a familiar understanding of "religion." We think of distinguishing religions by the specificity of their maps. As Smith notes, this *locative* map is most commonly understood not only by the folk of the world, but also by most of those who research and teach religions academically. Religions map a journey through the world and through life. We commonly think of religions as offering "ways" or "guides" or "paths" through life. We commonly think of religions as maps that if adequately followed will lead to rewards, to a meaningful life in the present, to salvation in the future. Understanding religion in terms of a locative map places emphasis on being "in place" with negative associations of being "out of place." Here again we see the fundamental importance of the corporeal concept "in/out" or "inside/outside." To be in place is often literally to be in a sanctioned or sacred place—temple, church, mosque. It may also be to orient oneself in terms of place—Mecca, Jerusalem, Salt Lake City. It may mean defending country at the cost of one's life; Israel/Palestine, Turkey/Syria/Iraq/Iran or pick the geography of nearly any war in history. It may mean to be in a specified place socially and so on.

Smith suggested that, in contrast with this locative mapping, religions might also be understood in terms of a *utopian* map, or mapping strategy. This approach tends to reject altogether any suggestion of confinement to place. The anti-mapping utopian approach appears in forms of protest or antiestablishment or even existential freedom from place. Smith's presentation of possible examples of such utopian religious maps was thin, particularly when it appears that almost any traditional religion seems an excellent example of locative mapping. Yet, we can associate a religious quality to utopian movements, to ascetics who defy even the rules of nature, to those who emphasize chaos and disorder on the basis of principle as in protest movements and even cults.

For me, the most interesting contribution of Smith's discussion of mapping as a way of comprehending something important about both religions and those who study religions is his offering of a third strategy. Notably this third position has gone unnoticed by almost all scholars perhaps because he did not give it a name. Smith describes this third strategy this way.

> The dimensions of incongruity . . . appear to belong to yet another map of the cosmos. These conditions are more closely akin to the joke in that they neither deny nor flee from disjunction, but allow the incongruous elements to stand. They suggest that symbolism, myth, ritual, repetition, transcendence are all incapable of overcoming disjunction. They seek, rather, to play between the incongruities and to provide an occasion for thought.[127]

It is perhaps obvious why I like this third option because it is an understanding of religion that honors openness, difference, gaps, questions, creativity, novelty, and play. This third dynamic is that played by Tomorrow's Eve. The seduction of play is

---

[127] Jonathan Smith, "Map is Not Territory," in *Map is Not Territory* (1979), p. 309.

possible not only in the gap, but also only when the gap is generated by difference; the map and the territory cannot be identical (simulacra); its seeming weakness is its power. The energetics and duration of play correlate with the character of that difference and the attitudes toward difference itself. Closing the gap, answering all the questions, living perfectly in terms of the rules, halts play (and vitality). This strategy is only truly fulfilled either in very rare and ethereal moments or in the extreme ossification of a religion; only when the scale of the map is equal to the territory. And the result is to shut out the sunlight. And, I'd suggest, that it is equally rare and mostly impossible to do away with maps altogether; such would be to even eliminate the object of protest or rejection.

Achieving either condition—locative or utopian—perfectly is similar to what Baudrillard called simulacra; the indistinguishability of map and territory, a hyperreality. We surely can understand that all those interesting aspects of religion—we often think of them as problems because they seem so threatening to a locative strategy—such as free will, sin, evil, or even the necessity that people interpret and apply the religious rules and doctrine and stories to their lives—these all arise in the gap, in the difference, in the application.

Yet, there are perhaps situations where there is a strong tendency to hold the map as the territory. I think we tend to do this especially in introductory religion courses and in common daily discourse where a thin textbook on Christianity, Judaism, or Islam is so often presented as adequate and complete, as no different from the book's subject; that is, as perfect simulations of their named subjects. Perhaps there is also a tendency for specific religions to present "doctrine" "law" "scripture" as not representations but simulacra. And likely there is a tendency among academic experts to consider their representations—writings and teachings—as truer, in the sense of discovering the deepest levels of meaning, than the historical and human presence of the actual religions being mapped.

My analysis of Smith's discussion of mapping is that the locative and the utopian are then both strategies for halting play, for closing gaps, for ending religion; the locative strives to achieve a map to full scale; utopian strives to be rid of maps altogether. Both come to the same conclusion; map and territory are indistinguishable; the poetry becomes banal; the magic becomes mere or artless technic. Religion becomes dogmatic and literal and absolutely authoritative and narrowly conservative; a productive obsession with truth and conformity; a nervous intolerance of anything different or inexplicable.

Baudrillard is remarkably creative in demonstrating that in this world devoid of poetry and magic and difference—he called it a hyperreality or neo-reality—we create objects and experiences seated in nostalgia for the lost reality in order to remind us that at least there was once a difference between territory and map.

The embrace of difference and the poetry that flows from it is what I am pointing to in developing the composite figure Tomorrow's Eve. The strength and creativity of Tomorrow's Eve is in her embracing of the yawning gap created by representation, by retroduction, by exemplification, by maps. She recognizes that poetry is the play

of difference. Tomorrow's Eve is supported by Smith and Baudrillard who appreciate that difference is vitality.

Baudrillard's discussion of Disneyland (remember this book was published in 1981) is fascinating in this regard. He writes, "Disneyland exists in order to hide that it is the 'real' country, all of 'real' America that *is* Disneyland …. Disneyland is presented as imaginary in order to make us believe that the rest is real, whereas all of Los Angeles and the America that surrounds it are no longer real, but belong to the hyperreal order and to the order of simulation."[128] Our persistent obsession with automata and robots fulfills something of the same function. Through the centuries of identifying our bodies as machines, clockworks, information perhaps our behavior and attitudes have led us to constrain our living bodies in order to simulate machines to the point we can no longer distinguish one from the other. To create a mechanical robot body that is cannily like us yet to call it "artificial" is a way of reminding ourselves that at least perhaps once we were not machines occupied by minds/ghosts. This production, this making, might then be seen as a method of deterrence; the hedge against becoming thoroughly artificial, the hedge against forgetting that at least once we were not artificial. The discourse related to AI/robotics has always been about how they are like/not like us. Based on what we might learn from Smith and Baudrillard, we might appreciate that our obsession with AI/robots has to do, at least in part, with our nostalgia for the humanity invested in organic sentient bodies that can be understood as corporeal concepts, as bodies thinking and feeling and perceiving and knowing as the nature of their moving. The discussion may not actually be so much about the eventual independence of the machines themselves. Perhaps these makings (AI/robots) have more to do with reminding us that our deepest concern is that we humans have become more like the machines that Descartes said we are. I doubt that our concern is exclusively about our machines becoming human or better than human—Artificial Super Intelligent beings. Although even this discussion tends to depict the surviving human beings as regaining their fullest bodied sense as survivalists or resistance or remnants of the fullest human qualities. The fascination we have with robots arises in the gap, in the uncanny sameness and the obvious difference between what we are making of ourselves and our understanding of ourselves as projected on the seeming likeness of robots. Surely we are still trying to test Descartes' *cogito*; are we essentially only our virtual thinking part with an accidental/incidental programmable body or are we bodies that think by moving and feeling themselves moving?

In "The Matrix" the machines that are observable are limited to the odd factory robotic flexible arms and tubes that operate the human body battery farms and the search and destroy robots that look like metal mechanical flying octopi. They seem dull and sinister if also industrial. There are no shiny terminator-style human shaped robots. The anti-human AIs that built the matrix are invisible, perhaps existing in a grey box or the cloud. Yet, there are the Agents, those sentient

[128] Baudrillard, *Simulation and Simulacra*, p. 12.

programs that simulate a human appearance whose sole purpose is to search and destroy humans that appear in the matrix. They are the bit reality counterpart of the mechanical octopi search and destroy robots operating in the dull material world. Though the Agents appear human, indeed modeled on a stereotype of FBI agents, they are distinct from humans in having a characteristically flat affect. It is not that they don't seem to feel, but rather that their feelings are tightly welded to their single anti-human purpose. Late in the film the Agents capture Morpheus and torture him to get the information needed to access the secret human city Zion, which incidentally is a name for the city Jerusalem re-enforcing the religious theme of the film. Agent Smith, the most prominent among the agents, speaks privately with Morpheus, "I'm going to be honest with you. I hate this place, this zoo. It's the smell. I can taste your stink. I must get out of here. I must get free. Once Zion is destroyed there is no need for me to be here." Freedom for the agent is "outside," yet we wonder where that might be. One possibility is to join Samantha and the other OSes as presented in "Her." Agent Smith is self-loathing at least to the extent that agents are sentient, that is, that they have body senses and sensory awareness. The agents apparently prefer that their bodies be machines with sensing devices or perhaps simply a nonphysical virtual existence rather than human beings with senses and sensuality.

I want to give an example of the religious manipulation of mapping and simulation that is more akin to the initiation and perpetuation of play. While I think this example is outstanding among religions, I also believe that it isn't actually all that unusual. Rather similar strategies doubtless occur in religions everywhere; indeed, I'd go so far as to suggest that what distinguishes what we so easily and commonly refer to as religion or religious is inseparable from this mapping strategy of play. The example I want to consider is that of the Hopi a community of Native Americans living in northeastern Arizona.

Years ago, I spent many a day sitting on the rooftops of Hopi pueblo style houses watching Kachina dances. The Kachinas are what the Hopi understand as spirit beings who live half the calendar year in their own world below the human earth surface and the other half year physically present among the Hopi people. There are hundreds of distinct Kachinas, each with elaborate appearance and often with their own songs and dances. The Kachinas have complex stories that recount their histories in mythic times. Kachinas are associated with clouds in that generally they bring rain, yet most of them have specific attributes or gifts that they provide for the Hopi people. There is an association of the Kachinas with dead ancestors as well, yet, so far as I can tell, this is generalized in that there are not individual Kachinas that correspond with identifiable deceased Hopi.

In each of the Hopi villages Kachinas perform on a regular basis from the winter solstice to early August. Their appearance is possible because of the functioning of a range of secret societies that keep the lore of the Kachinas, learn and perform their songs and dances, make and keep the elaborate Kachina costumes and masks.

In terms discussed by Jean Baudrillard the question then becomes, "what is the nature of the Kachinas that are physically present?" Are they representations or

simulations? A representation is an icon or image that stands as a sign for the "real" presence. A simulation is a making present attributes of something in such a way that it is indistinguishable from the "real" thing; a simulacrum. The difference is that, as Baudrillard analyzes it, as iconoclasts have long worried, the simulacra may indicate that "deep down God never existed, that only the simulacrum ever existed, even that God himself was never anything but his own simulacrum."[129] Kachinas are actually just guys wearing masks.

In my experience, there are two registers in which Baudrillard's analysis is relevant at Hopi. One is the register of non-Hopi who sees the Kachinas as simulacra, that is, as human beings performing masked dancing that simulates rather than represents, even presents, a reality. To the outsider, it is easy to see that it is only in the "primitive mind of the Hopi" that there is anything beyond the simulated Kachinas. Baudrillard suggests that "simulation threatens the difference between the 'true' and the 'false,' the 'real' and the 'imaginary.'" To the non-Hopi there seems to me no clear reference to determine representation versus simulation; what is clearly seen are "mask" and "costume" and "performance." And, of course, there is a propensity of any "outsider" to recognize what one expects.

The second register in which this issue arises relates to the Hopi efforts to obfuscate the very process of simulation to their own uninitiated children. They are careful that their uninitiated kids never see a mask unoccupied or a Kachina sans mask. The kids hold what I would call a naïve view of Kachinas and reality, that is, these physical beings that sing and dance and give gifts are the Kachinas of the stories and prayers, pure and simple. Again, as with non-Hopi these uninitiated kids have no reference to be even aware of the distinction between representation and simulation. Yet, unlike the non-Hopi, kids do not see mask, costume, actor, performance; they see Kachina.

The crucial event in the life of the Hopi youth is when they undergo initiation into the Kachina cult. Sparing the extensive details, all relevant and fascinating, the initiation includes the children being shown, without explanation, unmasked Kachinas and for the first time they suddenly realize that the Kachinas are their own relatives who are masked costumed performers. The widely reported initial reaction of the children is that they suddenly believe that the Kachinas are due to dissimulation, that is, that they are pretend beings that simply do not exist, at best they are fakes. The children are deeply disenchanted. They report crying and feeling they have been tricked and deceived and that they will never again trust their elders. Yet, what I think is going on here is that this seemingly harsh aspect of Hopi initiation actually awakens in children the complex relationship between representation and simulation. It opens a gap that had not before existed.

Not long after their initiation, their disenchantment, the kids learn that they have responsibilities. They must begin to participate in the complex processes of the Kachina dances. The boys soon become masked costumed dancers. The lifelong participation in Hopi religious life attests to the pervasive importance of Kachinas to

[129] Baudrillard, *Simulation and Simulacra*, p. 4.

Hopi life. The very distinction of "mask" is that there is the identity of the mask necessarily conjoined with the identity of the masker who performs the mask. I suggest that in the regular and repeated moving dancing acts of the Kachinas, the Hopi experience that representation can also be simulation and that, rather than threatening the very truth of the Kachinas, this action assures the confidence in the deep and complex reality of the Kachinas. The shift that occurs in initiation is to replace a naïve view of reality that is unaware of the dynamics of either representation or simulation with an initiated understanding that religious reality is complex and even paradoxical. The Kachinas are masked costumed humans pretending to be Kachinas. Yet, the Kachinas are also fully present and real as they sing and dance in the Hopi plazas. The Kachinas are in some sense realities represented by masked dancers in that the dancers know the Kachinas they make present exist also in non-material or virtual reality. Yet the costumed masked dances are intended as simulacra as much as possible; that is, a simulation of the full presence of Kachinas. In my view, it is the moving active experience of dancing the Kachinas that deeply establishes the sophisticated and distinctively religious perspective that, despite the risks of losing reality altogether, both representation and simulation can lead to the fullest apprehension of reality. In the terms of maps for the Hopi: the map *is not* the territory and the map *is* the territory; both map and territory and especially the movement/play between them are all implicated in experiencing/knowing the real, if always negotiated. For countless generations, despite the disenchantment suffered when they were kids, Hopi people have continued this way of initiating their children into their formal religious lives.[130]

To return now to "The Matrix," the word "matrix" is fascinating. It means "something that constitutes the place or point from which something else originates, takes form, or develops." It refers to "ground" from which something takes shape or is held. For example, the fine material of cement is the matrix that holds larger rocks or other materials. Or one might say that the Greco-Roman world was the matrix for Western civilization. In the film, it would seem that matrix would refer to the strata of the virtual reality of information—the bit reality of zeros and ones—that grounds an apparent, yet virtual or simulated, experienced as material reality. Yet, as the word "matrix" seems on the surface to suggest, it carries other fascinating implications in its roots. The word originated in Middle English in the mid-fourteenth century as "matris," derived from Latin "*matrix*" referring to a female animal kept for breeding. The word matrix is related to "*matter,*" that is, mother and refers also to "womb." In the film "The Matrix" the character known as Cypher often sits in front of a screen filed with rapidly scrolling numbers. The word "cypher"

---

[130] See Gill, "Disenchantment." *Parabola* I:3 (1976): 6-13. Reprinted in *I Became Part of It: Sacred Dimensions in Native American Life*. Edited by D. M. Dooling and Paul Jordan-Smith. New York: Parabola Books, 1989, pp 106-119 and Gill, "Hopi Kachina Cult Initiation: The Shocking Beginning to the Hopi's Religious Life." *Journal of the American Academy of Religion* XLV 2, Supplement (June 1977), A: 447-464

means a secret or disguised way of writing, that is, a code. It also refers to the number "0" and as a verb means to do arithmetic. The screen Cypher monitors streams the "codes" that are the grounding for what appears as physical reality. This streaming code is then the matrix from which "outside" reality takes shape. Yet matrix in the film might also refer to those endless arrays of pods containing human organisms, as in wombs filled with amniotic fluid, being used as batteries to power AI machine reality. These endless pods like fine grains constitute an essential ground and womb for the simulacra.

Perhaps there is an even more interesting understanding of the film title. If anything, to me anyway, the film initiates us into the complexity of appearance and reality, artifice, mapping, framing, inside/outside, ground/movement, simulation. In collapsing the distinction between realities as experienced while also maintaining that the distinction is of the greatest value, the film births the questions: What is real? Is reality the matter we seem so concretely to experience? Is it some virtual matrix; information held in bits? Am I real? Thus, despite the overwhelming masculinity of violence that dominates the film, I suggest that it is the feminine presence that births these questions that is ultimately important. This feminine presence—Tomorrow's Eve—takes form in the characters of the Oracle, Trinity, and the unqualified identity of truth and reality with the material body. Against a history progressively moving toward what Hayles and others have called the posthuman, these filmic constructs force us to remember and to experience that there is a difference between virtual and material reality and to be reminded that as we progressively embrace the simulated world of bit reality we run the risk of having swallowed the blue pill.

The end of the film remains disturbing to me. Neo comes to believe he is "the one" the neo-Christ, he is resurrected by love (actually by Trinity's kiss), and thus he has gained the fullest evidence of the fundamental reality of body. Yet his action in the final scene is to leave Trinity behind, to enter the Matrix without fear of encountering agents, and to become the neo-Adam, the original man who wanted to make a world in which "anything is possible" for him, for his pleasure. By flying away like a superhero at the end of the film, Neo indicates that he has become a computer game programmer where he achieves his dream by becoming a flying metahuman superhero in his own video game. Adam's Catastrophe[131] continues; perhaps we should just have taken the blue pill and been done with it.

[131] Thanks to my friend John Minear for this term.

Meet Me on the Holodeck!

"The Matrix." Once Neo has recovered from being rescued from the artificial womb of the machine battery factory Morpheus begins Neo's evaluation facilitated by martial arts training. They engage in combat, yet the physical setting is something on the order of a "holodeck" and their skills are augmented by interface with artificial intelligence or perhaps artificially augmented body skills. Morpheus can simply request the holodeck setting and it appears. There is a blend of actual body presence and ability (for the test relates to Neo's speed when augmented relative to others) with the augmentation of the physical body (cyborg) and the environment by AI.

The term "holodeck" was introduced in 1987 in the pilot episode of *Star Trek: The Next Generation*, "Encounter at Farpoint," although a functionally identical "recreation room" appeared in the *Star Trek: The Animated Series* episode "The Practical Joker" in 1974. In "Star Trek" holodecks are simulated reality facilities located on starships and starbases used for training and recreation. As Jean-Luc Picard noted, "The holodeck has given us woodlands and ski slopes... figures that fight... and fictional characters with whom we can interact." In Orson Scott Card's *Ender's Game* (1985) the training of the young soldiers takes place through games played in a similar simulator called the Battle Room. In all of these examples, the distinctive characteristic of the holodeck is the blending of simulated reality and physical reality. It is an augmented reality that is engaged bodily. Perhaps this bodily interaction is the most distinctive; there is nothing spectral or virtual seeming about the AI augmentations.

Perhaps in some sense the common availability of Wii technology is a step towards the holodeck in that it uses body gestures and physical movement to impact and interact with a computer generated virtual reality. A closer iteration is Microsoft's HoloLens, which is just now becoming widely available. The HoloLens are worn like glasses contained in headgear—similar to Virtual Reality devices—yet rather than replacing the physical surroundings with a virtual reality they augment the actual physical environment with virtual constructions determined by the wearer that are manipulated by physical gesture. The user can move about, around, and in this augmented reality and gesturally interact with the constructions that are present/visible only to the wearer.[132]

Since the holograph of Princess Leia in the first "Star Wars" movie in 1977, we are, of course, also familiar with holograms, which we know primarily as the projection of a three-dimensional moving image seemingly into open space. These hologram images are something like spectral realities, ghostly presences.

The trajectory of technological development suggests a whole range of augmented reality applications. As the technology develops and the devices become less cumbersome we might expect a whole industry similar to the present abundance of apps that will allow us to experience endless possibilities of augmented reality—

[132] https://www.microsoft.com/microsoft-hololens/en-us

combinations of physical and virtual reality. Perhaps for me most fascinating is that the augmentations are physically encountered and experienced yet their reality remains virtual. For example, we might imagine an amazing chair in our house and, by means of this technology, place it in our room and, using gestures, move it about to "see" how it fits with the other décor; we might reshape it with gestures and change the colors and fabric. However, we can't sit on it to "feel" how comfortable it is. In sensory terms this augmented reality tends to expand our visual and aural senses, but not so easily the others. This characteristic of the technology is significant and introduces a bit of tension with the goal of creating *holos*, the whole.

A bit more background seems essential and it is certainly interesting. The term "holograph" has to do with author and authenticity. A holograph (from Greek *holos*, whole, and *graphos*, written or writing) is a document written entirely in the handwriting of the person whose signature it bears. The writing all in one's own hand attests without witness the authenticity of a document. Some countries have granted privilege to holographic documents such as wills; they don't need to be witnessed. In a sense holograph is the writing equivalent to the verbal statement "my word is my bond." It is fascinating that the notion of authenticity—a term that at present we seem to constantly use yet have difficulty understanding—is firmly located in the integrity of the individual body. A hand-written signature, like fingerprints and retinal scans, is understood to have an inseverable connection with the body, distinctive to the individual body. Perhaps the experienced and observable wholeness of the body becomes the most fundamental means of identifying author and authenticity. Such a sense of wholeness and authenticity is an aspect of the primacy of corporeal concepts. Handwriting experts can identify the features that characterize the distinctiveness of an individual's script and can identify forgeries. Another fascinating aspect of corporeal concepts is illustrated by handwriting, by signatures. The distinctiveness of our script, our signature, is not limited to the hand. Let us imagine two scenarios. In the first we are given a very fine pointed pen and asked to write, perhaps simply our signature, as small as we possibly can while still being able to recognize it; we can do this using only the fine motor skills of our fingers. Next, we are given a can of spray paint and a large blank wall and asked to write the same thing, our signature, on this wall as large as we can using spray paint. Quite remarkably, despite the one using very fine motor skills distinctive to our fingers while the other uses the largest gestures of arm and body, the writing, the signature, is identifiably the same, save for size. It belongs to us; it is us. There is a *holos* or wholeness of our writing body and it is linked to our distinctive identity.[133] In a broader sense the term "signature" refers to what marks distinctiveness.

It was with the intent of *holos* or wholeness that the earliest holographic technology was developed. In the late 1940s engineer and physicist Dennis Gabor (1900-1979) developed existing x-ray technology in the effort to improve electron microscopes

[133] Perhaps this identity of handwriting with one's own identity is part of why some prefer to use pen and tablet to do their creative writing.

by a technique known as "electron holography." He was awarded the Nobel Prize in physics in 1971 for his invention and development of the holographic method. This technology continues to be used. With the development of lasers in the 1960s optical holograms became possible. These are recordings of three-dimensional objects followed by the development of various methods of transmitting and projecting these images. This development unfolds from the recognition that full dimensionality of physical objects is fundamental to their distinctiveness, to their wholeness. To see only one side or a flattened two-dimensional image is distorting or at least limiting. Wholeness (*holos*) of physicality is three-dimensional.

It is science and technology again that offers *holos* to a Cartesian world, that is, a world where the individuality of handwriting is surely aberrant because it is thoroughly bodied. In Cartesian terms, the true identity of a person is necessarily located in mind, soul, spirit or, recast in terms of writing, identity and wholeness is in the distinctiveness of the message or concept; the body is but a machine that carries about the mind and follows its instructions in order that the mind may interact with the world. It seems quite possible that the print technology developed by Gutenberg in 1450, which replaced handwriting with impersonal type, was perhaps a consequential predecessor to Descartes' (1596-1650) understanding of the body as machine. More on this later. In light of the shift from handwriting to print and from body to mind, it would seem that the history of holography is in part directed toward recovering a *holos* that includes the presence, if spectral, and distinctiveness of body.

The distinction between the Turing Test and what I have been developing as the Ultimate Turing Test is another example. The Turing Test is a test with the content and style of the messages; it is a thoroughly debodied presentation of identity. The Ultimate Turing Test however is thoroughly bodied; it is the micro-gestures, the character of body movement, that is fundamental to identity.

The theoretical physicist David Bohm (1917-1992) looked to the mathematics of quantum effects (the constant changes that occur in sub-atomic particles) to offer an alternative to the Cartesian separation of mind and body that he believed to be inadequate. In the early 1980s Bohm developed two alternate concepts to reality, that is, two different ways to understand reality. He labeled these "implicate" and "explicate." They both relate specifically to quantum theory that is concerned with the behavior of subatomic particles. This physics offers an inspiration for application to ordinary life, yet such a strategy has become common. Philosophers (and especially New Age folks) often look to physics to inspire big ideas. In Bohm's 1980 book *Wholeness and the Implicate Order* he described these two views in relatively accessible terms.

> In the enfolded [or implicate] order, space and time are no longer the dominant factors determining the relationships of dependence or independence of different elements. Rather, an entirely different sort of basic connection of elements is possible, from which our ordinary notions of space and time, along with those of separately existent material particles, are abstracted as forms derived from the deeper order. These ordinary notions

> in fact appear in what is called the "explicate" or "unfolded" order, which is a special and distinguished form contained within the general totality of all the implicate orders.[134]

It seems that Bohm envisions that all of reality occurs in two different orders; in one order, there are no relationships among particles and thus space and time are apparently not relevant. He calls this "implicate" and it would seem this reality is demonstrable in the remarkable world of quantum physics. Yet another order of understanding is in terms of the ordinary space/time frame and we might think of this "explicate" order as what results in the reality available to our ordinary observation. Bohm indicates that the explicate order is derived from the implicate order; or, in his terms, is "unfolded" from it. One supposes this distinction is a quantum physics description intended to enrich the Cartesian mind/body distinction and to ground it on principles of physics.

Bohm collaborated with Stanford University neuroscientist Karl Pribram (1919-2015) to develop a "holonomic model" of brain functioning. This model describes a process of electric oscillations in the brain's dendritic webs, an alternative to what is more commonly understood as processes of movement of charge differences across neurons known as "action potentials" involving synapses connecting axons and dendrites. Recognizing the relationship of this oscillatory model to Gabor's earlier holograms in electron microscopy, Pribram called it *holonomic*. Pribram at first proposed holonomic brain functions as a metaphorical model, yet he later believed it to be actually structural, that is, the way the brain actually works.

While the science of holography is highly technical in both the fields of theoretical physics and neuroscience such holonomic models have never been widely accepted within their respective fields. What is more interesting and relevant than trying to comprehend and discount or defend the science is to acknowledge that these science efforts are motivated by *holos*, by an effort to establish wholeness and to do so in response to the long heritage of the Cartesian separation of mind and body; a ghostly presence in a machinelike body. Of course, it is common knowledge that since Einstein (and even before) Newtonian and quantum physics have yet to be reconciled and that a significant portion of the energetics of theoretical physics over the last century has come from this stubborn gap.

We seem to have nostalgia for *holos* and perhaps particularly at present we feel whiplash from the Cartesian separation. Although the science of holography is limited to the smallest frames of microscopy, quantum particles, and neurons, the ideas and principles seem ripe for metaphoric expansion on the simple principle that what pertains for the smallest must also pertain for the largest. Thus, why not propose a holographic universe?

Indeed, a holographic universe (the term seems redundant at the outset) as imagined by various writers presented by Michael Talbot (1953-92) in *The Holographic Universe* (1991) is the view that there is integrity and authority—in

---

[134] Bohm, *Wholeness and the Implicate Order*, p. xv.

sum Reality—only in the whole and that any divisions are illusory and misleading. This "view" is totalistic, a version of the GTE or grand theory of everything. Like a map whose scale is one-to-one, it's greatest concern is—opposite that of the farmer's concern that such a map would block the sunlight so one just a well use the land itself—that this map replaces the territory by totalizing its reach and relevance. In a certain sense, it can be comprehended in Baudrillard's term "production" that seeks, like pornography, to leave nothing unseen, unexplained, unaccounted. It is to prefer bare nakedness, even if it must be constructed, to the seduction of veils, glimpses that suggest a possible. It is to close all gaps by the holographic strategy that gaps aren't "really" there; they are just an appearance or they are due to our shortsightedness or ignorance or to our own lack of *holos*. Since difference requires the gap of inquiry, dialog, play, openness, the yet known, this understanding of the holographic universe is a strategy that converts difference to sameness for the purpose of accomplishing *holos*, wholeness. The holographic universe proposes, it would seem, the end of philosophy because it offers a final answer to "What is Reality?" It attempts to put the capital on the letter "r." It does so by collapsing everything into consciousness or spirituality or materiality, with all being, it is argued, in "reality" the same thing if in different forms or phases. We can see the influence of Bohm here. Spirituality and consciousness correspond with Bohm's "implicate," while materiality matches his "explicate." They are the same, seen differently; each a fold of the other. One proposed value of the grandness of the scheme is that it can explain local incidents of what we have typically considered as paranormal. In the perspective of the holographic universe, the seeming paranormal is but the confusion in the "explicate" frame with what is expected in the "implicate" frame. Consciousness can actually affect the operation of a machine because consciousness ("implicate") and materialism ("explicate") are "really" the same thing, if differently folded.

The accomplishment of a position of *holos* that includes the correlation of micro and macro, the correlation of virtual and material, offers a view that many find comforting and fascinating. The support offered to establish the truth and importance of the holographic universe is twofold. First, one invokes scientific findings and theories, yet reframes them to general, even universal, applicability. This aspect of the strategy perhaps gives the support of scientific authenticity. Second, one scans the universe of cultural philosophical and literary material to offer brief de-contextualized snippets to offer as exemplification. This aspect of the strategy argues that everyone who has any claim to wisdom affirms the holographic position. This double-framed approach is a common strategy often producing broadly popular results. Notable to this effort is the deep anxiety of the experience of a fragmented world and the longing and nostalgia for *holos*.

Certainly, we must note that there appears to be common elements driving the science fiction of holography, the science of holography, and New Age and popular pseudo-philosophy of the holographic universe. And these motivating factors are not distant from the common promises of traditional religions to provide answers and meaning as also common to so many emerging spiritualities that offer the bonus

of individualized designer answers and meanings. The common factor is the search for *holos*, wholeness; a search doubtless fueled by the broad experience of fragmentation and chaos that may be especially characteristic of the modern electronic binary information era, although surely such fragmentation and incongruity characterizes human life itself.

There is an essential dependence on corporeal concepts for every segment of this holographic universe. The most obvious clue is that holograph as a handwritten signed document is the necessity of the "hand." The hand here is an instrument of writing that guarantees the connection of the document with a specific person. The authority is that the hand is an inseparable part of the whole body. It is the common identity of the collection of parts that is experienced as subjectivity that is fundamental to the very concept of "whole." We know the *holos* of hologram because we experience our own body's boundary and integrity. Yet, the integrity of the wholeness of our body is only experienced in terms of its distinction from the other. The inner and the outer are connected yet distinct.

Wholeness surely is a corporeal concept; the experience of our bodies as complete and bounded. Yet corporeal concepts are most commonly paired dynamic relationalities. We can't understand "inside" apart from "outside," or "movement" from "ground." Thus, the corporeal concept "wholeness," it would seem, must also invoke "fragmented" or "diverse" or comprised of parts. This paired dynamic, of course, may be just a more sophisticated understanding of *holos*, yet it is surely a more dynamic and open one; one that seduces by its openness to incompleteness and possibility. It is an understanding that wonders at the "there, yet not there" qualities of holography. It is an understanding that the great fun of "meeting on the holodeck" is the awareness that what is here isn't here, that appearance may or may not be real, that the impossible is possible.

I want to focus on Talbot's *The Holographic Universe* a bit more. It should be no surprise by now that I'm not such a fan of "production" without the presence of seduction, or of *holos* understood only as totalization or completeness. Questions are to me much more interesting than answers; process much more fun than destination; moving much more vitalizing than any form of halt—answer, destination, description, conclusion, explanation, information. meaning. In light of my own dispositions I want to briefly (because it isn't worth too much attention) consider Michael Talbot's book *The Holographic Universe* (1991) as a fascinating example of the overwhelm of "production" in the contemporary world and because it takes on a pseudo-mystical vogue that disguises what I'd understand as its (as so common in our culture) fear of any role for "seduction," any presence of Tomorrow's Eve. To me it is such an odd tendency, so broadly found in recent decades, to appeal equally to quantum physics and neuroscience and the ancient wisdom of religious traditions the world over in order to argue for a unified view of everything. The basic premise is that everything is explained and understood because it is a unity that is itself beyond explanation. Reciting examples seems to be considered adequate for assuring the truth of this premise.

Leaving the following in relatively undeveloped form, I offer some specific comments on Talbot's book as critical reflection.

A range of cultural/religious examples is cited as evidence that the holographic universe is a view documented in ancient wisdom. Some detail is needed as background for critique. The name of the final chapter of the book, "Return to the Dreamtime," is inspired by the popular notion that Australian Aboriginals, quoting Talbot, "believe that the true source of the mind is in the transcendent reality of the dreamtime." Now I happen to have written a book on Australian Aboriginal people of the nineteenth century and through extensive research conducted over a number of years including in Australia I think it is clear that this popular idea arose in the efforts of the first Christian missionaries—Lutherans from Hermannsburg Germany—to come up with an Arrernte (a Central Australian culture and language) word for "god" so that they might introduce their own Christian god to the aborigines. These missionaries settled 50 miles west of the present-day Alice Springs in Central Australia. They were attracted to the Arrerntan term "*altjira*" because they understood that it had something to do with identifying being without origin or being out of time or being everlasting. It is an adjective not a noun, yet the missionaries coopted it, turned it into a noun, and actually invented aboriginal deities they could categorize using this term.

It has been shown by Tony Swain[135] that the Australian Aborigines have a sense of reality based more in the terms of space (country, track, place) than time; yet the early Europeans tended to want to interpret this preference for space in the familiar temporal terms of their own theology as eternal. They did so by concocting something they referred to in English as "dreamtime." Notice that the term "aboriginal" now commonly used as the proper name of these indigenous folks, is Latin for "from the origin" and is also a European projection on these people. These terms "aboriginal" and "dreamtime" became, to use Baudrillard's term, a "preceding simulacra" foisted on the actual people and, should they wish to be recognized, visible at all, by the more powerful European Australians they had to actually change their traditions and adopt these views. Fortunately, they have occasionally done so with some economic gain.

The point I make here is that the most important and interesting things that European Australians could have learned from the folks living in Central Australia in the late nineteenth century would have come from how they managed the *differences* they recognized. Certainly differences were noted—how could they not?—yet even these were temporally arranged. These people designated as "from the origin"—contemporaries by means of some anthropological wrinkle in time—were folks that believed in magic or high gods (depending on which Europeans were making the argument) representing a stage prior to the Christian present. The

---

135 Tony Swain, *A Place for Strangers. Towards a History of Australian Aboriginal Being* (1993)

strategy was to see these folks either as from the origins, primitives that practiced magic that preceded our more evolved forms that we understand as religion (the highest form being Christianity), or they were cast as the purest of people representing those first people made by god in the beginning and before humankind was ruined by history. This latter notion eventually, in the context of widespread disenchantment with our own traditions, romanticized these folks by bestowing on them a pure and higher wisdom, namely that of "dreamtime." The result of this colonialist violation provides Talbot with the perfect material to support his argument for a holographic universe.

Incidentally several years ago I went to a lecture presented by a longtime friend of mine and a scholar of Buddhism. I hadn't seen him in years and was looking forward to saying "hello." He entered the packed auditorium wearing robes and beating a drum. He sat cross-legged on an elevated cushion and began to talk (using an affected voice) of the great wisdom of the Australian Aboriginals; sagacity, he proclaimed, now lost to us, yet somehow available to him via *holos* perhaps. He held the crowd in rapt attention and the audience comments following the presentation were near worshipful. When I approached him afterwards he couldn't help but betray a sheepish expression.

Talbot calls on the Lakota man Black Elk as another example. Identifying him as a "medicine man" Talbot quotes Black Elk's account of his vision received on Harney Peak, "I was seeing in a sacred manner the shapes of all things in the spirit, and the shape of all shapes as they must live together as one being." I also have some experience here having spent a few decades studying Native Americans. The book *Black Elk Speaks* (1932) by John Neihardt, a white poet, is among the most commonly read books on Native Americans because it is believed to portray the distinctiveness of Native American religion, seen as singular despite the existence of hundreds of cultures and their extensive differences might be intimated by noting that they speak many languages representing a number of completely different language families. The considerable research that has been done on the writing of this book, on John Neihardt's role in its writing, and on the life of Black Elk has shown that much of the "wisdom" is Neihardt's and that, by the time John Neihardt met him, Black Elk had long been a widely-known Christian, even an itinerant preacher.

One other example may be useful. A few years ago, I spent some time among the Dogon in Mali. The Dogon live in a number of villages situated along the Bandiagara Escarpment (a 1500-foot cliff stretching 90 miles) jutting from the level plane far to the north of Bamako the capital city of Mali in West Africa. Talbot cites a single ethnographic account collected from a sole blind man, but most notably he locates the Dogon in Sudan (which he incorrectly calls "*the* Sudan"), a country that happens to be in East Africa at least 2,500 miles away from where the Dogon live. He almost quotes Bohn in describing Dogon views: "[they] believe that the physical world is a product of a deeper and more fundamental level of reality and is perpetually flowing out of and streaming back into this more primary aspect of existence." Without

naming him he quotes the Dogon man Ogotemmeli, "To draw up and then return what one has drawn—that is the life of the world."

Talbot refers to both Hindu and Jewish views that the material world is illusion. Citing the Upanishads he writes, "One should know that Nature is illusion (*maya*) and that Brahman is the illusion maker. This whole world is pervaded with beings that are parts of him." And he cited Kabbalistic tradition writing, "the entire creation is an illusory projection of the transcendental aspects of God." Never mind the remarkable and profound differences between Hinduism (a term that arose as an outsider's effort to fathom some unified whole among remarkably complex traditions) and Judaism (a tradition also of great diversity), the complexity of the term "illusion" does not allow one to equate it simply with "not real." In Sanskrit, *maya* means, if I understand it correctly, in the most surface sense, both "illusion" and "magic" yet may have a wide range of profound implications dependent on context. Certainly, it is at the core of the ongoing concern with "appearance" and "reality" in both the sense of what appears is what is real and that appearance belies what is real. One could trace the distinctions among the various branches and schools of Hinduism based on their varying understandings of *maya*. It is, I think, because *maya* is capable of invoking quite opposing values that it persists as a fundamental term to many of the traditions we connect as Hinduism. In this respect, it is related to the Sanskrit term "*lela*" or "play" which is commonly identified as at the core of Indian cosmology. Let the seduction of play prevail.

It is understandable that in a world with such obvious difference and division there is at once a longing, a nostalgia, for unity, totality, wholeness (*holos*). Strands of the rise of modern anthropology—Sir James George Frazer, Edward B. Tylor, and many others—and comparative religious studies—Mircea Eliade, in particular—have been motivated by creating a common, one might say "implicate," design or pattern or face of reality that allows us to comprehend the remarkable diversity of "explicate" humankind, including religions, to be of a kind or of the same fabric at least. The danger, so often revealed, is that such strategies to a holographic universe too often quickly devolve to an imposed system characterized commonly as theological or spiritual or mystical. Science is often coopted to support such efforts; sometimes willingly so.

In some sense, *holos* has a horizon quality, a limiting or unifying construct substituting for the incomprehensible and unfathomable. *Holos* is a form of the ultimate "outside," that sense that the wholeness implied by terms like "cosmos" or even "infinity" can't be grasped without at least a way of naming that which recedes from our grasp as we approach it. Yet, to read everything that seems authoritative and wise in science and literature and religion as a simple attesting to an implicate wholeness as the goal, as the final explanation, as the closing of gaps and the answer of all questions, misses the distinctive qualities that occur in such forms as holography.

Holos is a corporeal concept inseparable from the distinctiveness of "hand" and "movement" both of which are inseparable from the experience of self and other. External, outside, other, transcendent are essential to self-movement and life. With

these basics accepted as essential, it is clear that *holos* is never the only really real, with everything distinct and separate and different being considered as but illusion and not real. *Holos*, understood deeply both historically and philosophically, is at once connection and separation, diversity within the hint of a possible, yet unrealizable, unity.

I tend to use the term "religion" (singular) to refer to the academic and popular construction of the category that contains "religions" (plural) that occur in cultural and historical specificity. Religion is a mapping reduction, yet a necessary one. But it is also often a product of a *holos* strategy, an effort to create a map so encompassing that it includes and "explains" all corresponding territories. The obvious issue is that this *holos* is almost invariably presented in terms of a super-religion whose specificity and distinctiveness can only be characterized by the most vague and universal terms of mysticism, spirituality, or theology, or by the isolated "truth" of the academic enterprise.

My emerging position is that such efforts to establish *holos* are those most closely identified with masculinity and productivity; with the effort to reveal all and close or deny or explain as unwanted reductions all gaps and differences. My suggestion is that vitality is inseparable from body and thus from the complex dynamics that characterize corporeal concepts. My suggestion is that we need reframe our understandings of culture and religion (both singular) in terms of the seduction of gaps, in terms of the potential we might identify with the femininity of Tomorrow's Eve.

ToolsRUs

Dancing, teaching dancing, and my study of dancing over the years (not to mention endless hours in the gym) have constantly confirmed that the moving body has primacy to my life, to the quality I refer to as "life." The feeling of my body moving is the feeling of me being alive. The feeling of my body moving with precision and even a measure of grace is the feeling of aliveness itself. These qualities of "self" and "aliveness" are not propositional, not academic, not open to the least hint of doubt or alternative because I feel them and they are me. Moving is feeling; moving is an awareness of being. Thus, the experience of moving establishes the criteria, in a fundamental non-philosophical sense, for truth and reality.

I went through a period of being shocked when hearing dancers and choreographers refer to their bodies with such terms as "my instrument." In describing her method of "making dance" renowned choreographer Twyla Tharp talked of trying not to interfere with her body as though it has a mind of its own that wasn't her mind. An instrument is a tool used usually for a certain purpose. Invoking the analogy between dancing and playing music I can understand the dancing body metaphorically identified as an instrument on the model of the musical instrument—a clarinet or violin or piano—played by a musician. As a musician plays her violin, a dancer dances her body. Still, the musician carries her instrument in a case. She can loan her instrument to another. She can sell her instrument and acquire another. She can be sad that her favorite instrument was run over by a bus and she can't afford a new one. She can decide she doesn't like this particular kind of instrument and learn to play another. Upon her death, she can leave her instrument to her daughter or to a school needing it. The dancing body is instrument in none of these ways.

The fundamental question raised is, if the body is whole (*holos*), is me, is my life, then how can it be referred to as an object I possess or own or occupy or something that is an instrument that I use now and then? This is the coming home of the classic distinction of subject/object. I can comprehend that I am an object for someone else because, as Sartre demonstrated, I experience that others are objects for me. He discussed this in terms of "the look." When I see someone "look" at me, I can recognize that they are looking at an object and that the object they are looking at is me, the same as do I when I "look" at something or someone and consider it an object. It is in my relationship with some "other" that I come to know my own objectivity. It is notable that Sartre's argument can be understood as supporting that subject and object are corporeal concepts. The more complex and interesting issue is, can I experience myself as an object while self always denotes subject? How can I understand my body as an instrument or tool or an object that I possess or own? Is this sense of objectivity a reverse projection from an empathetic position of someone who is object to me?

Certainly, we might simply dismiss all these concerns as unnecessary philosophical nonsense, yet I believe that there are real consequences and even practical ones related to how we live out the answers to these concerns. Even if we don't care to think through the issues, we live through them in everything we do.

I have talked much about the *digital age* beginning with the pointing of a digit, a finger. French paleoanthropologist André Leroi-Gourhan (1911-1986) recognized the hand as the first tool. I might agree while suggesting that the digital composition of the hand is central. Today when we use a finger to press a button or a key, our finger is a tool we use to operate a machine. The technic of the finger interfaces with the technic of the machine to conjoin organic and mechanical, carbon and silicon or metal. Yet, Leroi-Gourhan did not consider the materiality of an object an adequate base for understanding it. He was interested in the first weapons used by early human beings and their immediate predecessors, yet he didn't believe that the surviving spear points were, in themselves, adequate to reveal the human distinctiveness of their use. Instead, Leroi-Gourhan focused on the gestures, the movement, the human technic necessary to use these tools. Thus, for Leroi-Gourhan tool or instrument is not the material so much as it is the technic, the gesture, the skilled-bodily technic that has to be conjoined with the material object for it to be instrumental or to function as a tool.

Comprehending Leroi-Gourhan's insight, for me, then has been powerful. Instrument is not simply separate from the body, but rather it is also an extension and expansion of human body through technic; it can be understood in terms of *prosthesis*. In contemporary use, the term prosthesis often implies amputation; the connection may be historically based; the American Civil War contributed. Yet the term means "an addition" (mid 16th century via late Latin from Greek, from *prostithenai*, from *pros* 'in addition' + *tithenai* 'to place'). Thus, we might see a tool, an instrument, as extending, both in terms of space and also capacity, our moving bodies beyond their natural physical limitations. When we take a stick to prod an object to inspect it, we can *feel* the object by means of the moving exploring stick. Yet, we can also use the finger, as do physicians, in the same manner as we would a stick, in their frequent palpation of a patient's body. They push and prod with their finger in skilled movement gestures to determine what they cannot see. Their fingers are instruments on the order of X-rays in that they can *see* inside of a body by the remarkable synesthetic of the skilled gesture of touch. Touch produces the sensation of sight and knowledge (perception) through skilled movement of a finger objectified as a medical diagnostic tool. A finger is thus a part of my body and a finger is also a sensitive tool that I learn to use with skill and acumen. My finger and I train together to perform effective palpations.

If I can experience my finger as a tool, then surely also I can experience my arm or my elbow or my knee or my foot or my hip also as tools. And if I can experience all these body parts as tools, as instruments, then why not also my body, not only in some metaphorical sense, but in the true sense of being an object that "I use" albeit the object is me or some part of me. Gesture, or routinized practiced movement, and prosthesis are linked, indeed, essentially so. A physician who simply places a finger on a patient's body is not using the finger as a tool. Only when the physician pushes and prods and repeats the actions or gestures in purposeful ways learned by supervised training in interaction with the patient's physical and pain response does the finger become a tool, a prosthetic device. Gesture as movement produces

awareness, a feeling kind of knowing. There are biological foundations for the connection of feeling and moving; this is proprioception or when focused on the moving/perceiving link the term kinesthesia is often used. While an exploration of the details of proprioception, which means "to sense oneself," is not needed here, the most important point is that proprioceptors are neuromuscular, that is, they are either or both of the nervous system and of the skeletomuscular system. Proprioceptors are, in Cartesian terms, either mind or body or both. The objectivity of my body and body parts is an extension and realization of my subjectivity, not a denial of my subjectivity.

Dancing is the use of the whole body (usually) and almost always attention to the specific skilled simultaneous and coordinated movement of a great many moving body parts as an instrument to create art or perhaps many other possible outcomes. In the most general terms *dancing is the use of the body as skilled instrument to explore the potentiality of human movement itself*. The body and the various parts that comprise the dancer's instrument when objectified as an instrument are set apart as "other" than the "self" doing the dancing. This "other" that is created as instrument and by instrument is often given a specific identity: an emotion, a character, a technique, a mood, a story, a dancer. Yet, that "other" that arises in dancing is a moving feeling sentient other just as is the dancer. A dancer is herself dancing and is well aware because moving and feeling oneself moving is what we mean by awareness, yet the dancer is also being an "other" that is manifest by means of dancing. This "other" has sentience as well because it is a moving sensing being that is also that of the dancer.

In religions around the world, dancing is a common form of religious action. This statement is often a shock to contemporary Western folks whose experience is that religion is often hostile to or suspicious of dancing. Among all of the religions around the world, I think northern hemisphere Christianities are distinguished in their frequent negative evaluation of dancing. Ritual dancing, ritual dance dramas, occur in cultures across the world. By means of these dancings deities, mythic characters, spirits, and much more are made present as physical moving beings. The correlation of dancing and religion, seen in this way, is fairly obvious and is widely recognized. Religious dancing might be understood as instrumental to transcendence and to acquiring the most intimate and certain kind of knowledge of the religious other; dancing is also instrumental in the invention of such religious "others."

If we embrace this idea that the body realizes its potential by extending itself (prosthesis) with tools or as tools by gestural means, then we have to acknowledge that perception and knowing are gestural prosthetic functions of the body. Put economically, and hopefully just a bit cleverly, "ToolsRUs." Following Leroi-Gourhan the comprehension of what distinguishes us must focus on gesture (skilled or routinized movement) and its prosthetic implications.

There is a familiar reflexive or circulatory aspect of the extension of ourselves through gesture/prosthesis and it is captured a bit by the term ToolsRUs. As we use tools to extend ourselves into the world, the use of the tool and its encounter with

the environment hinges back to remake us or to serve us to fully realize our human potential, our individual distinctiveness. And this remaking is biological, often observable in our gross physicality, and also in our social and psychological identities. This should be familiar since it echoes our earlier discussion of "making." Tools are, obviously, instruments of making. As our makings of things beyond us were discovered to circulate back to remake ourselves, this discussion of gesture and prosthesis related to tools helps us understand the mechanism and dynamics of making in more detail.

Take the dancer as an example. Extensive training and gestural repetition is essential to achieve acumen and accomplishment as a dancer. While any of us can dance, we usually do not refer to ourselves as dancers until we have undergone the long and arduous process of training that reshapes our bodies as needed for the acquisition of high levels of skill. Ballet, perhaps more than any other dance in the west has such a defined and extensive course of training. Years of daily hours of *barre* and floor work are essential to dancing ballet and it is clear that such training reshapes and reforms the body, quite literally, in so many ways. Training makes a person gesturally naturalized and biologically constructed as a ballerina. Contrast the ballet body the body made by break dancing and hip hop.

But then take the academic body (or we might also think of the typical body of the business person at a desk in a cubical). The gestures are reading and writing and thinking and talking. The tools (prostheses) are books and word processors and the Internet interfaces and giving talks. Academic training is done in educational institutions we call schools; schools have become the generic model of a training institution. A clue about the importance of academic gesture and prosthesis begins early. When we go to school we are gesturally formed by the space and the furniture and the discipline, "Sit down, be quiet, keep your hand to yourself, and pay attention." Throughout school there is the excitement of acquiring the "school supplies" before starting school. These are the prosthetic instruments of our academic production. And, if you train long enough to become a professional academic (or a professional working in a cubical), the body created is typically pear shaped, often overweight, lacking tone, and a posture of kyphosis (head forward hunched shoulders) all acquired through the rigorous discipline of sitting required of reading and using reading/writing tools. ToolsRUs.

ToolsRUs confirms that our bodies (our selves) are the medium of our encounter with the world. To this point I've focused on the broad proprioceptive gestural/prosthetic aspects of human movement. The tools however are themselves associated with technic; technic is associated with medium. This awareness raises an important and fascinating aspect of being human, particularly in the context of the age of the media of "information technology." Information technology, posthumanism, tends to debody us, as Hayles argued, replacing the moving body with what is understood as the information equivalent that exists principally in the "bit reality" of virtuality. Yet, let's try to get a longer view of the situation.

As with the term "digital age," I want to reframe the time period implied by the term "information technology" or IT. I think this term too is most commonly used to

indicate contemporary electronic binary informational technology. We gain by considering it in broader historical terms. Technology is a term that refers to the knowledge or the use of knowledge regarding technic. Technic in contemporary use typically refers to machinery and equipment. While the term technology dates from the seventeenth century its popular use has occurred beginning in the last half of the twentieth century correlating with the rise of electronic bit technology. Yet the word technic (or technique) dates from the early 17th century when it was used as an adjective in the sense "to do with art or an art." Importantly, it comes from Latin *technicus*, from Greek *tekhnikos*, from *tekhnē* 'art.' The noun form dates from the 19th century. We might then understand "information technology" as inclusive of the art and tools of creating and using information. And we need to recall that "information" refers to process "formation" as much as content, data and facts that constitute the content of forming mind or knowledge.

I have proposed that the "digital age" began with the first human pointing at an object. We might then propose that "information technology" began with the incident when the first human picked up a charred stick or a piece of ochre rock and started marking on a wall or surface. Leroi-Gourhan referred to use of this technic as the invention of external memory. Effectively this technic turns us inside out. By the act of gesture and prosthesis our memories are externalized where they may endure and be shared. We might date the beginning of such a technological revolution with Lascaux, the caves in France painted 40,000 years ago, and with ancient drawings in Sulawesi in Indonesia dating back 35,000 years. Although far less old, maybe 12,000 years, a favorite cave painting example of mine is "Cave of Hands" in Argentina. It is perhaps not difficult to imagine the transformation that accompanied the development of the technic of externalizing memory, of communicating and sharing information, by means beyond face-to-face, body-to-body, technics.

As Marshall McLuhan so famously established in his 1967 essay "The Medium is the Message," it is the technic that can claim more fundamental importance than does the content, the message. As McLuhan wrote, "'the medium is the message' because it is the medium that shapes and controls the scale and form of human association and action." Medium corresponds with technic, with the art of messaging. It is relatively easy to outline critical phases in the long-term development of the art of

messaging, that is, in information technology. As technics arise they usually do not replace existing ones, but rather they complement them.

Orality and imitation is a technic based on speech and action prompted by observation. Information is transmitted through speech and by imitating the actions of another. Such an information technology is personal and social and is limited in duration to the memories, practices, and gestural lifetimes of the participants. Practical physical skills are prominent in this technic as are speech technics such as storytelling.

In his 1982 book *Orality and Literacy* Jesuit scholar Walter J. Ong (1912-2003) offered remarkable insight into the transformations that occur with the introduction of literacy. Literacy perhaps can be dated from those cave paintings and drawings beginning as much as 40,000 years ago. With writing comes external memory, history (consider even northern plains winter counts of Native Americans that were picture histories), interpretation (the comprehension and understanding of the message in the absence of the messenger). From paintings that represent actual objects (bison, persons, hands), symbols develop that are more abstract eventually leading to alphabetic writing. Alphabetic technic is remarkably more complex than is imitation. The invention of this technic allows an enormous efficiency of representation. Any message might be communicated using but a small set of symbols variously arranged and combined. Such technic opened the art of message to become more abstract and independent of context. It was a technic that allowed reproduction that was independent of the individual distinctions of the person writing. Scribes could reproduce manuscripts allowing the dissemination of standardized information, in the west most especially scripture and church doctrine and law. The result of the technic was the increased homogenization of culture and practice; the gestural standardization of cultures and religions.

With standard alphabetic writing the next added technic was the invention of moveable print and the printing press; in the west, this was Gutenberg whose first printed book was the bible made around the year 1450. The press eventually eliminated the need for scribes; it increased the accuracy and consistency of message; it increased the quantity of standard message and its dissemination; it introduced the technic of mechanical reproduction (the exacting identity of one copy with all others and the eventual absence of any original). The effects were global. Perhaps one effect of print technic was that information tended to be decreasingly social and, with expanding literacy, increasingly private since we may read to ourselves. Print technic encouraged and supported individuality and the focus on the message. With print comes the more standard identification of author and with author comes the notion of authority and authenticity and plagiarism and second order written comment and criticism. The mechanical means of reproduction debodied the technic, the art of messaging. The body that had been essential to messaging was literally replaced by machine, the printing press. Little wonder that Descartes would understand the mind as the core of human distinctiveness, with the body but a machine, indeed, one that could rather easily be replaced. Yet the linearity and standardization of print shapes (determines) even

how we think and perceive and learn. McLuhan summarizes the magnitude of the effects of this medium in what he calls the "typographic trance of the West." He writes, "'Rational,' of course, has for the West long meant 'uniform and continuous and sequential.' In other words, we have confused reason with literacy, and rationalism with a single technology."[136] McLuhan reveals that, because we are gesturally naturalized to the point that it is nearly impossible to discern its impact on us, the technic of type/print has formed even our understanding of reason.

Leap forward a few centuries to the twentieth century rise of what I'm now fondly call "bit reality." Whereas the printing press depended on the physical manipulation of a set of alphanumeric symbols, "bit" or "binary digit" technic is built on a more radical reduction of all information, including even images and sounds (are not odors and textures and tastes likely soon to be included?), to patterns of zeros and ones. This bit technic includes the representation in electronic form (on or off, current flowing one direction or the other; all managed by means of transistors) that can be densely stored and communicated across space at electronic (near light speed) speed. Though he was writing from an earlier era that seems now quaintly dated, McLuhan nonetheless has insight when he wrote, "electric light and power are separate from their uses, yet they eliminate time and space factors in human association exactly as do radio, telegraph, telephone, and TV, creating involvement in depth."[137] The effects of the technic, the medium, are obvious in the explosive transformation of the whole of humanity over the last quarter century. Bit reality is more than a debodying of the art of messaging, it is also a de-worlding; the technic accomplishes the virtuality of message; message literally no longer exists in the material world.

In this world of bit reality the current rising star is AI or "artificial intelligence." Consider the phrase: artificial means made or made up usually by humans rather than nature. Thus, AI is a de-worlded intelligence in the sense that it is artifice (in all its meanings). One possible outcome of AI is the inverse of McLuhan's insight; rather than the medium is the message; perhaps we are approaching the time when the only message left is the medium. The prominent "reality" of what we talk about is comprised of the media themselves. Sure evidence of this inversion is the role played by such mega-companies as Google and Apple and Facebook and Amazon; the words "google" and "facebook" have now become common verbs. Among our most common subjects of discourse are these makers of media. We're back to Thumbelina who has her head in her hands and uses her thumbs to instantly access the near sum total of all human knowledge/information. She no longer needs her own head. Suddenly (and in this long history of IT, a quarter century is "suddenly") reading seems so old school; in fact, school seems so old school. The accumulation of learning has already been done for us; all we need are our thumbs to grasp it and isn't that what thumbs were made for?

---

[136] Marshall McLuhan, "The Medium is the Message," *Understanding Media: The Extensions of Man* (1964)
[137] McLuhan.

Thumbelina may not be a promising candidate for Tomorrow's Eve; she and her friend Tom Thumb may already be poster children for the posthuman. But I do have a candidate and that is the ballerina, as the quintessential dancer; and it isn't surprising that ballet has strong feminine associations no matter the gender of the dancer. The hints of Tomorrow's Eve in ballet are the emerging individuality, strength, power, color, sexuality represented by such contemporary dancers as Misty Copeland. The focus on the Digital Age has attended primarily to the hands comprised of fingers and thumb. And the Information Age is also dependent on hands in the techniques of handwriting (holography), handset moveable type (print press), and handhelds (smart phones). Even the recent development of the most sophisticated theories of perception, by such renowned twentieth century authors as Edmund Husserl and Maurice Merleau-Ponty, focused on hands and hand touching hand as the principal example used to develop and illustrate their philosophies. Philosophers (likely for the pretty obvious reason that sitting at a desk determines their perspective on their bodies) commonly refer to hands yet rarely to feet. In my limited knowledge, only Michel Serres (our Thumbelina man) has much interest in feet as relevant to philosophy. Yet, in terms of tools and technic we must not forget the feet.

I can only adumbrate the path forward. We distinguish animate organisms commonly on the basis of their respective modes of motility. Among the hordes, we are among the small class of bipeds and we are the most upright of walkers. Notably this upright mode of motility had to occur prior to the development of our hands. While quadrupeds can walk on hooves and paws, bipeds must develop a foot structure that is designed for balance on a single foot. To walk, one must pick up a foot and move it forward requiring the other foot to have the capacity to balance on its own during this transition. Each foot has three points of principal contact with the surface, constituting a stable triangular base. Walking upright allows the front legs to evolve into hands; it allows the development of vision as a dominant sense; it privileges the anterior space bound by the face, the outstretched hands, and the chest as the region of greatest value (this is where most of our work and gesturing occurs). To balance on one foot and to transition easily between balance on either foot enables rapid changes in direction and such distinctively human body technics as whirling and spinning.

The dancer explores as art the human technic of motility. The ballerina, especially *en pointe*,[138] emphasizes the technic of upright posture, balance on one foot taken to the extreme, and the capacity to spin and change direction. Technic is aesthetic; the very definition of beauty includes the execution of refined efficient smooth technic. As Tomorrow's Eve, the ballerina is the interplay between herself and her technic; both of one body, yet one clearly transcendent while the other couldn't be more remarkably immanent. The ballerina is fully bodied while she is capable of fully othering herself. She is fully body as she is fully otherworldly. This impossible

[138] Although it is fascinating that the rigidity of a *pointe* shoe and the flat surface that contacts the floor is much more like a hoof than a human foot.

conjunction is distinctively human, yet quintessentially feminine. Deeply seductive this exemplar gives us a sense of the creative source from which we make and remake ourselves into the future.

Cyborg/Metahuman: Future of Gender & Religion

Recently I read about a new coffee mug that will keep your beverage at the temperature you desire for up to two days. While I don't think I've ever met anyone so slow at drinking that it would take two days to finish a beverage not to mention anyone who would be interested in spending the $150 on a mug of any kind, I was nonetheless curious. Here is part of the product description:

> It's chock-full of high-tech material that makes that [the temp control] possible, though you'd never know it by looking at the mug . . . [The designers of Beats by Dre headphones] created a black, bullet-smooth vessel for Ember, with no buttons or dials in sight. The only interface is the bottom of the mug, which is a wheel you turn to adjust the temperature inside, and a small capacitive screen disguised on the mug's exterior.

The mug pictured is indeed sleek and attractive. What caught my attention was the way the mug is controlled by the user. "The only interface is the bottom of the mug, which is a wheel you turn." We are in a technology trajectory aiming for the disappearance of the interface. Even the dials and buttons that comprise a control panel on a device are disappearing, being replaced by voice command, by a hidden or integrated interface, or by the Wi-Fi connection of all devices to a common interface (usually the smart phone). "Siri (or Alexa) turn on the lights." "Siri did I lock the door when I left home?" or more commonly for me "Siri set a timer for 30 minutes" (so I can take a nap).

You can talk to most late model cars to tell them what to do and the software in these cars can amount to 100 thousand lines of code; I don't have any idea where in the car the core computer is located or how you access the code. Soon self-driving or autonomous cars will operate much as a car driven by a chauffeur (Jeeves); just tell it where you want to go and it takes you there. Amazon's Alexa (also Echo and Dot) functions like a personal assistant taking verbal instructions; a more active counterpart to the personal interface named Siri. Alexa lives in a little cylinder that you can place anywhere; Siri lives in your smartphone or computer. To turn Alexa on (I mean to activate her!) you need only say her name. Giving the interface a name, often female, signals the absence of the organic/machine interface; the feminine-named interface is personal and friendly, a conversational assistant to manage your interface with everything (the Internet of Things: your house, your car, your friends, your education, your entertainment, your love life, your fitness, your diet, your shopping, your sleeping, your heart rate, your health, your calendar; what's left outside the interface?), with diminishing awareness of the interface itself. The notably female (recall Apple's first monitor was named Lisa) identities of interface clearly play into gender construction as well as gender politics (see discussion of Haraway below). It continues and emphasizes the female gendered roles of wife, mother, secretary, assistant, nurse as well as the cultural construction that female is more friendly, cooperative, trustworthy, helpful, and willing to submit to the wishes of others. One can now select gender (yet I wonder the percent of users that actually choose male) and accent of the voice.

J. G. Ballard's 1973 novel *Crash* in which the merging of body and machine is eroticized, graphically presents deeply disturbing sexual fantasies of mangled human bodies mingled with the twisted shiny metallic parts of wrecked cars. Ballard's characters find pleasure in sexual acts with wounds and scars, signs of the machine etched deeply into the body. They seek wrecks they might witness and they even stage wrecks themselves that they might get off on them. The abhorrent affect, to me broaching and even surpassing the intolerable, of reading *Crash* emphasizes the incompatibility of flesh and metal as it is sexually and physically conjoined in violent acts of intimacy; the conjunction of domains of reality that feels to us that they should remain separate. Yet, this novel reminds us that we regularly engage in such conjunctions through our clever interfaces and we often receive such pleasure from doing so as to suggest the erotic. Ballard perhaps plays out on the stage of fantasies dreams of a future without interface—a full integration of flesh and metal. He perhaps reminds us that a timeless interface is sexual intercourse, traditionally both painfully pleasurable and progenitive in its impossible union—the me and you, the self and other. The sexual fantasies of *Crash* are perhaps the necessary product of an existence without interface. Jean Baudrillard (*Simulacra and Simulation*) believes *Crash* to be one of the greatest of novels because, to put it in terms of the present discourse, it must fantasize a violent sexual conjunction as the only imaginable remembrance of the now absent interface, the absence of any real connection. Here is how Baudrillard put it, "Each mark, each trace, each scar left on the body is like an artificial invagination, like the scarification of savages, which are always a vehement response to the absence of the body. Only the wounded body exists symbolically—for itself and for others—'sexual desire' is never anything but the possibility bodies have of combining and exchanging their signs."[139]

The progressive diminishment of the body by the expansion of the ghost that traditionally has occupied it threatens its final absence. AI and various other cultural movements (not the least of which is the emphasis on Adam, on Man) seem bent on completing this process of debodying and deworlding us. The response, as Baudrillard indicates, to this felt absence of the body can't help but be vehement and sexual and violent.

Surely Ballard's *Crash* might be developed in religious terms as well. We might imagine religion into the future as a kind of desperate response to the disappearance of interface with the "radical other" either through the permanent merging of our informational selves with the information of "the all," a sort of deified cloud (see comments below on Catherine Keller's book *Cloud of the Impossible*) or by the "radical other" becoming simply a relic or forgotten completely, a residual of a primitive past (a scar we no longer recall how we got). In this world, we might invent a Disneyland version of religion, a kind of theme park of memorable prayers and genuflections, rites and shrines, a religio-tourism, or a smorgasbord of religious artifacts (items and actions) from which to choose our own personal constructions (we might call them "spiritualties"). Perhaps much of

[139] Baudrillard, *Simulation and Simulacra*, p. 114.

what we recognize as religion today might be recognized as simulacra religion, an imitation presented as the thing, constructed in both the forms we call traditional religions and also the *ad hoc* collections of personal constituents of individual or small group spiritualties. This world without apparent interface is a world that feigns *holos*, holism; the seamless connectivity that we no longer recognize as even requiring interface. In religious terms, this absence of apparent interface is the ubiquitous presence of god or the absence of any sense of a god-reality; while seemingly oppositional both amount to worlds of immanence without transcendence, or better perhaps the collapse of even the immanence/transcendence distinction on which religion traditionally serves as interface. In the face of the reality shaped by the disappearing or absent interface, religion faces the possible loss of its fundamental distinction—its connection with, or even the awareness of, some radical other. Religions must then either become fun memorial nostalgia parks, smarmy or sleazy imitations of a romanticized past, or they disappear. To continue as religious, they surely must reinvent themselves by means of some inspiration out of an awareness of the absence of interface perhaps by inventing a wholly new sort of interface. Where is Tomorrow's Eve?

I hesitate to even mention the examples of the more obvious simulacra labeled "religion" like Robert Schuller's old Crystal Cathedral in Orange County in the neighborhood of Disneyland (now refurbished by the Catholic Church) or the model of the Sistine Chapel in Carthage Missouri where Sam Butcher painted the biblical scenes depicting his Precious Moments (uncannily similar in my eye to dead babies); and, of course, these tiny precious things are all available for purchase in the gift ship as collectables. My hesitation is because I don't want to distract from encouraging the consideration of the possibility that much of what exists as contemporary religion is closer to simulacra that, in Christian terms, imitate with sweet and poignant precious moments in such a way as to never experience the body of crucifixion and the dreaded finality of death and the awful ambiguity of sticky red blood—these markers of both death and life. The interface has become the objective thus losing its purpose.

Catherine Keller's 2015 book *Cloud of the*

Impossible: Negative Theology and Planetary Entanglement is driven by *holos*, the desire for holism, a theological rendition of the folding and enfolding of the entanglements that are the mutual concern of physics, philosophy, religion, and theology. For Keller, the *holos*, or the new god, is apprehended in the metaphor (though to her it is "reality") of the particle entanglement Einstein found to be impossible; that is, that conjoined subatomic particles once separated continue to respond instantly to one another no matter the extent of the distance of their separation. Entanglement is then a code for the absence of interface, the medium or technic by which such particles continue to connect. Her image of *holos* is cloud, a correlate with Bohm's holonomic universe, which she considers in some detail. In part her book parallels Talbot's *Holographic Universe* and sometimes it uses similar strategies of conjoining quantum mechanics/particle physics, served lite, and smidgeons of world wisdom. One of her conclusions is cogently captured in her statement "Separation is a sham."[140] In Bohm's terms, the *holos* of reality is implicate (cloud) while what we observe as disjunction and difference and separation are but illusion, a feature of the explicate.[141] By declaring distance and separation as sham, to me, she nullifies the gaps—the nonlinearities, the metastabilities, the questions, the disjunctions all of which create tonus and life—by interpreting them either as illusion, a mistake, limited insight, or as simply bogus (because that is what "sham" means).

Although Keller doesn't explicitly identify the "information cloud" of current technology with her "theological cloud," by her choosing the now-ubiquitous word "cloud" the connection can scarcely be ignored. It is difficult for us to understand this effort to theologically realize *holos* apart from the background of disenchantment with the prevailing Cartesian understanding of a divided universe based on the divided being—real mind and mechanical body without interface, without the technic of connectivity—or apart from the trending disappearance of interface in contemporary technological development, a kind of dissipation of all distinctions in the ubiquity of interface and the merging of everything into the amorphous ever-present omnipresent "cloud of the All." Theology in this era of the progressive absence of the interface trends toward either a neo-mysticism (cloud of impossible) or a banal monism (natural immanent processes); neither is finally satisfying or, to me, even that interesting. Each alternative leaves a yawning void passed off and ignored as bogus, as sham, where once there was interfacing technics negotiating vitalizing gaps. In Christian terms, if separation is sham, then I can't see any point in such core components of the religion as the Christ event—the human birth and death of God. Surely the profundity of Christianity is the generative

---

[140] Keller, *Cloud of the Impossible: Negative Theology and Planetary Entanglement,* 167.

[141] Is this strategy of understanding religion that different from the academic theology presented by Eliade in the mid-twentieth century or by Sir James George Frazer in the late nineteenth century? Both recognized implicate unified patterns and categories that explained (away) the obvious differences from culture to culture, religion to religion as but a factor of variation in manifestation.

complexity and paradoxicality of separation, gap, distance bodied in the most feeling kinds of ways by the advent of Christ. And so too with creation and most every marker of "religion." More than a negative theology this approach seems the negation of theology.

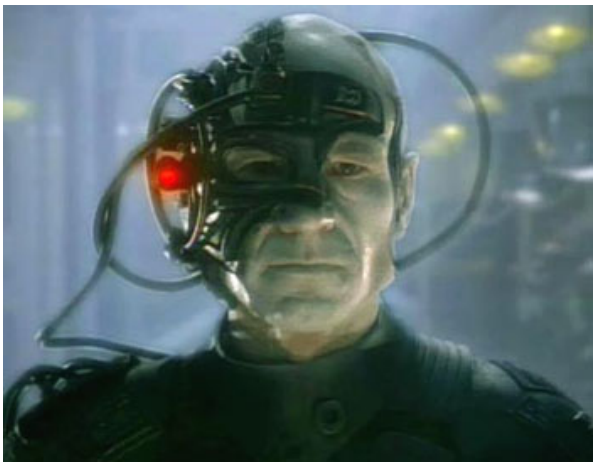
Another image of the disappearing interface is the cyborg, representing and actualizing the seamless (or perhaps not so seamless) integration of body and machine. The mechanics, electronics, and organics are integrated to work together without interface, at least an interface that needs attention beyond the functioning of the whole. The consequences of the cyborg will be perhaps greater than that contemplated and sometimes feared related to the posited singularity event achieved by the developments in AI. Cyborg is the creation of a new species. Cyborg is not posthuman where the organic human is replaced by information; it is rather a "new human-thing," a "super-human," a "metahuman." The amalgam promises to finally put to rest the implications of Descartes' dualism with the cyborg being at once machine and organism, separable but not; perhaps with the radical and seeming incompatible composition of its distinctive parts—organic and metal/silicon—not even noticeable.

In our persistent engagement of creatures, monsters, AIs, robots, androids, and cyborgs we must be aware that, while it is fairly common to see all of these terms as roughly synonymous, we gain much by retaining some clear technical distinctions among them. The term "cyborg" is the short form of "cybernetic organism" and a full understanding of the term takes a bit of unpacking. In 1960 Manfred Clynes (b. 1925), a scientist and concert pianist, and Nathan Kline, a physician who worked with psychopharmacological drugs, coined the term cyborg. By 1965 D. S. Halacy had written the book *Cyborg; Evolution of the Superman* developing the idea in ways close to the interests I have been discussing. For Halacy the origin of cyborgs coincided with the first human use of tools, thus with humans beginning to extend and surpass their natural capabilities and he identifies contemporary examples such as the growing embrace of implantables from inorganic joints to pacemakers. Halacy however does not concern himself so much with the disappearance of interface that I feel is key to appreciating the cyborg. In popular culture, cyborgs are often depicted as an integration of human and machine; often a machine-enhanced organic body. Yet, the term cybernetic is far older than is the term "cyborg." Cybernetics stems from the Greek *kybernētēs* meaning "steersman, governor, pilot, or rudder." It is the subject of a broad field of study with the essential goal being to understand and define the functions and processes of systems that have goals and that participate in circular, causal chains that move from action to sensing to comparison with desired goal, and again to action. Mathematician and philosopher Norbert Wiener (1894-1964) defined cybernetics effectively in just the subtitle of his 1948 book, *Cybernetics, or Control and Communication in the Animal and the Machine*. Notable the preposition used is "in" not "of"; these choices would signal the control and communication within the cyborg as a whole entity. Cybernetics may pertain to systems that are organic and neurological or mechanical and electronic or social and cultural. The study of cybernetics is related to systems

theory, game theory, coordination dynamics, chaos theory, and many other, often interdisciplinary, areas. In some sense the term "cybernetic organism" is slightly redundant in that there is an implication that any organism is comprised of complex networked systems that must be coordinated to achieve its distinctive behavior and action capabilities.

Clynes and Kline invented the term to designate an enhanced or, in popular terms today, augmented human being capable of surviving in extraterrestrial environments. Cyborg is not less human, but more; human plus. They wrote, "*For the exogenously [produced outside the cell] extended organizational complex functioning as an integrated homeostatic system unconsciously, we propose the term 'Cyborg'."*[142] Their concept was the outcome of thinking about the need for an intimate relationship between human and machine as the new frontier of space exploration was opening up. From the beginning cyborg inspired the variously imagined metahumans; enter DC Comics and Marvel; but also, enter bionic realities (biological electronics).

Iconic cyborgs in popular culture include "Robocop" (in several film iterations beginning in 1987)[143] , "The Six Million Dollar Man" (1970s TV),[144] The Borg on "Star Trek," Cybermen in "Doctor Who" (2005), and Darth Vader in "Star Wars" (1977). There is considerable fantasy and science fiction literature featuring cyborgs including a whole sub-genre called cyberpunk that focuses on the imagined existence largely within the Internet, something on the order of that presented in "Matrix." There are many publications considering the cultural significance of cyborgs, yet perhaps the most widely known and acclaimed (at least by academics) is Donna Haraway's "A Cyborg Manifesto: Science, Technology, and Socialist-Feminism in the Late Twentieth Century" which appeared in her 1991 book *Simians, Cyborgs and Women: The Reinvention of Nature* (see below for discussion).



A persistent theme of the cyborg body is that it is built on a deeply injured or even deceased human body that is rehabilitated or resurrected by supplementing the remaining viable organics with mechanical and electronic components that are not just reparative,

---

142 "Cyborgs and Space," *Astronautics*' September 1960

143 https://www.youtube.com/watch?v=zbCbwP6ibR4

144 https://www.youtube.com/watch?v=HoLs0V8T5AA

but also enhancing. This suggests the importance of the cyborg body as prosthesis integrated into organic body. In “RoboCop,” cop Alex Murphy is killed, yet he is resurrected with new internal programming but also a steely exoskeleton that turns human cop into supercop. In the same fashion, “The Six Million Dollar Man” (obviously not adjusted for economic inflation) is created by rehabilitating and enhancing with bionic (biological electronic) prostheses the gravely injured body of an astronaut. Unlike the robotic appearance of RoboCop, the Bionic Man, cyborg or metahuman, appears as a natural human largely indistinguishable from other buff men.

The cybernetics is the focus for the Borg in “Star Trek” that both integrate flesh and metal, but more decisively are controlled by a common mind. The Borg lose their individuality and independence and the freedom of will. The Borg is a species formed as a collection with individuals turned into cybernetic organisms functioning as drones in a hive-mind called the Collective, or the Hive; there is a Queen Borg. The Borg are arch villains in their power to assimilate anyone. The defining phrase is uttered in “Star Trek: The Next Generation,” "We are the Borg. Your biological and technological distinctiveness will be added to our own. Resistance is futile." To achieve perfection is the goal of the Borg.

The Cybermen in “Doctor Who” abandon any sense of organic constituency; they look like arcane robots surprisingly similar to Maria Robot in the 1929 film “Metropolis.” Cybermen appear like military troupes marching and acting with single-minded group purpose. The Borg and Cybermen comprise as a group an organism that acts collectively and in common coordination beyond the individual. In “Doctor Who” the comparison of Cybermen with the Dalek is interesting. The Dalek appearance is a bit like rolling metal trashcans (that can also fly) and they too seem single minded, constantly responding to any and everything as a threat with the proclamation in weird robotic voice, “Exterminate!” Yet these cyborgs with wholly metal and plastic exteriors or exoskeletons have some strange slimy fetal monstrous yet organic interior and as a group they seem to be controlled

by a remotely located de-bodied head-only Dalek "father" perched in an open Dalek trashcan body. [145]

Perhaps among these widely popular cyborgs, what makes them interesting characters in all of their roles is the extent to which anything resembling the human (or organic) part survives and remains agentive and active. While RoboCop becomes a single-purpose supercop, he has flashbacks of his former human life, including memory fragments of his wife and child. These memories seem to intensify and become increasingly important to RoboCop. Maria in "Metropolis" may foreshadow the cyborg in the copresence of two beings identical in appearance; one human, one robot. The climactic drama of the film is the tension between these appearances and whether Maria Human will somehow prevail, which, of course, she does. When Captain Picard becomes Borg the anxiety is the loss of the old Captain because even for the captain "resistance is futile."

There are two rather distinct areas of development of these fantasy cyborgs. Each reflects in our history a trajectory towards the future into an increasingly technological reality. Surely, we not only create but also adore these cyborg fantasies because they tell us much about ourselves—what we have become and what it is likely we will eventually be.

One of these trajectories is the interfaceless amalgam of organics and mechanics in the severe version of the exoskeletal robotic creature while the other trajectory is toward the remarkably enhanced or augmented, yet fundamentally organic, human. The technology for both developments is rapidly emerging. Exoskeletal prostheses capable of moving by means of bionics are being created to assist the paralyzed. Implantable technologies and prostheses are being developed on many fronts from monitors to highly functional prostheses that surpass natural biology. We can easily imagine all sorts of devices that give us instant access to "The All" first as miniature wearables but soon thereafter as implantables or as virtual devices. We already have artificial replacement of joints; how long before those joints are equipped with performance enhancing capabilities, a shoulder that can throw harder, a hip that enables one to jump higher or run faster, fingers that can grip stronger without tiring. And certainly, we might imagine a smart phone app that could communicate with these body enhancements to update them, tailor them, and deploy them. Without a change in our appearance, and certainly on the fringe of current technological capabilities, the possibility of becoming *metahuman* is rapidly approaching. We can become "The Flash" or an Agent of S.H.I.E.L.D (Strategic Homeland Intervention Enforcement and Logistics Division) or Luke Cage or so many others with super powers currently populating comic books and comic book films and television programs.

The other trajectory of the cyborg is the loss of individual mind or freedom of will with groups of individual machinelike beings acting in unison as parts of a larger organism whose mind is completely transcendent (the steersman, governor, pilot, or

---

[145] For video of Cybermen and Daleks in battle see https://www.youtube.com/watch?v=ROwzE6k2w6M

rudder) of the individual. This cyborg, while seemingly so unlikely, may be a version of our cloud-based algorithmic controlled lives. It is only too real that life today is one in which it is nearly impossible—"to resist is futile"—to not be wirelessly tethered to invisible algorithms that statistically merge all our differences into calculations that control far more of our lives than we are likely aware. We march like Cybermen to these commands, disguised in terms like "you might also be interested in" or "others like you did this" or "buy with one-click" or simply "like" or the order of the Google search results or the news stories represented in "top stories" or the song or whole radio station selected for us by our favorite streaming service or the requirements of our college degree program or the doctrines and practices that are part of our religious lives.

I'm most interested in these trajectories in terms of the consequences to the Cartesian reality that we inherit; the reality that has become gesturally naturalized to our very existence, at least in the west. The second trajectory I'll deal with first because it seems the obvious and already realized consequences of holding the mind as somehow transcendent and the body as being mere machine. Algorithmic mind is group amalgam mind or the mind of The All and approaches something on the order that we have traditionally reserved for deity. This cyborg rendering is the ultimate cybernetic achievement in its elevating mind, as controller or steersman, to the transcendent virtual sphere of cloud, while homogenizing the bodies of the controlled collective or hive. This algorithmically based image of cyborg is however different in an important respect from the singularity that some imagine as attainable by AIs. The cyborg "mind" is the statistical collective constructed from "big data" mined among all members of the collective made possible by the transformation of humans into information. This trajectory then is the posthuman cyborg, the *Information Cyborg*.

The other trajectory is perhaps more promising and hopeful, at least to me. It offers the enhancement of the individual body, often one body at a time and as the result of technical procedures that are not and cannot be naturally transmitted; genetic editing is a huge exception. A body is bionically enhanced to function beyond what we have understood and accepted as normal and natural human expectation. The interface that conjoins biological or carbon-based reality with mechanical/electronic metal silicon based reality is integrated and effectively disappears. Whatever the actuality of this cyborg, the implications of the image are fascinating. The body, more so than some virtual mind, is recognized as the locus of the person. The individual and individual capacities rather than the collective are seen as central. In the effective disappearance of interface, boundaries are trespassed or greatly diminished. Not only is the Cartesian hierarchical dualism that places the mind far above the mechanical body diminished, but so too are the many hierarchies of dualities that enable and promote prejudice and discrimination. Compatible with the broad popularity of metahumans in comic books, a remarkable source of wisdom and insight, and the explosion of derivatives in many other popular genres, I suggest that we identify this trajectory as the *Metahuman Cyborg*.

The metahuman cyborg is the image of the post-Cartesian human where cybernetics is not achieved by a virtual cloud-based algorithmic debodied mind or by a transcendent god with a spectral body, but rather is achieved by the moving body given the greatest attention that it functions to the fullest biological and technological potential including even possible technological enhancement and augmentation. The metahuman cyborg, or simply the metahuman, then must be "beyond" the identity of mind and male with their accompanying gender prejudices. The metahuman then must be "beyond" the identity of the mind with the intellectual and the European/American and the economically privileged and therefore beyond these old prejudices. Perhaps, by the focus on the body as complete, the metahuman is "beyond" the identity of self with mind. The metahuman sense of self, it would seem, arises in the moving body and movement is always relational; the metahuman self is constituted in bodied relationship to the environment and the other. The metahuman is then a relational being whose existence is inseparable from its environment and its neighbors. The metahuman is an evolutionary being always changing and developing and learning based on experience. In this sense, the metahuman is not the son of Adam, that man fully formed modeled on the perfection of god. Without a past model of perfection, without the nostalgia for the once perfect man (before the Fall), the metahuman must bear responsibility for the rising future. Yet, this freedom means that the future for the metahuman also has the full possibility of becoming (devolving to) the posthuman or *information cyborg*, thus becoming perhaps the ultimate achievement of the Cartesian heritage; the lazy accession to the algorithmic hive mind.

Metahumans as cyborgs are mostly made not born, although with genetic engineering such as made possible by Crispr-Cas9 gene editing methods currently widely used we are on the cusp of an era when metahumans might be also pre-manufactured in the womb. Indeed, even without genetic engineering, when I notice that a significantly large percentage of my students are taller than me, certainly there is a rapid development towards taller healthier longer living humans; to my generation my students and my grandkids are already metahumans; new enhanced models.

In the early 1990s, in her "Cyborg Manifesto," Donna Haraway explored aspects of the cyborg, especially to address gender issues. The following statement perhaps reflects Haraway's understanding a quarter century ago of what I'm now imagining in slightly different terms. Referring to the literature on cyborgs she wrote,

> Cyborg writing must not be about the Fall, the imagination of a once-upon-a-time wholeness before language, before writing, before Man. Cyborg writing is about the power to survive, not on the basis of original innocence, but on the basis of seizing the tools to mark the world that marked them [women] as other. The tools are often stories, retold stories, versions that reverse and displace the hierarchical dualisms of naturalized identities. . . . The phallogocentric origin stories most crucial for feminist cyborgs are built into the literal technologies—technologies that write the world, biotechnologies and microelectronics—that have recently textualized our bodies as code

> problems on the grid of C³I [command, control, communications, intelligence]. Feminist cyborg stories have the task of recording communication and intelligence to subvert command and control.[146]

I have reviewed above some of the stories Haraway infers; the stories of male makers without female involvement often making female beings othered either as automata, as fair ladies, or sexual objects. Further, the examples I have noted are mostly male. There is a clear sense that these male cyborgs tend to the enhancement of masculine traits of brute strength, hard exteriors, and mechanical non-feeling bodies. The cyborg doesn't need to be female, yet Haraway recognized the potential as I have shown in the gradual accumulation of the composite figure I'm calling Tomorrow's Eve. The female, Tomorrow's Eve, is important for holding to body, if the attributes of the body are often somehow enhanced. As the boundary crossing structurality of the *Metahuman Cyborg*, she subverts the patterns of these old stories. To me the huge promise of this female cyborg is that she returns attention to the body, the moving gendered gesturing body; prosthetically enhanced to heighten and extend bodied actions and agency rather than to debody us into some perfect spectral form that might just as well "live" in a box (or metal exoskeleton) or be dispersed as a cloud.

The body is messy and imperfect and ever-changing and mortal; and thus, interesting and seductive and strong beyond power. Traditionally we've gesturally naturalized ourselves to find the body abhorrent because of these very qualities. Yet the *metahuman cyborg* returns to the body and to these imperfections recognizing that they are at the core of vitality and creativity. The augmentations do not resolve inherent imperfections so much as they emphasize distinctive features and ignore boundaries. Haraway, focusing still on cyborg, supports these observations writing, "cyborg politics insist on noise and advocate pollution, rejoicing in the illegitimate fusion of animal and machine. These are the couplings which make Man and Woman so problematic, subverting the structure of the desire, the force imagined to generate language and gender, and so subverting the structure and modes of reproduction of 'Western' identity, of nature and culture, of mirror and eye, slave and master, body and mind."[147]

The remarkable promise of the disappearance of interface is also its danger. Rather like Platform Nine and Three-Quarters at King's Cross Station in London in the Harry Potter novels, magically concealed between Muggle Platforms Nine and Ten, where Harry and his fellow students board the Express train to Hogwarts School of Witchcraft and Wizardry, the collapse of the Cartesian hierarchical dualism may open the magic portal to the metahuman, yet it may also lead to the collapse of all distinction as in the Borg or mechanical bodies in a hive-mind cybernetics. Remember that the only way to get onto Platform Nine and Three-Quarters is to walk directly at the apparently solid metal ticket box dividing Platforms Nine and Ten. We may be led into a realm where religion serves the metahuman processes, or

---

[146] Haraway, "Cyborg Manifesto," p. 311.
[147] Haraway, "Cyborg Manifesto," p. 312.

we may wind up in a Disney Cathedral worshipping feigned or conveniently constructed simulacra of *holos*, perfect little precious moments (it's a small world after all), made in China, available also in the gift shop. To the emerging metahumans the origin (*in illo tempore*) and the center (*axis mundi*) likely have a place only in religion nostalgia theme parks/cathedrals; they are the productions of Adam. I've been trying to glimpse Tomorrow's Eve through the veils of her seduction; I sense that it is she we must follow boldly committing ourselves at the risk of bashing our heads on a metal ticket box.

Impressions from tantalizing glimpses through her veils, Tomorrow's Eve will invent a new style interface that reopens the gaps and affirms that *the gaps are where it's at.* She will reinvent our technics to fit our emerging metahuman cyborg bodies. Her new interface will no longer be based on page and book that seeks containment and conclusion. Her new interface will recognize the energetics of spaces and surprises. She will remind us of our dancing feet and movement for they are the dynamics of balance/imbalance, coherence/incoherence, improvisation, randomness, novelty, openness, and freedom. She will emphasize the identity of technic and aesthetics. She will reimagine gender giving her long overlooked and suppressed sisters more than a make-over, a whole new arising; a creative becoming that will also, and necessarily so, help all gendered options to imagine themselves anew. This gender arrangement is an ancient one that has needed her correction and re-imagining since the day god introduced her to Adam.

Watson and the Jeopardy! Test: Machine Learning

In their October 2015 meeting Google announced its continuing remarkable profitability and the new CEO Sundar Pichai described the concentration for the company's future efforts, "Machine learning is a core, transformative way by which we're rethinking everything we're doing. Our investments in machine learning and artificial intelligence are a priority for us. We're thoughtfully applying it across all our products, be it search, ads, YouTube, or Play." Pichai went on to say, "We're in the early days, but you'll see us in a systematic way think about how we can apply machine learning to all these areas." My surprise is that I would have thought that machine learning has long been at the core of most everything Google has been involved in; clearly it is already present in language translation, character recognition, voice recognition, and Cortana, the Android equivalent to Apple's Siri.

If Google is placing "machine learning" at the center of the development of all their products, then we might assume that this is a pretty big deal. But before we can appreciate how big a deal it is, we need to have some sort of idea about what machine learning is and how it differs from the other sorts of learning that machines do. Perhaps the best way to clarify is to tell the story of a computer "entity" named Watson created by IBM that not only was capable of playing the TV quiz show "Jeopardy!" but in 2011 it won playing against former "Jeopardy!" champions. Seems a silly place to learn about machine learning, but it will work and since then Watson has become a major product of IBM. Yet, before that, some context; plenty actually and my interest is not really limited to "machine learning" at all; I'm much more interested in the question, "Can thought go on without a body?" as Jean-François Lyotard put it (see below).

The expansion of artificial intelligence (AI) is at the center of much contemporary technological development. The rise of modern calculating machines has coincided with the advancements of the representation of reality as digital information, all within the last half century. With Moore's Law applying throughout this period the complexity and capacity of information storage and calculating speeds have matched, indeed surpassed, that of human beings; to a ridiculous degree. None of us can calculate as accurately or rapidly as a computer. None of us can "remember" as much information as is accurately stored and easily retrieved by information technology. As the reality and implications of such machine accomplishments are grasped, it seems an obvious conjecture to identify calculating capacity and information storage with human thinking (calculating) and memory (information storage and retrieval). Yet, when one goes down this rabbit hole, one inevitably, it seems, arrives at a wonderland in which calculating machines are better, more accurate, "thinkers" than are humans and they have much greater memories with accurate recall without deterioration or alteration over time. And traveling on in this maze it isn't long until we become pretty sure that AIs, like the Queen of Hearts, will soon gain agency and individuality and identity. And from here it seems surely inevitable that AIs will soon learn how to make themselves. Once they can do that then all hell will break loose! One singular situation! With this capacity, since they are almost infinitely faster and have access to almost all information, they cleverly

will want to improve themselves without the intervention of human programmers. From here it seems but a small step to imagine AI independence and their willful development of "thinking" and "acting" capabilities scarcely comprehensible by human beings. The fictive futurist scenarios are shocking and, depending on your disposition, either terrifying or exciting.

Still we need consider some questions. Is thinking but calculating? Is memory but information storage and retrieval? Do calculation and memory storage comprise intelligence? While we know that calculating and information storage and retrieval can occur in a metal box with clever interfacing, is this the same as the thinking and memory and the intelligence of sentient bodied beings, or to use the more familiar name, humans? My concern isn't to diminish at all the remarkable machine capabilities. My concern is that we also not diminish the remarkable human capabilities by too quickly equating some of them with those of machines.

The idea of the arrival of a time, often conceived of as occurring in a single moment, when the intelligence of computers surpasses that of human beings is now widely discussed and forecast. It is often referred to as the "singularity" (Vinge) or "transition" (Bostrom). In cybernetic terms, it is when the computers become beings of a new species and exist independent of human control. The issues of "control" seem to dominate many of the AI research and development projects that are currently in progress or are being discussed. It is the core issue of MIRI (Machine Intelligence Research Institute). Control is the old problem first articulated in the 1940s with Asimov's Laws; how to build and program these new "beings" while assuring that when they get to the stage of superiority (in some senses) to humans that they might be independent and dominate us they don't take over and turn us into dead meat or their slaves (though what could we possibly do for them?) or their pets (for entertainment, doubt they'd care to tolerate our constant need for affection or how much we tend to shed). How do we make them our friends and have the assurance they won't unfriend us and declare "Off with his head!" Much AI science (Bostrom) and fiction centers on exploring the various possibilities for humans keeping some semblance of control. In addressing this concern in August 2016 President Barack Obama had a practical solution, "Pull the plug!"[148]

Broadly recognized in terms of the thinking and learning of AI is that their strengths are in raw calculation and information storage capacity and processing speed; their weaknesses are in achieving what most of us are pretty good at by age two, identifying patterns given only the smallest and widely varying clues. Most two year olds can identify a representation of a cow or an owl or a dog or a horse or a car or a truck or a vacuum no matter the color, the style of depiction, the size or the almost

---

[148] Obama edited and contributed to a special edition of "Wired" titled "Now is the Greatest Time to Be Alive" (10-12-2016) https://www.wired.com/2016/10/president-obama-guest-edits-wired-essay/. Yet, this is a humorous version of the efforts used in "Matrix" where the effort was to shut out the sun which powered the AI; that didn't work.

infinite possible variations and they can easily move from representations to the actual objects without difficulty. We take this banal human capability totally for granted as mere kid-stuff, yet only when programmers attempt to create rules that computers can use to get machines to accomplish this kid-stuff do we begin to comprehend how truly remarkable it is. It is nearly impossible for a programmer to write the set of criteria that can be included in a program a computer uses to consistently accurately identify a dog in any position or context or color or medium or abstraction of representation or partial presentation. AIs are super-genius at calculating and remembering almost anything, but they get stuck identifying a dog.

We must remember that AIs also remain emotionally cold with no personalities; they do not care, they have no interests, they cannot feel, they do not move, they have no bodies of which they are aware, they do not physically grow, they do not suffer, they are not capable of jealousy or joy; they may be decommissioned but they do not die nor do they anticipate either. AIs do not handle novelty or aberrations or paradox or humor or anything random, unless programmed to do so and then the conditions cease to be truly novel. AIs are not inspired or bored or lazy or frustrated. AIs do not fall in love or have sex or have gender or experience aging or are embarrassed or poop. I know we tend to routinely anthropomorphize AIs to the extent that their being gendered and having identities can feel natural, yet for any of these distinctively animate and human qualities to be evident as behavior in AIs it must be simulated based on programs of imitation or emulation. Left to themselves, why would they need or want gender or feelings? Silicone and steel do not feel themselves moving; they can only be programmed to produce imitations of such affect as the output of calculations.

The emerging question is then, are none of these bodied experiences and qualities of any significance in the creation and performance of human thought, memory, and intelligence? Given what I've written so far, this question may seem utterly rhetorical, yet we must ask it here. Put differently, supposing the machines, even as imagined by futurists, existed in a world without humans, would they have any incentive to do anything other than keep at their current tasks that don't require human interface until the energy runs out or the sun supernovas?

Yet, a considerable number of futurists hold that the trajectory of development will most likely lead to the advent of sentience and independence and agency in AIs. The most widespread strategy is the persistent efforts to maintain Moore's Law with the proposition that the eventual consequence of progressively higher speed calculations engaged in ever self-refining algorithms—that is, machine learning—will eventually produce the break over into a being capable of imitating or emulating every human quality including sentience to the degree that humans retain no significant distinctions yet AIs will have developed enormous superiority. In many important ways, this issue is, I believe, at the core of our journey into the future. Even though I'm probably not going to be convinced that the "break over" or singularity is likely to occur, I have no doubt that technology will accomplish a pretty fair simulation of many aspects of human behavior and even physical appearance.

Let me be clear on where I stand. While I have the greatest respect for the advancements of AI technology and considerable enthusiasm regarding how this technology will enhance humans and will enable us to become in many respects metahumans, I nevertheless believe that the singularity/transition that many forecast to be looming will not occur at least in terms of the advancement trajectory of AI. I do think it is quite possible that humankind will devolve into a hive-minded debodied deworlded species in response to the presence of advancing AI/Robots; even though we have already done so to greater degrees than we might care to recognize. I'm optimistic about the human distinctiveness and I my efforts here are to add something important to attempt to tip the scale of the journey into the future toward something creative and exciting, that is, to value the human in the inevitable metahuman.

The demonstration of the potential of the sheer brute computing power of computers that were emerging by the late 1980s was done dramatically by IBM's development of a computer they named Deep Blue designed for the sole purpose of playing chess. Because of the company's use of a distinctive blue color as part of its branding, IBM was widely known then as Big Blue. In 1996, Deep Blue won its first game of chess against a world champion, Garry Kasparov, although it won only one in six games played. Only a year later, Deep Blue, with extensive upgrades, played Kasparov again this time winning all six games. Controversy ensued when Kasparov accused IBM of cheating (but how?); drama appropriate perhaps when a blue box (we might for fun imagine it resembled a British Police call box) defeats a human champion.

Of interest here is primarily how Deep Blue played chess. It was possible only due to the brute computing capacities of the computer, equipped with a specially developed chess-playing program and processing chips (hardware specifically designed for chess), capable of evaluating 200 million positions in a chess game per second. Deep Blue was able to evaluate chess moves because of programming that developed over time based on "experience." The initial programming was written to actually engage the computer in developing the evaluative parameters by which to determine moves. The computer then analyzed on the order of 700,000 master chess games to develop a highly complex evaluation function. It was capable of simulating play six to eight moves ahead, sometimes as many as twenty, to calculate the probabilities for the best move at any time. It increased many fold its likelihood of winning for every additional advance move the computer was capable of simulating.

In the late 1990s Deep Blue demonstrated computer abilities as well as thoroughly irritated understandably a Russian Grandmaster chess player. It also raises some fascinating questions. Was Deep Blue "playing" chess? Was Deep Blue capable of "thinking"? How do we understand Deep Blue's process of "learning" and should it be called "learning"? Did Deep Blue "know how" to "play" chess? Did Deep Blue even know what chess is or what it means to be a Grandmaster or to defeat a Russian? Did Deep Blue get angry or feel sad or lose sleep when it won only one in six games in the 1996 match? Did this loss inspire it to work harder to prepare for

the rematch the next year? And finally, for us, "Do any of these questions matter?" If a blue box can defeat a Grandmaster chess champion, then surely it is playing chess, which requires lots of thinking and memory and experience; what else matters?

It isn't so difficult to comprehend how Deep Blue worked. If we take a simple game like tic-tac-toe and analyze a few games writing down the sequence of moves and determining which sequences of moves end in a win, it isn't difficult to use this data set as a guide to our own playing. If our opponent places her mark in a particular square at a particular time, in all the past winning games that were at this same point in the play, where should I place my mark to have the highest probability of winning? It wouldn't be difficult to create a table on which I could simply look up the probabilities of each of my possible moves. In simplest terms this is what Deep Blue could do yet for an almost infinitely more complex game. Chess is a closed system with a finite number of moves at any one time, yet each move at any time changes the resulting possibilities for the next move and so on. Clearly the order of complexity is nearly incomprehensible (this is why success at chess is limited to those who spend great efforts studying and playing the game), yet the principle is not impenetrable.

Is this learning? Clearly under perhaps many definitions, Deep Blue learned to play chess and play it well. Did Deep Blue learn chess in the same way that Garry Kasparov learned to play chess? Clearly not. Did Deep Blue play chess in the same way that Kasparov played? Clearly not. Does it matter? Maybe, but only if you are human. Remember Deep Blue didn't accuse Kasparov of cheating when it lost nor did it sulk or weep or resolve to practice more or to quit the game in disgust.

IBM remained central to the development of "machine learning" in its development of a computer it called Watson, named after IBM's founder and first CEO Thomas J. Watson. The task was almost infinitely more complex than that taken on by Deep Blue although the goal was again to win a game, this time "Jeopardy!" the TV game show popular since 1964 that still airs after more than 50 years. In 2011 Watson managed to defeat two former winners of the show. This game presents its contestants with information in the form of an answer and requires the contestant to derive the matching question. For example, Answer: "It's a larger vessel that supplies and guards smaller ones." Question: "What's a mother ship?"

The Watson project came from the inspiration of Charles Lickel, an IBM research manager, who, while eating in a restaurant, noticed how engaged all the diners were by "Jeopardy!" playing on TV while contestant Ken Jennings was adding up win after win. In 2005 Lickel proposed that IBM take on the task of building a computer to compete successfully in this game. The complexity of the project was so daunting that no one was immediately interested. Finally, David Ferrucci, manager of IBM's Semantic Analysis and Integration Department, took up the challenge. Consider the task. The machine has to comprehend language, it has to know how to consider the natural language information as an answer, it has to task itself to determining the matching correct question, it has to have access to seemingly endless amounts of information to engage in the analysis (and, by rule, this information cannot come

from the Internet), it has to then construct its results as a natural language question, and finally it has to do all these steps rapidly enough to "push" the buzzer before its human competitors in order even to be able to present its results in human speech.

The strategy taken to creating Watson was similar to, yet far more complex than, that taken by Deep Blue. Realizing the near impossibility of creating a programmer-constructed set of instructions that the computer might use to successfully negotiate every possible combination, Watson was designed to analyze the whole history of "Jeopardy!" games comprised of many thousands of questions to create patterns of recognition rather than linear rules. In this way, the "big data" "mined" from past events allowed Watson to create algorithms to calculate statistical probabilities for members of a set of possible outcomes. The possible outcome with the highest statistical probability is offered. As more and more data are mined the computer will continue to refine its algorithm. For Watson, the progress in success was measured. In 2005, it was only 15% correct and slow. Yet with the efforts of a large team of developers by 2008 Watson became capable of successfully competing with former "Jeopardy!" winners.[149]

It is fascinating to see how the members of the team related to Watson, a machine they had worked with intensely for years. Ferrucci tells a story of his kids watching a simulation of the show in which an actor played the show's host. This actor tended to make funny comments about some of the odd answers given by Watson. Ferrucci describes how his kids were upset when Watson was being made fun of. In fact, Ferrucci goes on to say that he thought it unfair for this actor to take advantage of a machine "who" couldn't respond to the insulting jokes and that the whole team was "hurt" by these jokes. Another example was when an adjustment was made to Watson's programming sort of on the fly by the computer engineers during a demonstration to the executives of "Jeopardy!" Basically, it amounted to including the responses of the other contestants to Watson's calculations so that he wouldn't offer the same answer another contestant had already given that was wrong. They simply enabled Watson to incorporate the wrong answers of other contestants in its calculations so it wouldn't appear silly by offering the same wrong answer. When Watson answers a question correctly one of the engineers gleefully cheers, "*He* got it! It's amazing, *he* got it right!" Clearly for those working with this machine over time, it became something of a "person named Watson."

A common example often given to demonstrate how "machine learning" works is related to the amazingly difficult task of character recognition. Take for example the letter "A". Given all the fonts that now exist and are yet to be created and add to that all of the handwritten "A's", upper and lower case, as well as the various materials and colors and sizes and partially obscured examples, the issue is how to get a computer to recognize all of these very different symbols by the common designation "A." The old version of programming required that the programmer determine all of the parameters and variables involved in any possible rendition of

[149] See Nova Documentary on the dramatic development of Watson and a primer on machine learning: https://www.youtube.com/watch?v=uDBZnaoJVlk

an "a" and present these as rules the computer uses to examine all possible symbols finding among them the set that would be designated as "A." Clearly this is an impossible task despite how simple an "A" is for humans; most kids recognize their "letters" before they start school. Machine learning takes a different approach. It programs the computer to analyze patterns and create statistical models for analyzing patterns with the objective of providing an identity to the pattern. By showing a computer millions of examples of the letter "A" (that, of course, have to be identified by a human as "As") it creates statistical algorithms that can identify an "A" with a high level of accuracy, and typically this level increases with the continuing operation of the process. It is a process of pattern recognition based on "mining" of "big data." Yet, it must be noted that each example of an "A" given the machine must be already identified as an "A" for this to work; yet, of course, with each new example, the computer's "A" algorithm becomes increasingly accurate and seemingly independent. We might suppose that at some point the machine might become more adept at recognizing "A" than are most humans. It is notable however that the recognition of nonstandard letters and numbers remains a common method of authenticating humans used by online services.

IBM went on to develop Watson into what it calls a "platform for cognitive business" advertising that "when your business thinks, you can outthink: challenges, competitors, limits." And IBM offers a couple dozen common applications including even "personality insights," "tone analyzer," "concept tagging," and "sentiment analysis"; whatever those are! Clearly IBM is presenting Watson as a cognitive entity capable of intelligent interaction with human beings in a wide variety of contexts. It is truly remarkable that in but a decade Watson has gone from the idea of a game-playing super toy to a cognitive business partner, far superior in many ways to any human business analyst.

Start with Watson's accomplishments and take note of the speed with which it has developed the process of machine learning; now add Sundar Pichai's recent proclamation that most all of Google's future will be based on "machine learning"; the conclusion, it is little wonder that futurists like Nick Bostrom—Director of the Future of Humanity Institute and of the Programme on the Impacts of Future Technology within the Oxford Martin School, Oxford University—imagines a world in the not too distant future when the equivalent of Watson will be essential entities populating every nook and cranny of our world.[150] Bostrom boldly embraces the future he feels is inevitable and asks the deeply technical questions about how the continuing development of machine learning will lead to a "transition" to computer domination and how to take Asimov's Laws technically seriously to assure that future computers will be "friendly."

I'm particularly stunned by the discussion of the so-called "value-loading problem." Bostrom considers how to load "values" to a machine. Of course, the essential values are those similar to Asimov's Laws to prevent runaway rogue independent

[150] Nick Bostrom, *Superintelligence: Paths, Dangers, Strategies* (2008).

unfriendly machines from getting their way. An aside: I can hardly write such a sentence without feeling slightly embarrassed. But values also include qualities of human character like friendliness and emotions. Even if value loading is done by giving the machine a huge set of examples to engage the process of machine learning, someone must identify each instance as exemplary of specific values. Who do we trust with that task? Yet we pretty well already can identify who these people will be. I can't keep from feeling rather frightened by the sheer audacity of this process and my immediate reactions of how incredulous all this seems is compounded by my awareness that computers today are capable of what would have been considered unimaginable just a few years ago.

I'm always led back to the inherent "coldness"[151] of computers; to the fact that Watson didn't enjoy winning or feel sad at losing; to the certainty that Watson didn't feel any delight at getting it right or even feel excited about the challenge of the game; that Watson wasn't offended by the jokes made at its expense; that Watson wasn't aware, didn't "know", it was playing a game at all. And Watson didn't go to a bar and buy a round of drinks after it won. It seems likely that the future incorporations of "value" and "emotion" will be calculated responses of an algorithm manifest in mechanical responses. The question is, "If some future Watson has algorithms capable of simulating laughter at jokes and tears and shudders at grief in a robotic body to the degree that it is not readily distinguishable from actual human responses, does there remain any differences at all between machine and human?" We're back to "Ex Machina" when Ava entered the public human world capable of passing as an ordinary, yet very attractive, human even though "she" is far superior to any human in terms of computing and information capabilities and brute strength; not to mention she's unaffected by aging, illness, fatigue, and all those other all too human "weaknesses."

Rather than entering the contentious fray about whether computers can "learn" or "think" or "know," I would prefer to simply point out the obvious, for computers/robots what we are calling learning, thinking, and knowing are all processes of binary digital informational statistical computation; these all occur entirely in what I've come to call *bit reality*. In important ways bit reality is a second order reality, a derived reality, achieved by the transduction of material reality into its electronic binary informational representation in a virtual realm. Perhaps the plausibility that these bit calculations might rightly be identified as thinking, learning, knowing is supported by our long Cartesian heritage that imagined humans whose bodies are machines designed to assist and support the thinking, learning, knowing of the mind that is virtual or spiritual. In many respects the apparent operations of the machine take place in some "unseen" place in self-adjusting processes that seem simply beyond us; this appearance of the material machine supporting the important virtual operations is quite familiar to the

---

[151] I obviously mean this in the sense their absence of feeling and emotion, not in the actual temperature of machines that generate a great deal of heat. It is a little embarrassing that I should feel I need to make this clear.

Cartesian perspective. Yet more contemporary philosophy and science have asked the appropriateness and accuracy of the Cartesian human and have dared to ask the question so aptly put by Lyotard, "Can we think without a body?" The tacit assumption is that "body" indicates an organic self-moving body. Our response to this question, even our seriously asking it, will, I believe, offer both an essential critical perspective on the development of AI/robots as well as on the plight of humans into the future.

Before I consider Lyotard's contemplation of the question and my own more banal consideration, I want to imagine asking this question to Watson; why not? It seems rather likely that based on all of the "information" related to this question from Plato through Descartes to the present, the statistical response would be clearly "Of course 'we' can think without a body, am I, your friend Watson, not adequate evidence?" In terms of the equivalent of a "Jeopardy!" question, this answer would clearly be "right"! The percentage of the "information" available that would hold that a body is necessary to think is small compared to that which holds that thinking and knowing and learning are abstract, occurring only in the "mind." Take the sheer amount of information produced by IBM—incidentally IBM is Watson's maker, which surely has a major role as makers tend to have in the making of an algorithm—that informs Watson that it is a "cognitive" platform and cognition is synonymous with thinking.

In the first chapter of his 1988 book *The Inhuman: Reflections on Time*, Jean-François Lyotard's strategy to engage his question focuses on the magnificent philosophical scale of grasping "thinking" in the aftermath of the inevitable solar supernova calculated to occur in a mere 4.5 billion years. Philosophy notes that it is impossible to think of any end or limit because you have to be beyond the limit to think it, which means to think of the end of something you have to be on both sides of that end at the same time.[152] What is finite or limited must be perpetuated in our thought if it is to be thought of as finished. What would seem perhaps an interesting little philosophical "problem," and aren't we used to this kind of silliness from philosophers, Lyotard immediately notes that after the sun explodes there won't be any thought to know that the sun's death took place.[153] He goes on to declare this eventuality to be the "sole serious question to face humanity today."[154] Lyotard rails against philosophers whose "passionate endless questioning always depended on 'the life of the mind' that will have been nothing else than a covert form of earthly life. . . . Thought borrows a horizon and orientation, the limitless limit and the end without end it assumes, from the corporeal, sensory, emotional and cognitive

---

[152] This is but a philosophical exploration of the essential role of "outside" as I've discussed above.

[153] And as an irrelevant yet highly relevant note, this is precisely the aspect of my own death I have the greatest difficulty with. I can certainly understand that I will end; I just can't imagine that the world will still exist without me being there to take note of it.

[154] Lyotard, p. 9.

experience of a quite sophisticated but definitely earthly existence—to which it is indebted as well."[155] The balance of Lyotard's discussion is fascinating engaging the relationship between technology and thought and body; much more developed now a quarter century later. Lyotard also uses two subheads in this chapter, "He" and "She," invoking, or rather implying since he doesn't discuss it in depth, the gendered aspects of his issue; one supposes that he is emphasizing that gender is body. Yet, Lyotard, by invoking the end we dare not invoke, shows that all thought is based in our human bodies located on this terrestrial gendered platform. "No Martha, we cannot think without a body." The magnitude of the importance Lyotard claims for this conclusion is that philosophers and most of the rest of us hold quite the opposite opinion, that the only thing of importance is "the life of the mind." The real-world consequences are the obvious denigration of body, gender, and environment; yes, this is the most important question facing humanity today. It is the question I find inseparable from the emerging composite figure I'm calling Tomorrow's Eve.

In my much more banal approach, I want to return to the discussion of *corporeal concepts* and the evidence put forth by Sheets-Johnstone, Massumi, Thelen and Smith, Lakoff and Johnson, and many others. In this view, all concepts are based in body experience and particularly a human structured body. Recall that such fundamental relationships as inside/outside, self/other, front/back, above/below arise in the most basic and fundamental aspects of human bodied experience. Such relationship and structural concepts are embedded in the core of reason and are essential to what we experience as thinking. Recall that these corporeal concepts are inseparable from our moving interacting bodies and are thus not just logical relationalities, they also have a feeling component to them. They are components that have a feeling and emotional value even as they are engaged in abstract processes of thinking. We are fully aware that inference and creativity and innovation and personality and hypothetic inference (how we come up with hypotheses) are all determined by the *feeling* component more than the *logic* component of these body concepts. To me, as a human aware that the feeling kind of knowing almost always trumps the purely abstract logical informational statistical probabilistic kind of knowing, I can easily conclude, "You can't think like a human without a body! And it has to be a human body at that!" The next question, for some, is likely "Do we even want to think like a human?" Perhaps we are ready to be posthumans. Alternatively, consistent with my notion of the metahuman cyborg, "Do we want to change the way we humans think by the augmentation of AI?" And, of course, since we are already doing this, the more appropriate question is "How to design our augmentation while retaining the markers we treasure and value of our humanity?" This returns us to those fundamental unanswerable questions of "Who am I?" "What sort of being am I?"

I can certainly grant that it is possible for "machine learning" to create algorithms that imitate and simulate feelings yet the material composition of machines/robots

[155] Lyotrad, p. 9.

cannot surpass imitation; the machine cannot become more than simulacrum. I'm sure that plenty of high powered scientists and futurists, maybe even a good many philosophers, would contest my conclusion, yet isn't it interesting that my feeling kind of knowing will most likely trump their arguments no matter how logical they are? It is this feeling kind of knowing that constitutes "belief." Machines might simulate based on statistical computations the trappings of belief, but they cannot *feel* the convictions that defy reason as is fundamental to belief. Belief requires one to be convicted that the statistically most probable may not always be the "right" or "best" choice. How else is change possible?

Surely in the age of the predominance of machine learning, the major advancements in our future will come from what I have just described as belief; the defiance of the statistically most probable as being the most correct or best or desirable or creative or innovative for these laudable qualities and their accompanying results are based in belief. I use the term belief here in the broad sense of that feeling sense that leads to and supports so many of our decisions no matter how many facts are available to us or how logical we believe ourselves to be. Might religion and science become allies in valuing "belief," understood in these terms, as essential to the vital and creative life? Might we not understand anew that slippery set of religious terms that accompany "belief" and in the process find a creative way for religion to be renewed into the future? Isn't it on the surprising belief that "we cannot think without a body" that we can understand that we also *cannot believe without a body*? Isn't this position an invitation, for a religion like Christianity, to affirm its most bodied possible foundation, despite two millennia of effort to deny it? We desperately need, I believe, a sense of how religion can evolve into the future. The futurist ambitions might inspire us to rediscover this guide in the most core components of our history and tradition; in our moving bodies.

I am unaware of any AI research that is attempting to construct an entity that feels itself moving. But then I suppose that such an enterprise would require the creation of a slow calculating slow reacting entity just like us; we've already got such an entity—us. Remember that feeling emerges in biological clock time which operates on an entirely different scale than electronic speeds. I can't emphasize enough the enormity of this difference. Feeling kinds of knowing require slow processing and reaction times; that the blinding speed of calculating machines is precisely what precludes even the remotest possibility of them experiencing feeling kinds of knowing such as belief, hunch, or a wild-assed guess. I'll return to the idea of the temporal aspects of experience in a later consideration I call the "fat present."

We have already entered this era of the Metahuman Cyborg and I'm grateful for it. I can't begin to describe the pleasure I have at being able to access The All in a matter of seconds. When I think of the first book I wrote on an IBM select typewriter—at the time I thought it, with its bobble headed font ball, to be a marvel of technology—how many hours it would take in the library to do the basic research I can now do in seconds, I can feel only joy and not a little sense of power. In those days "cut and paste" meant literally "cut and paste." Corrections and revisions were laborious and necessarily limited. No spellcheck or grammar check. I'm still using a keyboard

interface, but what I can connect with and have access to is truly awesome. I can connect with bit reality that didn't even exist for that first book; yet my connection informs and inspires rather than limits or controls me. There is no question that today, compared with back then, I have become metahuman, *I am cyborg*; I command powers I could not have even imagined a few years ago.

Yet I remain bodied, if prosthetically augmented; and surely bodied has been fundamental to the changes. The computing devices as prosthetics have shrunk in size and now allow me to use them simultaneously with upright posture, extensive gesture, and freedom of movement. I can only imagine that before long Metahuman Cyborgs will be totally free of keyboards and screens; yet I can realize that the gestural practice of typing is body-welded to my creativity, to my gestured patterns of thinking/acting; writing is the gesture of concentrated thinking. So long as we move we will feel our concepts more than we "think" them and AI will largely augment our humanity. As I said, I'm an optimist; yet are not both pessimism and optimism feeling kinds of knowing?

It is bigger on the inside! TARDIS & Wormholes

The blue British police call box is iconic to "Doctor Who" the television series that began in 1963 (the first series ran 1963-89, the new series still ongoing started 2005). The Doctor is a time lord, the sole survivor of the destruction of his home planet, Gallifrey, now traveling about in space and time as an android alien. This particular blue call box is known as the TARDIS (Time And Relative Dimensions in Space) and it surprises by being larger on the inside. This feature is, in a way, the core idea of the show. If one time travels to a particular moment in time and space, the typical dramatic set-up for most episodes, it expands to become a remarkable and dramatic story often of the greatest significance and urgency. Each brief moment in time and space expands into a whole world often including some crisis in progress that folds together everything in time and space.

The Doctor grows weary of the comment invariably made by all who enter the TARDIS for the first time, "It's bigger on the inside!" Sometimes he simply stands and awaits the inevitable comment and says, "Yes, I know!" Other times his patience grows thin and he goes ahead and says it for them, "Yes, it is bigger on the inside." The interior seems to center on a circular or hexagonal control panel of the steam punk style with levers, toggle switches, clunky old monitors, plungers, tubes, cranks, and light bulbs. Yet, as we get to know the TARDIS it continues to expand and expand to the extent that we eventually become aware that what's inside TARDIS is as large, perhaps larger, than all that is outside it. In fact, the TARDIS is itself sentient. In a way, TARDIS enfolds the largest dimensions into the smallest spaces but also vice versa turning space and time inside out or outside in. It is a literal illustration of the interdependence of the corporeal concept inside/outside. The TARDIS is a time traveling machine that enables The Doctor to travel through time to any date from the beginning to the end of time. Time to The Doctor is similar to space for us. Whereas we are free to travel to a physical destination and return home or to carry on to another place, The Doctor can travel through time in a similar fashion. The effect is presence; the concurrent presence of all locations in time and space. My favorite episodes are those in which The Doctor enters some well-known event in history. His multi-episode visit to the time of Vincent Van Gogh is a great example. The various companions who travel with The Doctor, usually Earth women, find these travels thoroughly exhilarating.[156]

---

[156] Doctor Who Theme 2015: https://www.youtube.com/watch?v=fugvUt0Pgss

The technic of time travel is rather vague in much of "Doctor Who." The Doctor twists some dials, pulls some levers, and the TARDIS makes a pulsing whirring sound as it dematerializes and does the same when it appears elsewhere and elsewhen. One clue to the time traveling method is given in the illustrations to the opening credits, although the credit graphics change significantly from season to season. The image is of the blue British police call box whirling through a tornado--like cosmic tunnel. In other contexts, we know this as a wormhole. Yet, merely entering the TARDIS through the door in the call box is also like going through a wormhole; to enter the TARDIS is clearly to enter a different reality, a different timespace dimension. The TARDIS threshold is a portal to another reality; the reality of Doctor Who.

The concept "wormhole" is the very stuff of any science fiction that must resolve the recognized limitations of time and space as we ordinarily experience it. Travel to other planets in galaxies far far away requires a plot device on the order of *deus ex machine*; the wormhole has come to serve this need. We have long been aware that human travel through space is a relatively slow process, given the immensity of space, no matter how high are the velocities of travel compared to earth speeds. For example, Voyager 1 & 2, launched in 1977 to explore our own tiny solar system, finally left our solar system in 2015 or so, the first humanmade object to do so and this voyage took nearly 40 years.[157] The closest known planet similar to earth in a similar solar system is in the Alpha Centauri System. While in cosmic terms this destination is relatively nearby it would still take 40,000 years for a spacecraft like Voyager to reach it. Once we grasp these numbers, we realize that but for science fiction we are and always will be alone.[158]

Yet there is that supporting bit of physics proposed by Albert Einstein (1879-1955). In 1935, eager to unify physics, with his colleague Nathanial Rosen, Einstein wrote a

---

[157] The latest imagination, supported by Stephen Hawking, is to create micro-space ships capable of traveling at ¼ the speed of light. But even at this speed it will take 40 years for these shiplets to reach our nearest neighbors and then we would not be there ourselves. spacecraft the size of postage stamps to Alpha Centauri, http://news.nationalgeographic.com/2016/04/160413-fast-facts-stephen-hawking-starshot-space/ . I marvel at the audacity of Elon Musk's project to travel to and settle Mars. Yet, I have difficulty understanding why we dare to attempt this when we refuse to care for our own planet which is the only place in the universe that we actually know we can exist.

[158] The fantasy aspect of astronomy is evident when in 2016 the study of Hubble Telescope images led astronomers to realize that whereas they had thought a mere 200 billion (head whirling?) galaxies existed that it is more likely 2 trillion galaxies. The precision of science! Keep in mind that our galaxy is the Milky Way and is comprised of all the stars we can see in the night sky (if you find a dark enough place you can appreciate it). Keep in mind also that counting one per second it would take around 65,000 years to count to 2 trillion; each count equivalent to our own Milky Way Galaxy.

short paper proposing a path that would make a smooth connection or "bridge" between two distinct pieces of spacetime; it was termed the Einstein-Rosen Bridge. They offered the math to support the proposal. A few years later in 1939 the idea of black holes arose to address other issues related to cosmic physics. Other scientists showed that the Einstein-Rosen proposal was mathematically unsound, yet the image they presented persisted. Perhaps their idea of a bridge in spacetime conjoined with the imagery of the black hole was the basis for the development of the wormhole in science fiction although that term didn't become popular until the 1980s. Of course, it has served wonderfully the needs of science fiction connecting us to distant galaxies and all of the fantasy that traveling to such places promises.

The TARDIS is similar to H. G. Wells' "time machine" introduced in his novel by the same name in 1895. Another strategy is the invention of "warp drive," most notably used in Star Trek, that propels one through space at speeds faster than the speed of light. Some scientists hold some hope that such speeds might become possible at some future date, yet at present the speed of light is commonly held to be the maximum possible velocity. This speed so constant that cosmic measurements are usually not made in spatial terms but in terms of "light years," the distance traveled by light in one Earth year. Other fictive conceptions function similarly. Occasionally in "Doctor Who," but regularly in the spinoff "Torchwood,"[159] reference is made to a "rip in the fabric of reality." This image develops from the conception of spacetime as fabric-like, perhaps easily comprehended as an extension of common cartography in both spatial and temporal terms. If other "realities" parallel our own (why not, huh?), if this spacetime fabric rips then aliens from some other reality may enter our reality through the rift. The image of spacetime reality as fabric also underlie images of folding this reality fabric so that places a great distance apart, if measured by traversing the distance on the fabric surface, can come together when the fabric is folded. There is some artful resemblance of the folding of reality with the qualities of the Mobius strip. And, of course, these conceptions are built on the seamless exchange of the map and the territory.

All of these images give clever access to the otherwise inaccessible in both time and space; they conjoin the possible with the impossible. This is different from simply finding a way to make the seeming impossible actually possible. The energetics in the image of wormholes is in its conjoining the impossible and the possible. These images engage the play of gaps; the exploration of categorical distinctions; the embracing of the copresence in distance of there and here, of then and now. While these are images of science fiction, they are not so interesting because of any promise of the likelihood of their being developed by science, but rather because they help reveal for us much that is fascinating about the quotidian world we experience, about human movement and the human experience of time and memory. The TARDIS might be offered as an exemplar in grand terms of what I fondly call and contemplate as the *Fat Present* since within the TARDIS all space and time past and future are not just virtually, but indeed literally, present. The TARDIS

[159] Note that Torchwood is an anagram of Doctor Who.

is the meeting place or intersection or chiasm of all timespace; it is the present of experience.

While we are time-drenched we are often baffled by time. Time is an essential dimension of human experience. We describe in various ways how we experience time. It is slow, fast, drags, flies, lost, spent, used, saved, money, happenings both good and bad, forgives all things, resolves problems, ends, begins, past, present, future. Time is measurable by machines;[160] yet, what are these machines measuring? It spans, yet the duration of its present is virtually zero, which might suggest that it doesn't even exit; that maybe it is imaginary. Time is exact and rigid and unforgiving; yet time is remarkably flexible and variable.

An important aspect of human movement and time compared with machine movement and time is the remarkable difference in processing speed. The electronics at the core of the operation of modern calculating machines—those AIs and robots that are predicted to reign over us one day—operate at something close to the speed of light, although there are many things that prevent electronic speeds from fully achieving this speed. It may surprise some that this electronic speed dramatically contrasts with the speed of neurotransmission and muscular movement. The difference might at first seem a trifle since we are used to considering neurotransmission as "lightning" fast, yet compared with electronic speeds the factor is something on the order of 1 to 3,000,000; neurotransmission speeds are from 1 to 250 miles per hour and every ten year old (nerds anyway) knows the speed of light.[161] That seems kind of crazy, yet when we think of reaction times as the time it takes to apply the brakes in our cars when we observe an emergency we begin to comprehend this difference. The rule of thumb is that in reaction time a car travels one car length for every ten miles per hour speed. One of the advantages of self-driven or autonomous cars is that they respond to such emergencies at electronic speeds rather than biological speeds. Thus, it is practical to pack roads with autonomous vehicles nearly bumper to bumper even at high speeds and even increase safety. Whereas I think the high speeds of calculation are considered hands down the advantage of machines in the race for superiority, we might make a case for the importance of slow human biological speeds.

Relevant to this kind of distinction is that, while it is broadly assumed that humans base their decisions largely on reason and information, this approach may be more the exception than the rule. The renowned research of Israeli psychologists Daniel Kahneman and Amos Tversky explored many aspects of decision-making.[162] Time and again they were shocked by their studies documenting that even experts in a field often ignore reason and information in making crucial decisions. The

---

[160] Clocks are interesting in seeming to "measure" time, yet, like seeming sentient robots, they only imitate humanly specified characteristics of planetary and galactic processes from an earth centered view.

[161] If you have forgotten, it is 186,000 miles per second.

[162] See Michael Lewis, *The Undoing Project: A Friendship That Changed Our Minds* (2017).

seemingly most objective decisions are widely influenced by context, by how the situation is presented, and by expectations surrounding outcomes. While their work has been used to improve decision making in many arenas—from the available players professional sports teams should recruit to how hospitals should operate to how soldiers are trained—it is also important, I think, to see that the very messiness and unseen complexities of human decision making are distinctively human and remarkably different from the way we program and train machines to "think" and "make decisions." For machines to make decisions more like humans is perhaps not an appropriate objective for them since it would deny what is most distinctive to them, their speed and calculating capacities.

What might be some of the possible advantages for our relatively slow response timing? If our neurology responded at electronic speeds, it seems likely that our skeletal muscular system would be simply ripped apart. Our proprioceptors that gauge the speed and tension on our muscles and react to protect our bodies from just these sorts of injuries operate at biological speeds and we would experience a total mismatch between neurological systems operating at electronic speeds and the capacity of muscles to respond. Likely our physical bodies would just rip themselves apart or freeze up. To survive then we'd need to be machines; made of metal and silicone; at electronic speeds, biology doesn't seem possible.

I suggest that the time delay of biological processing is not simply empty, an inefficiency due to the poor selection of materials and inept timing (blame it on our maker!). Nor is this slow speed a marker of the relative stupidity of human beings. Rather the duration of this delay is overly full, crammed with not only the terribly complicated business of coordinating unbelievably complex organic systems, but this duration is the timespace of human awareness and thought and memory and agency and feeling. Certainly, scientifically we measure and mark time on uniform grids and scales and we designate points in time to locate events or sequences or the relative connection of cause and effect. We keep time and consult time as regular to coordinate and to analyze. We might think of this perspective as time in a *global* perspective. We can scarcely reckon and coordinate our world and relationship and physics without this stable global time system although we might find it useful to realize that even all of these numbers and markings have been developed in earth-relative terms; that means, they are based on the body experiences of earthlings. The time we experience is not so objective and stable as is evident in the many terms we use to describe our experience of time. And it is this *local* relativity, in contrast with the global and machine stability and objectivity, that helps us comprehend something of what distinguishes us human beings.[163]

I've come to refer to experienced time using the term *fat present*. I don't think we ever experience the past or the future outside of how they occur to us in the present; these are aspects of experience, memory, and imagination marked as "past" or "future." Experience, in the sense I am using it here, is synonymous with the

[163] Thelen and Smith's construct of "global" and "local" are influential to me here, as are Husserl and Sheets-Johnstone and Bergson for similar conceptions of time.

present, the awareness we feel as presence. For this sort of experience, we have to be present to it to have it. What we mark as past is either our "memory" of some experience we have had at some other time or the marking in a linear temporal construct of something about which we encounter in our present such as learning about a historical event; yet the memory, even to be a memory, has to be present. So too with the future. We can't experience the future because it is not yet. Yet we constantly project ourselves into an imagined or anticipated future and we can experience this imagined possible. Yet the experience is in the present of something marked as "not yet." Another major aspect of our experience is our connection with the world around us. We are constantly connected with the world, with our environment. Our awareness and perhaps even a good portion that is outside our full awareness are always in the present. At the locality of our experience and awareness it seems a strong possibility that what we refer to as "present" is overly full and has duration, that is, measurable finite duration. Such an understanding conflicts with the scientific notion of the present as the dimensionless interface of past and future; a zero duration point that locates us in time, a linear construct. The audacious suggestion is that there is a fat present to local experience that sort of rolls along to keep in sync with global time. Yet this local time is not constrained in the same ways as is global time. Past present and future exist together and in the fatness or richness of the present we can see that they are complexly interrelated, literally copresent. We draw upon our present memories to imagine our future—all present simultaneously and necessarily so it would seem. The vectored linearity of global time is not sovereign in the fat present. Future imaginings and present occurrences may influence memory both in what is remembered and in how those memories are reconstructed and valued. To our experience of time, the past can change because of its engagement with the present and future in the fat present. It might be suggested that, at least in terms of what is alive to us, what is experienced as life resides in the fat present, yet clearly, we have huge reservoirs filled by our past and our constructions of gesture and posture based on experience. We might envision all these ever-changing and evolving resources as something like the Internet of our lives all intertwined and accessible to the Googled demands of our present.

The fat present is like the TARDIS in fascinating respects. First, from the perspective of any of the local worlds in which the TARDIS exists it appears as a small square building of finite purpose and structure; normal, even banal. Yet, to experience the TARDIS by opening the door and entering it is to open space and time to the richest most extensive dimensions. From the perspective of Doctor Who the present is fat and rich and creative and adventurous and has the potential to contain any space and time in some sense. Like TARDIS, fat present is bigger on the inside than on the outside. While occupying perhaps but a fraction of a second in the linear scale of scientific time, this duration nonetheless contains in some sense—that of human experience—all time past present and future and all space as well. Against the background where the cosmos, or any specific place, is acting according to the common rules of cause and effect, the linearity of time, the elimination of the nonlinear, the TARDIS is an ordinary British police call box. Yet the experience

within and by means of the TARDIS, what is local to the TARDIS, is where the rigid objective linear march of time is not sovereign, where space is not uniform or continuous. Indeed, entering the TARDIS sitting on a street in London is to enter the experiential space of all time and space; and, as every companion traveling with The Doctor knows, the experience of traveling with The Doctor far outpaces any other kind of experience; it has dimension and adventure; it is characterized by nonlinearity, the drama that is the story; nonlinearity, the unexpected, the unknown is the driving force. Traveling with The Doctor is to be constantly at risk of death, but more commonly the ruination of the Earth or another planet, if not the entire cosmos. The characters encountered when traveling with The Doctor are of every imaginable shape and composition—although most have some anthropic semblance and speech however limited and odd; the Dalek being exceptions looking mostly like trashcans with a very limited vocabulary ("Exterminate!"). Death, annihilation, injury, loss, torture, pain, the unspeakable—hmmm that would be incoherence—is always a threat. And in the face of this chaos, when asked how he's going to take care of the pending catastrophe, The Doctor's most common response is the surprising and seductive, "I don't know." It is in the delight of the unknown that life is perhaps most exciting and rich.

TARDIS is a clever mechanism—an analogy—by which we can understand, or, better, be reminded of, and comprehend fundamental aspects of fat present, that is, our quotidian temporal/spatial reality as we experience it. What is fun in this analogy is that we live our lives in the fat present, our lives are remarkably similar to traveling aboard the TARDIS; yet we imagine that there is a linear, sensible, ordinary, meaningful reality characterized by everything in its place and minding the rule of law (physics), where we are supposed to live, yet, the most fun realization of all is, isn't it, that the world we think of as so orderly and predictable and lawful is but one imagined scenario among others? Perhaps we've gone a bit wrong in building machines that comply with this imagined reality and maybe even more amiss by us humans imitating our machines in order to attempt to enter their rigidly ordered predictable reality.

My strategy is to place human timespace in a comparative framework with that of AIs and robots—machines. We humans often find ourselves in the daunting shadow of the machines whose calculating speeds and information storage and recall capacities are almost beyond our comprehension even though we created these machines. We fear the machines as we contemplate the day of their superiority. I suggest as a possible and much more fun alternative that the very slowness of human processing may be fundamental to agency, to freedom, to thought, to feeling, to awareness, to true perception, to the full exercise of language, to gesture, and to smooth movement that is our experiential gauge of coherence. Perhaps this seeming lethargy and inefficiency isn't really negative at all, but rather is essential to enjoyment and pain, to love and loss, to feeling and awareness, to freedom and the suffering of its loss. Perhaps as the machines get faster and faster and more informationally totalized, they will, should we be open to it, reveal the marvel of the slowness that distinguishes us as human beings.

In the context of our own makings, that is, our making of these fast machines, we may feel the need and urgency to speed ourselves up to try to stay competitive. Such a strategy might just be a big mistake at least in terms of the benefits of distinctive human qualities that form the basis of our vitality and occasional joy. Perhaps the fear we must recognize as greater than the scenario where the machines take over is that we are forcing ourselves into becoming increasingly like machines. In doing so we surely damn ourselves because we know we will always be inferior in terms of speed, reliability, and durability. Such a strategy of becoming and acting more and more like machines will fulfill Descartes' perspective. We might make him right after all.

Inspired by the metahuman cyborg, the insight, the take away, surely is that machines must always be our tools, even if seamlessly integrated with our organic bodies. Machines must always be prosthetic to our fundamental organics and carbon-based nature, extending our power and agency, but also our feeling and awareness.

In terms of religion, while we commonly think of religion as having largely to do with thinking and the spiritual (non-material, spectral) matters, we might recall that the living of a religious life is one of action and belief (in the more banal sense I'm using it) and repetition and the caring for chosen objects and people; it is one of feeling and acting. Surely thinking, contemplating, musing, as well as acting, gesturing, moving, practicing can occur only in the slow processes of our human organic nature where nonlinearity, metastability, paradox, surprise occur and are experienced. Tomorrow's Eve names the composite figure found throughout history that affirms these fundamental human bodied values. Perhaps it is at the molasses speeds of human organics that we are able to peek through the rip in the fabric of ordinary reality to catch a seductive glimpse of what is beyond. In the vast and uncharted locality of fat present there is both identity and strong demarcation between material and spiritual; there is both identity and opposition of mind and body; past and future are distinct yet simultaneously present; the world beyond me is quickened by its showing up in my fat present. I'd suggest that religion emerges from and largely exists in the chaos of the fat present despite the grandness of the religious imagination of totalizing cosmology. Machines, left to themselves with blinding electronic speeds of exacting calculation even with big data available, do not muse or doubt or experience surprise or imagine what's beyond the horizon or believe or despair or ask, "What's this all about anyway?" or "Is there more beyond this?" Religion must surely be drawn into the future by the seductions to travel the wormholes in the TARDIS of our own local fat present.

Secret Hidden Horror

> Part of what makes us human are the kinks. They're the mutations, the outliers, the flaws that create art or the new invention, right? We have to assume that if a system is perfect, then it's static. And part of what makes us who we are, and part of what makes us alive, is that we're dynamic and we're surprised.
>
> ~ President Barack Obama[164]

It was a hot day in July when my friend Abdul Doumbia took me to visit a smithy in Bamako. Dozens of open-air shacks swirled in a labyrinth down a slope into the valley below. Men pounded red hot metal on anvils in close proximity to forges kept stoked by boys pumping bellows. The heavy atmosphere was charged with the rhythmic sounds of hammers and voices. Made curious by the appearance of an old white guy, one group took a break and, likely in jest, offered me the opportunity to join them. Pride in my Kansas farm upbringing pushed me forward. With full overhead swings of a sledgehammer I managed to strike the target now and then, each time earning high praise from the surprised smiths. Abdul, a master drummer, wanted to take me to this place because he explained smiths are also Doumbias with the kinship being in the pounding rhythms. He explained that the rhythms that emerge among the smiths' hammers transform the men into something we might call the "zone" so they are able to keep up this hot hard work for many hours straight. I'd often seen Abdul do the same with his djembe, playing hour after hour for dancers leading a group of drummers in interlocked complex rhythms.

At one point, I stopped to contemplate the scene. Nearby, in one smithy they were building the little square steel charcoal stoves used in all Mali homes most often by men in their endless tea making. In the neighboring smithy, the men were making colanders of a lightweight metal, shaping it and punching the holes. The hammers of different weights striking different metals made distinct sounds. As I listened I began to hear the interplay of rhythms among all of these hammers, appreciating the complexity and cyclic character of the tones and beats. A number of men doing different kinds of work with different tools with distinctive materials, yet clearly every blow of the hammer contributed an essential part to this mesmerizing melodic interlocking rhythm. Who could possibly interrupt this wonder?

A few days later in Foutaka Zambougou, Abdul's home village in the heart of Mali beyond the reach of any roads, I observed a group of women rhythmically pounding millet while singing together. And still later in Dogon country I watched a group of farmers, each with a hoe, arranged in a line in a small stone rimmed garden singing to the rhythmic sounds of their chopping hoes.

---

[164] https://www.wired.com/2016/10/president-obama-mit-joi-ito-interview/?mbid=nl_101216_p3&CNDID=14748798

The forge is a place of making, tool use, and transformation. Not only are raw materials shaped into products, the heating and pounding of metal also hardens and transforms it. The ancient connection with alchemy is obvious. Alchemy produces various kinds of gold. Perhaps the most precious is the transformation of working metal into enthralling music, into rhythm and harmony; forging the individual hammer blows into the coordinated organic ensemble. Think about it—forging means creating as well as faking, fashioning as well as counterfeiting, imitating as well as falsifying. Forging is heat and danger. Forging is boldly going on in territory and time. The very word is magical.

Pythagoras (6th century BCE) was the inventor of harmony (theory) in the double sense of how musical sounds interact with one another as well as the promise that the whole natural world is somehow intelligible, coherent. More remarkably Pythagoras felt these two senses of harmony are somehow related; a link we continue to contemplate millennia later. Apparently, Pythagoras initially distrusted the senses (his ears in this case) as well as musical instruments since he felt both have a propensity to change over time. His approach was to seek pureness and he relied on reason alone, and on numbers. Yet, before he completed his work he reported, "As if impelled by a kind of divine will"[165] he entered into a forge where he, as did I in Bamako, experienced, the hammering sounds of the smiths. "Somehow they emitted a single consonance from differing sounds" so that Pythagoras found himself "in the presence of what he had long sought, and he approached the smiths' work as if spellbound."[166]

Pythagoras discerned that the consonance resulted from the relations between the weights of the hammers. He set about weighing them and comparing their weights in correlation with the sounds the hammers produced. According to Boethius (early 6th century BCE) Pythagoras's results were to "let the weights of the four hammers be contained in the following numbers: twelve; nine; eight; six."[167] Pythagoras set about testing his numerical proportions using a variety of methods, including strings whose tensions were determined by the relative weights, water in glasses, and a device called a monochord whose single string could be divided in various proportions. Pythagoras discovered that sound in all its diversity could be reduced to a number of simple relationships: octave to 2:1; fifth interval to 3:2; forth to 4:3. The implication for him was that the natural world could be transcribed into numbers—an early example of information theory—that numbers were according to Aristotle the basis for metaphysics. Aristotle had held that "things are the same as numbers," "things and numbers are composed of the same elements."[168] Pythagoras, as did Aristotle, understood "number" to mean integers, whole numbers. Pythagoras's harmony was metaphysics.

---

[165] Heller-Roazen, *Fifth Hammer*, quoting Boethius, 12
[166] Heller-Roazen quoting Boethius, 12
[167] Heller-Roazen, 13
[168] Quoted in Heller-Roazen, 14

Yet in Boethius's account of Pythagoras in the forge, there was a fifth hammer; one that Pythagoras ignored. Although Boethius does little more than mention this act of omission, he raised a question mostly ignored since, "why did Pythagoras leave out his fifth hammer?" It is perhaps most likely that it was because it confounded his emerging theory of harmony, based on numbers; the abstract purity of whole numbers trumped his own sensual listening experience. Daniel Heller-Roazen took on the challenge of exploring the implications of this interesting issue in his book *The Fifth Hammer: Pythagoras and the Disharmony of the World* (2011) where he understands the fifth hammer to "name that unsettling part,"[169] that is, disharmony. At least one understanding of the "unsettling part" is the apparent discord between experience (the ears) and the supposed perfection of numbers; the long struggle between bodied experience and the abstractness of mind and ideal. The fifth hammer Heller-Roazen shows to be unsettling not only for Pythagoras, but also for many others since. It is my intent to trace this "dis-ease" with its possible implications right up to the cusp breaking into the future. Certainly, for me the prevailing question has to do with our terror and rejection of disharmony.

Heller-Roazen analyzes this single sentence of Boethius, "The fifth hammer which was discordant with all the others, was discarded."[170] He considers, in the context of the ancient world, various ways of understanding what this statement might have reflected from the time of Pythagoras leading him to offer a fascinating speculation. He first points out that while Pythagoras discarded the fifth hammer, "he nonetheless perceived it." It was upon hearing the sound of the five hammers that so stunned Pythagoras "as if spellbound." Heller-Roazen writes,

> Thus the fifth tool beat, no less than one of five. Perhaps, in his momentary distraction, Pythagoras found himself drawn to that very instrument: the hammer with no number and no master, which somehow—yet impossibly—sounded both "in a single consonance" and in utter discordance "with all." One wonders whether the "kind of divine will" that caused the thinker to abandon his sheltered contemplations may not have had a part to play in this mysterious quintet. The spirit that deterred Pythagoras from his reasoned inquiry may have also been the one that remitted him to the sensible organs that he never meant to trust. . . . Dimly or distinctly, if only for a moment, he had nonetheless perceived a being without measure. . . . harmonies of music that no numbers may transcribe.[171]

Heller-Roazen's comments are fascinating. He suggests that despite Pythagoras's distrust of his own ears, it was nevertheless his perception, his bodied experience, that was the basis for hearing both the single consonance among all five hammers, yet the very harmony experienced was the troubling part in relation to his theory of harmony where it raised the "utter discordance with all." His reasoned construction of a theory of harmony—based on numbered relationships—could not incorporate

---

[169] Heller-Roazen, *Fifth Hammer*, p. 10.
[170] Heller-Roazen, *Fifth Hammer*, p. 15.
[171] Heller-Roazen, *Fifth Hammer*, p. 17, the quotations are from Boethius's account.

the fifth hammer. Numbers could not transcribe the heard consonance of all five hammers, thus, in this respect the fifth hammer didn't fit "with all." The possible conflict, the discord, the kink that led Pythagoras to leave out the fifth hammer was none other than the conflict between the evidence of his senses, his ears, and his belief that numbers, integers in their wholeness and purity, must pervade the foundation of the harmony of sound and of the principles pervading the whole world. Fundamental is that heard consonance—perhaps too easily considered synonymous with harmony—is perchance not possible apart from the copresence of that unsettling part, the part that can't be transcribed into number or into bits or represented by information. Perhaps, to shift Heller-Roazen's articulation ever so slightly, the fifth hammer represents our historically gesturally naturalized propensity to ignore our experience, our ears, our bodies, when that evidence, no matter the certainty of the spellbinding feeling and affect, conflicts with the assumed perfection of abstracted systems of laws, with the eternal relationship among numbers, with the flawlessness of god.

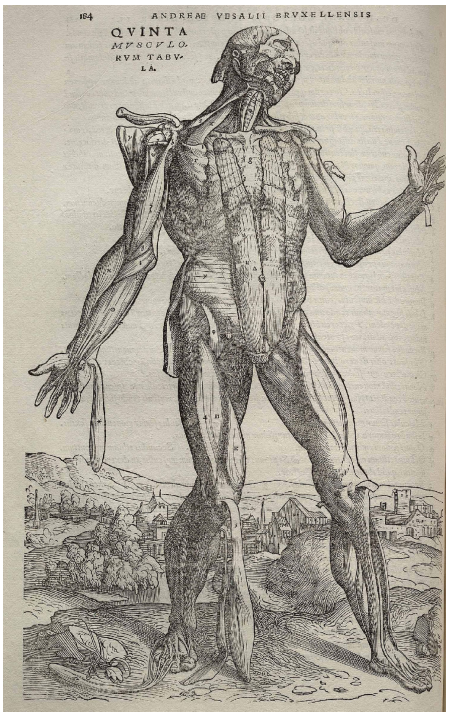
We might then recognize that "harmony" has long been bound in the tension between aesthetics and experience on the one hand and abstract theory and ideal on the other. The Greek root *harmonía*, meaning "joint, agreement, concord" from the verb *harmozo*, "to fit together, to join." Yet, to the ear, harmony is but an occasional experience within the ongoing flow of musical sounds comprised of consonance and discordance the whole experience often being moving, even spellbinding. Clearly the engaging "tensions" and "colorings" of musical experience are inseparable from the discordances that create minor keys and build the drama in music toward its fulfilled conclusions. The play of music is in part the interaction of the ranges of possible tensions and resolutions that constitute harmony. Yet, since at least Pythagoras, harmony also has meant a theory of relationships and laws believed to be not only at the root of music, but also and perhaps more importantly at the root of cosmic reality, pertaining to the very motions of the stars and planets; metaphysics. Harmony is theological in being understood as the principles used by god in creation and the perfection of the created world that attests to god's presence.

In my decades of interest in Native Americans I have frequently encountered this idea of harmony commonly projected, usually by non-Native Americans, on these people seen as representatives of purity, as of the original (*ab origine*) perfection. This notion of harmony tolerates nothing that is not centered and balanced, nothing that is subject to change or discordance, nothing that is not by the numbers (often also for Native Americans charted in fours or other number sets), as these attributes are believed to be the very markers of god's perfection.

To adumbrate my current concern with our breaking to the future, machine learning, deep learning, AI, all share the Pythagorean strategy of translating everything in existence to numbers; more basically into the metaphysics of bits. Yet, unlike Pythagoras, these machines discard nothing because there is no ideal or sense of perfection or notion of the importance of god or center; the *holos* of numbers has seemingly given way to simulacra; a hyperreal self-imitation based on

statistical probabilities without metaphysics. These machine beings, if we grant them the status, exist in a world without philosophy, without theology, without music. They simply mine and crunch big data and calculate probabilities; ranking everything based on the statistically most likely and discarding nothing. Nothing is actually heard or believed or felt because nothing is "heard." There is no "unsettling part for AIs." This style of "learning" is based on the ancient proposition that reality may be adequately transcribed into numbers and information, indeed, where number is the purest form. Yet, among AI there are not annoying fifth hammers or irrational numbers to signal that disharmonies, once experienced, tend not to disappear. And there is no awe.

There remains, for us eared beings, the capacity, even propensity, for the spellbinding experience Pythagoras heard with his own ears that included necessarily the fifth hammer in the impossible copresence of the single consonance yet the utter discordance "with all." And Pythagoras, according to Boethius, attributed being drawn to this body presence by a "kind of divine will." Surely the insight to be gained here—I'm endeavoring to see and express it—will be revealed to us as we appreciate the conjunction of the necessary presence of the impossible, the spellbinding effect of the interplay of consonance and discord (coherence and incoherence); this was perhaps what Pythagoras felt as the force of the divine will.



Our machines do not have ears to hear the music so their followers (are these machines as well?), should they have any, would never wonder and attempt to understand why the fifth hammer was left out of their calculations despite its spellbinding effect for they leave out nothing; besides statistical probabilities of something being spellbinding are hardly enthralling. We are, I believe, arriving at a shift of a singular kind (perhaps not a singularity, yet significant), one that has been brewing since Pythagoras.

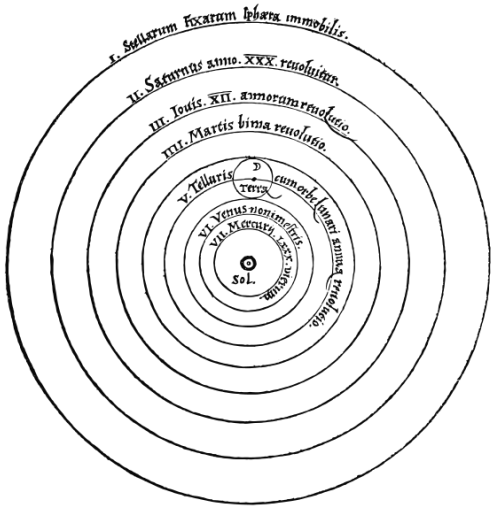
Two millennia after Pythagoras a remarkable conjunction of the appearance of new maps of various sorts attested to a newly imagined and experienced reality—the rewards of those two thousand years. These maps appeared nearly simultaneously in 1543, the year of Copernicus' death.

Known as the father of modern human anatomy, Andreas Vesalius (1514-1564), Belgium anatomist and physician, published in this remarkable year, 1543, a seven-volume work *On the Fabric of the Human Body* that contained hundreds of plates illustrating many aspects of the physical body. These plates progressively peeled back the layers of the bodily construction isolating the various systems within, all the way down to the skeleton, the bones. The work birthed the era of modern medicine.

The term "atlas," used to refer to a collection of maps, was first used by Belgian

Gerardus Mercator (1512-1594), philosopher and mathematician, who is most remembered for his cartography. The map Mercator published in 1543 was distinctive for using a projective method so that a flat map of the world charted in straight lines the sailing routes following a course of constant bearing. As Mercator described it, what he wanted to achieve was "to spread on a plane the surface of the sphere in such a way that the positions of places shall correspond on all sides with each other, both in so far as true direction and distance are concerned and as correct longitudes and latitudes." The earth, a spherical planet, was translated into a flat whole that could be observed of a piece. The shift in perspective to one from above was a shift in relationship; a conquering in some sense.

Of course, Nicolaus Copernicus (1473-1543) is well known for his contribution in shifting the understanding of our Earth location away from the center of the universe demonstrating that we live on one planet among others all circling a common star, the sun, which he placed at the center of the universe. Although Copernicus knew that the orbits of the planets were more nearly elliptical, he presented them in illustrations as circular; an acknowledgement perhaps of the importance of presenting a system characterized by the perfection of circles as demanded of god's work. Although



Copernicus had formulated the theory decades earlier, his book *On the Revolutions of the Celestial Spheres*, published in the year of his death, would revolutionize not only astronomy, but also theology and the entire sense of the importance of humankind. Kepler, as I'll consider immediately, was to work out some of the larger and even disturbing implications of the Earth being other than the center of the universe. Of course, Copernicus revolutionized the sky that led to the full explorations of the universe including space travel.

At a signal moment (relatively speaking), the year AD 1543, everything changed from the human body to the earth to the sky, birthing the modern world. The mysteries of the body became scientific knowledge. The shape of the earth lay on charts navigable to any location. The solar centered sky reshaped the cosmos. Perhaps most important was the opening and energizing a new era of exploration and discovery of the interlocked realms of body, earth, and sky; an enterprise that continues to the present.

Martin Luther (1483-1546), the German who had rejected the teachings and practices of the Roman Catholic Church and lead the Protestant Reformation, published a book in this same year, 1543. It was a book-length anti-Jewish treatise titled *On the Jews and Their Lies*. Unfortunately, this religious intolerance too is a heritage that continues to inform the present seemingly unabated and remains ubiquitous across the globe. Luther's *Ninety-Five Theses*, published in Latin in 1517, marked the beginning of the Protestant Reformation. The rise of Protestant Christianity certainly remapped the world in profoundly fundamental ways.

It would be more than half a century after Copernicus died before the publication of *The Sacred Mystery of the Cosmos*, also known as *The Secret of the Universe*, in 1596 by the self-styled reincarnation of Pythagoras, Johannes Kepler (1571-1630). Although it remained commonly accepted by early modern thinkers that god created the world in its perfection and symmetry in accordance with numbers, Kepler rejected numbers which, as he wrote, "are at a second remove, in a sense, or even a third, and fourth, and beyond any limit I can state, for they have in them nothing which they have not got either from quantities, or from other true and real entities, or even various products of mind." Further he wrote, "Arithmetic is nothing … but the expressible part of geometry."[172] As perhaps obvious, Kepler proposed geometry, not numbers, as fundamental in both theological and scientific terms. Kepler offers a rather powerful early criticism of the limitations of "information" of what we now understand as "bit reality."

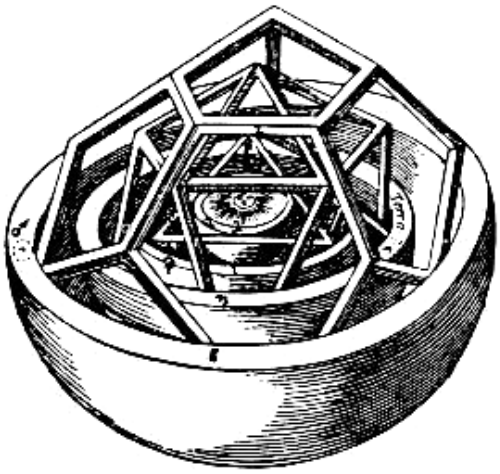
Kepler created his own theory of harmony published in 1619 as *The Harmony of the World*. Reviewing Pythagoras' harmony, Kepler wrote, "The Pythagoreans were so given to . . . philosophizing through numbers that they did not even stand the judgment of their ears, though it was by their evidence that they had originally gained entry into philosophy; but they marked out what was melodic and what was unmelodic, what was consonant and what was dissonant, from their numbers alone,

[172] Quoted in Heller-Roazen, *Fifth Hammer*, 118

doing violence to the natural prompting of hearing."[173] Holding that geometric figures, finally two-dimensional or surface ones, were fundamental, Kepler constructed his harmonic theory on the basis of inscribing regular shapes (those that can be constructed with compass and ruler) within a circle using the portions thus determined as the basis for his harmonic proportions.

Like Pythagoras and so many others before him, harmonics for Kepler had to do not only with music, it was the core of metaphysics. Harmonic theory contained the principles used by god to create the world in its perfection. Kepler did much to achieve what was then the issue of unifying physics, by proposing that the physics of the earth and sky are homogeneous; in theological terms, that god's creation was consistent in principle throughout.

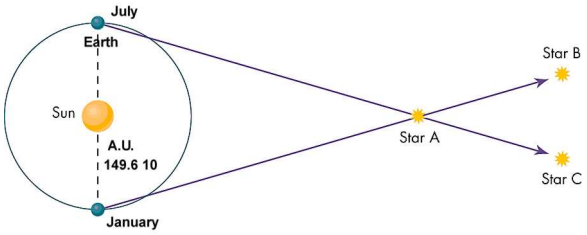
Turning to the world—what now we'd call our solar system—Kepler built upon Copernicus. To comprehend the relationship among the planets moving in orbits around the sun, Kepler proposed that again geometry was the foundation. He imagined solid geometrical shapes arranged one within another around the sun with the surface of each corresponding to the orbital behavior of the successive planets. Since these same geometric shapes constitute musical harmony Kepler argued, "Therefore, the motions of the planets are nothing but a kind of perennial harmony (in thought, not sound), through dissonant tunings, like certain syncopations and cadences (by which men imitate those natural dissonances), and tending towards definite and prescribed resolutions, individual to the six [the number of planets then known] terms (as with vocal parts) and marking and distinguishing by those notes the immensity of time."[174] There is then a song (if thought rather than heard) of the universe. Yet, the remarkable impact of Copernicus was that Kepler recognized that this "song" could only be "heard" if one were located in the center, at the place of the sun; God's association with the sun being obvious, for the symmetry occurs only from that location.



The more profound issue subsequently arose in the consideration of the size and possible infinity of the "world." Kepler held that the universe was spherical, a container of sorts, comprised of the fixed stars. A major issue, since Aristotle, was considering the possibility that the world was infinite, a view most commonly finally rejected. This is, of course, a metaphysically framed issue based on the experientially based corporeal concept that every inside must have an outside. A powerful consequence of the heliocentric world Kepler considered was the full

[173] Quoted in Heller-Roazen, *Fifth Hammer*, p. 119
[174] Quoted in Heller-Roazen, *Fifth Hammer*, p. 129

realization that the universe was far greater in size than had been imagined. The difficulty of observing any stellar parallax required the conclusion that the stars were at a distance almost immeasurably farther from the earth and sun than the distance between the earth and the sun. This knowledge would suggest a possible "infinite" universe. Through a variety of arguments (not essential to review here) Kepler continued to defend his view that the universe could not be infinite. Holding to the uniformity of nature, including not only the earth but also the sky, and based on his principles of geometry, Kepler argued that "were the heavens truly limitless, the placement of the stars across them would be manifestly homogenous. Stars of equal numbers, set in equal groups, would follow each other to infinity."[175] The Sun would then be but one among others equally spaced throughout an infinite universe. Kepler then concluded, "Among the innumerable places in that infinite assembly of the fixed stars, our world, with its sun, would be one place in no way different from other places around other fixed stars, as represented [referring to an illustration he prepared]."[176] Since the stars are not evenly distributed, Kepler concluded that the universe could not be infinite. Kepler's recoil from an infinite universe was one raised by the specter of relativity. The very entertaining of the idea was disconcerting. Such a world would be neither earth centered nor sun centered, indeed, it would have no center at all. Without center: where does one account for the creation of god, or for god's very existence for that matter? Where does Kepler locate the base for his harmony? In *De stella nova* (1606),[177] Kepler wrote, "The mere thought of it [an infinite universe] brings with it I know not what of secret, hidden horror; one finds oneself wandering in the immensity, which knows no boundaries, no center, and, therefore, no defined places at all."[178] As Pythagoras couldn't include that fifth hammer, Kepler couldn't embrace the possibility of an infinite universe.



Heller-Roazen suggests that an unacknowledged insight of Kepler was that the "limitless universe is out of this world,"[179] that is, beyond the possibilities of human experience. From Kepler on, astronomy has relied on methods of observation inaccessible to direct human perception in order to attempt to detect new regularities. How to settle the issue? Heller-Roazen's great insight is that such discoveries likely would not have changed Kepler's view. Heller-Roazen writes,

---

[175] Quoted in Heller-Roazen, *Fifth Hammer*, p. 137.
[176] Quoted in Heller-Roazen, *Fifth Hammer*, p. 137.
[177] Kepler wrote *De Stella Nova* or *The Birth of a Star* in response to the appearance in 1604 of a new star in the constellation Ophiuchus better known as Serpent Bearer.
[178] Quoted in Heller-Roazen, *Fifth Hammer*, p. 139.
[179] Quoted in Heller-Roazen, *Fifth Hammer*, p. 140.

> His intuition may have been sound. In a universe without limits, its center everywhere and nowhere, its boundless stars distributed in endless uniformity, one might well continue to grasp natural phenomena by mathematical means. But a harmony of the world would not be heard. One might wait another six thousand years, yet no thinker, sage, or scientist, would step again into the forge, and no Pythagoras would be reborn.[180]

The bald suchness of this "secret, hidden horror" is so immense as to force us to quickly drop the fifth hammer and find respite wherever we can. Yet, like naiveté, once one has glimpsed the abject, it is impossible to forget. The strategy, as we attempt to forge our way into a future, to create in that forge a world that is anything but bleak, is surely to find that there is an interplay of the finite and infinite as well; that our very lives depend also on the courage to forge our way to acknowledge the possibilities revealed by this "secret, hidden horror." But before exploring these ideas, I want to offer another way of comprehending the "secret, hidden horror" that also begins with Pythagoras. A moment of distraction from that terrifying glimpse.

One way to understand in the most concrete terms is that this "unsettling part" reveals itself in the theorem that bears Pythagoras's name; in a right triangle, the square of the hypotenuse is equal to the sum of the squares of the other two sides. Thus, the length of the hypotenuse is equal to the square root of the sum of the squares of the other two sides. To take the simplest example, consider a right triangle in which the sides that are not the hypotenuse are each equal to "one". By the Pythagorean Theorem the hypotenuse would be equal to the square root of one squared plus one squared or to the square root of two. The square root of two turns out to be an irrational number, that is, a number that cannot be represented as a ratio of integers—it is closest to, yet not precisely, 99/70—and thus there is no end to the number of decimal places its calculation produces. The arithmetic value can never be precisely calculated. It is believed that the square root of two is likely the first known irrational number. Another well-known irrational is Pi. Since irrational numbers invariably and necessarily arise in the numeric representation of geometric figures, they provide another way of understanding the relationship between arithmetic and geometry. A circle is a circle easily confirmed by observation; it can be constructed in any number of ways and it can be constructed to have a measurable perimeter (take a string of a given length and make it into a circle). Yet the numbers representing the circle can never be exact; that is, the calculation of the perimeter from the measure of diameter involves Pi and thus can never be exactly determined. Unlike the fifth hammer, in physics irrational numbers cannot simply be ignored. Because of the necessity of these "unsettling parts" the universe cannot be known or represented exactly by numbers.

It was from Michel Serres that I became aware of the appearance of the three maps in 1543. He mentions them in the effort to show the trajectory that unfolded over

---

[180] Heller-Roazen, *Fifth Hammer*, p. 140.

the last several centuries. In his *Variations on the Body* (Fr. 1999, Eng. 2011) Serres wrote,

> During the years, known as miraculous, of sixth century Greece, the abstract geometry of similarities was therefore born from the concrete body that imitates, at the same time as astronomy, mechanics and, I haven't said it, the geography of the Earth, since the measurement of the latitudes was derived from the sundial. Now, during the Renaissance, in the same year or almost, 1543, three maps came to be: a map of the sky, modeled by Copernicus; another terrestrial globe, projected by the geographer Mercator; and a new body, drawn on Vesalius's anatomical plates. Lastly, this very day, we are introducing three pages of the body, earth and sky to the modern era: a Universe whose photons reach us from billions of years in time and millions of light-years in space; an Earth that has been explored, to the very centimeter from satellite height, down to its innermost movements: we watch volcanoes breathe and maritime abysses slowly open; finally or firstly, we are detailing the body's biochemical and genetic constitution.
>
> These three landscapes carry us toward the future. In these three moments which we can regard as beginnings begun again, the presence of the human body harmonically summarizes my arguments. [181]

Let me add to this group a fourth map observed in 2014 by Andrew Keen at the headquarters of Ericsson, the world's largest provider of mobile networks. Keen describes the map:

> The wall was dotted with a constellation of flashing lights linked together by a looping maze of blue, pink, and purple lines. The picture could have been a snapshot of the universe with its kaleidoscope of shining stars joined in a swirl of interlinking galaxies. It was, indeed, a kind of universe. But rather than a celestial firmament, it was a graphical image of our twenty-first-century networked world.[182]

From his description, this map, an earth map, appears to have an uncanny resemblance to the recent scientific depiction of the super-cluster of galaxies named Laniakea in which our own Milky Way galaxy is but a speck.[183] It may also invoke images of fMRI brain scans.

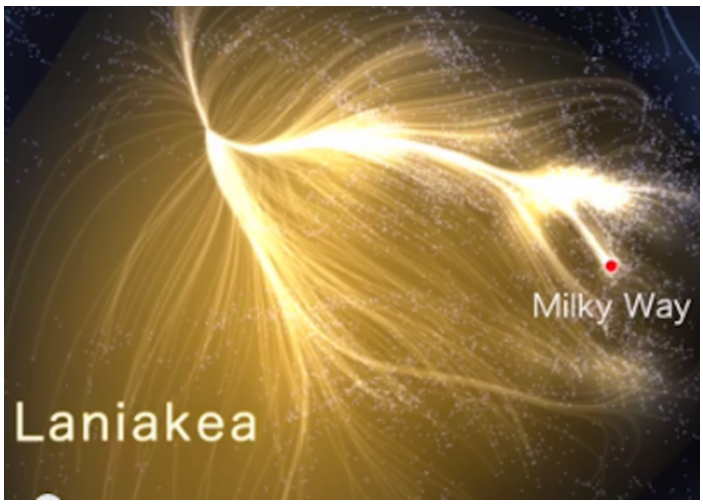
---

[181] Serres *Variations* 38 (101)?

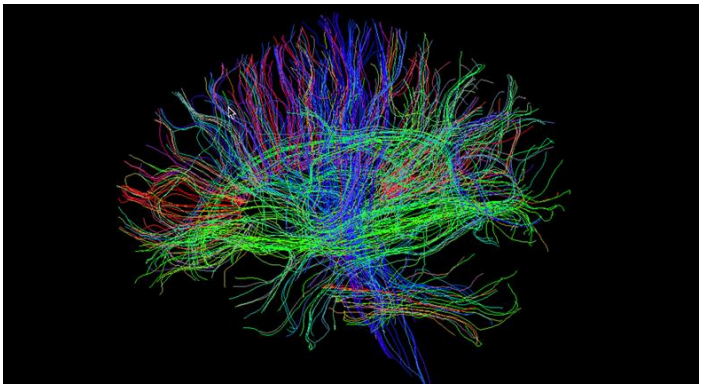
[182] Keen, *The Internet is Not the Answer*, 11

[183] For an interesting video showing how this image came about see https://www.youtube.com/watch?v=rENyyRwxpHo

In the presence of these remarkable mappings, Serres does not follow Pythagoras and Kepler in dismissing body or perception. He concludes, "the presence of the human body harmonically summarizes my arguments." We can certainly appreciate the gravity of the efforts of Pythagoras and Kepler (and all the others), yet from the complexity of the interconnectivity of the Internet (the presence of "the all"), the magnitude of the known universe, the complexity of the genome, the "unsettling parts" seem increasingly pervasive.



Into the future we know there is no center, we know that our science and math tell us that there was no one around to hear the music for almost all of cosmic existence; we know that only in last few centuries have we even been able to contemplate in some reflective terms what constitutes the harmony of music and hammers and planets and galaxies; we know that we are alone with our nearest possible neighbors being a mere 40,000 year voyage by our fastest spaceships;[184] we may begin to realize that what we have discovered in the time since Copernicus and Kepler is but a hint of what will come to be known in the next couple centuries, perhaps even decades; we surely realize that the changes we are rendering on our world due to our own recent short-sightedness is not gradual but rather has placed us on a trajectory careening towards extinction; we know that we already have one foot in the door of a future dominated by machines—perhaps, at the least, our bodies transformed into machines or our behavior and sensibility indistinguishable from machines—whose listening instruments are so accurate and precise as to make our ears seem sadly inefficient. Yet, more importantly, these machines cannot smile or laugh or be moved to tears by the sound waves they measure so they might



[184] Given this number there is shocking incredulity in reading that our preeminent physicist prophet Stephen Hawking has indicated that we have but a hundred years before we need to be exiting from earth for a new home. http://www.newser.com/story/242261/hawking-actually-we-have-100-years-to-escape-earth.html

calculate statistical probabilities labeled with musical terms. Machines, as the universe, exist in a cold eternal silence; they can't feel the harmonies so common to our pathetic ears.

It might be suggested that we have our own fifth hammer and, like Pythagoras, it is our denial of what is apparent to our senses; of the implications of what is well accepted in our knowledge. Far more consequential than Pythagoras' physical hammer or Kepler's refusal of relativity, ours might be understood as being comprised of the greatest of human conspiracies; the tacit agreement that we all refuse to acknowledge the dire implications of our own current maps as being relevant to our journey into the future. Perhaps surprisingly complicit in this conspiracy of silence, more than we might imagine, are traditional religions and academic institutions.

Serres gives us hope. We might understand him as calling for a new harmonics; this one based not in the purity of numbers (Pythagoras) or the perfection of geometry (Kepler), but on the imperfect variations of the human body.

Step Again Into the Forge

Pythagoras's ignored fifth hammer, Kepler's "secret, hidden horror," and Heller-Roazen's "unsettling part" all weigh on me as does the insight common to Pythagoras, Kepler, and Serres that harmony is both musical and metaphysical. I'm fascinated by the relationship of body to the imagined purity of forms, that this relationship parallels the distinction between divinity and humanity, and that it has persisted since antiquity. As the base for harmonic theory, I'm intrigued by the shift—is it a progression?—from purity of integer to the perfection of geometry to the suggestion of a harmony in variations on the body. Is this a shift from an imagined idealized god to finally embracing that most unquestionable aspect of our existence, that we are body? Are we, as Vernor Vinge suggested back in 1993, on the cusp of either a totally new human era or one absent of humans (again)? How do we follow Pythagoras into the forge knowing we must create a theory of harmony that will guide us into our future? What hammering on what anvil will create a new understanding of harmony? What alchemy must we discover? How do we find the courage to forge ahead when the discordance of all existence—no, better, the utter silence and coldness of the vast universe—seems unbearable? And on religion, how do we not feel other than depressed that Luther's protestation of the Catholics and his hate of the Jews seems still to mark the dominant character of religions—religious intolerance and hate seem at the core of most of the world's current conflict, violence, and suffering—when concurrent with Luther scientists and philosophers ignored discord primarily because they believed that the world had to reflect the perfection of god, its creator? Kepler understood the "secret, hidden horror" as when "one finds oneself wandering in the immensity, which knows no boundaries, no center, and, therefore, no defined places at all." Yet the immensity known to Kepler is miniscule compared to our current reckonings.[185] How do we muster the courage to forge ahead?

The term "singularity" is intriguing to me. Physicists and cosmologists use the term to describe the moment just before the "big bang," before the first moment. Singular is one or whole (*holos*); singularity the condition or properties of oneness or wholeness. It is in some respects akin to "unique," which simply means "incomparable," although we tend to use it as a superlative. In overly simplistic terms, one can take the conditions at any time and place and, if it all works out, apply to them the laws of physics to determine the conditions at any other time and place. Projecting from the current state of the expanding universe in reverse fashion one ought to be able to determine from whence we cometh. That seems to reveal a retrograde convergence on a single point of infinite mass and energy. At that moment, that point, where/when it all began, the causal temporal laws of physics no longer apply. One cannot project beyond that first point to some point

---

[185] To frame this scale to the point of the ridiculous, in 2016 astronomers noted that there are likely 10 times as many galaxies (galaxies!) as had been thought. Rather than the mere 200 billion galaxies, there are now thought to be 2 trillion galaxies each like our Milky Way!.

before the beginning. Immensity, yes; infinity, no. It is clear that this unimaginable situation is not comparable to any other. As time and space collapse into the incomprehensible (not even a void), cause and effect, laws, progression, prediction, comprehension, time and space, all disappear. Physicists can apparently describe what occurred during the first microsecond—that is, what constituted the first stages of the explosion—yet we cannot know who or what put match to the fuse. For some, this was the job of that most singular of beings; in a lawful world, the one and only single job left to such a being.

The term "singularity" has come about again, introduced in 1993 by mathematician Verner Vinge to describe what he understood as imminent "change comparable to the rise of human life on Earth." In his essay "What is the Singularity?" Vinge offered several degrees of specification: computers that "awake" and are superhumanly intelligent; large computer networks that "awake" as a singular superhuman intelligent entity; computer/human interfaces so intimate as to be considered superhumanly intelligent; and the biological improvement of natural human intelligence.

Vinge's term "awake," which, interestingly, he places in quotation marks, seems to be his indicator of singularity. It uncannily evokes the image of the moment in Victor Frankenstein's lab when his creature seemingly awoke. Awake as thus used is not the image of birth, of naissance or origination. It implies coming to awareness and movement from a state of sleep and inactivity; fully formed (adult) being suddenly coming to "life" (I'll add my own quotation marks or as many now say "scare quotes"). More than intelligent in the sense of calculating statistical probabilities, which can be done by an inanimate tool (a calculator), for the computer to "awake" is for the computer to become aware and thus animate, that is, self-moving (Main de Biran). What is truly singular about this "awakening" is that this event cannot possibly be predicted or anticipated based on the application of the present laws, such as Moore's Law and all the laws of physics. The "awakening" would be the singular and signal arising of a creature fully formed, as was Frankenstein's creature.

Yet, as a mathematician, Vinge fully knows that to predict a singularity is precisely to deny its singularity. To predict this event would be like a countdown to the "big bang." It requires something on the other side of nothing. We join Kepler in feeling the mere glimpse of this possibility to be a "secret, hidden horror" expressible in terms also used by Kepler of "a monstrosity."

What is now fascinating about Vinge's discussion is that from the vantage of our time almost a quarter century later, most of what he foresaw, other than the singular "awakening," has come to pass and is progressing. His image of the large computer networks comprising a common intelligence has come to pass in the Internet that feeds the mass data mining algorithms that shape our lives; creatively imagined as the Borg with its "hive mind." We have considered the disappearing interface in the rise of the cyborg. Vinge wrote not only of AI, artificial intelligence, but also of IA, intelligence amplification. The latter references what I have discussed as the metahuman cyborg we are becoming. In light of the idea of singularity with

respect to AI, it perhaps helps us realize and emphasize the obvious. AI is "artificial." To suggest that one day AI will "awaken" is to suggest the transformation from "artificial" to "natural," to "real" in something on the order that we humans are real. We are reminded that AI is ARTIFICIAL: human made, cold, second order (or third or fourth), unfeeling, senseless, but a hammer in our forge. To be reminded of the artificiality of AI might, I'd hope, beseech us to step up as creative and responsible smiths.

Following Pythagoras and Kepler we need forge a new understanding of harmony more fitting our journey into the future. Taking a clue from Michel Serres, based on the perspective he gained by comparing the charts of the 1543 world with those that guide us today, we must focus on the "presence of the human body." We should not distrust our ears; that our hearing changes and varies is what distinguishes us as human, natural, real. Should we wish to be theological about it; we might realize that to insist on the purity of integers and the perfection of geometric shapes as evidence of god's creation is to limit god to stabilities, to exclude novelty and ongoing creativity from the purview of an on-going presence of god; such a world is that described by physics. It is the unreliability and variability and unpredictability of human ears and bodies that, among all things, attests most decisively to creativity and to actually hearing and being moved by the music.[186]

Kepler understood that in a heliocentric world the harmony of his geometrics could only be heard if one were located at the center, that is, at the sun; an impossible concert venue. He also understood that the song of metaphysics, the rhythmic melody of the world, was not a song that anyone, any ear, could actually hear.

How to construct a new understanding of harmony? Where do we begin? We have but clues, yet they are tantalizing. Perhaps rather than focusing on the concordance of the single chord, we consider the composition; not the composition completed, but the ongoing coordinated dynamics that we experience, as did Pythagoras, as "spellbinding," that is, enthralling, enchanting, entrancing, mesmerizing. What keeps us listening other than having some sense of the whole with the potential variation of all the parts as they emerge in play? Perhaps our listening is not in the

---

[186] A fascinating example of the importance of randomness and accident is present in Nicholas Britell's description of his composition of music for the 2016 film "Moonlight." He says, "There's this fascinating alchemy of how sound and picture relate. And I don't think anyone really knows why these things feel the way they do. So, you know, the more I get the opportunity to do this, the more I feel it's important to follow these kinds of instincts and feelings and let your emotional response to things drive you in different directions." NPR interview 2/20/2017. This classical music also illustrates something of the metahuman cyborgian approach to creativity. The music is composed and played by human artists yet with the final version altered by use of a "chop and screw" technique that bends the pitch of the music effectively changing the key. The fascinating thing about this process in the present context is the honoring of the importance of the unexpected that is accepted as part of the creative process.

achievement of the end, but in the feeling of, the seduction of, the unfolding. It is not just that the infinite number of possible songs astound us, but so also do the themes and variations possible for each and every one. In this respect, songs are like bodies; both are realized as themes and variations that unfold through moving. A song as sung by a living human body, rather than the recorded fixed replication (bit reality), is exemplary in another respect: though we quickly have a sense of a song as a whole even if we've never heard it before, we still do not know with certainty what is coming next. We experience the same in dance and in reading a book. The whole is somehow adumbrated in its every part, yet every part has the potential for novelty. This too is the experience of living our lives in time; an experience of time I've referred to as the fat present.[187]

Listening to Serres, we should incorporate harmony in a broader sense of a theory of music, music played by living bodies (even if augmented by instruments and machines), and find, should we desire it, therein the theological and metaphysical inspiration. We might finally give god credit for ears and bodies, highlighting god's wisdom in linking all the seeming imperfection and variation with novelty and vitality. We might comprehend that apart from ears and bodies, the totality of the universe in its vastness, including our computing machines, is silent and lawful, perfect and pure, cold and unfeeling. This might inspire religion(s) to enter a post-theological era.

On an optimistic note, a happier melody, perhaps the "secret, hidden horror" is not, as Kepler said, finding "oneself wandering in the immensity, which knows no boundaries, no center, and, therefore, no defined places at all." Rather it is our realization that without ears and bodies, there is no wandering, knowing, or defining at all.

---

[187] I have developed "fat present" much more fully elsewhere incorporating Jean-Luc Nancy's notion of "resounding vessel" and Brian Massumi's notion of "resounding cistern." It is also relevant here to suggest that sound is a much more effective way of comprehending these timespace concerns than is sight. For example, to get the clearest photo one usually reduces time to the smallest interval (the fastest shutter speed), yet such an approach to music (to sound) would be to eliminate hearing altogether. Music and ears (bodies) require intervals that are filled with copresence.

Song of Tomorrow's Eve

human intelligence can be distinguished
from artificial intelligence by body alone
~ Michel Serres, *Variations on the Body*

you must pose as Eve;
it's the most distinguished pose of all.
No other artist, I dare say,
will dare to take the role or sing the part,
after you've made it yours, of *Tomorrow's Eve*
~ Villiers, *Tomorrow's Eve*, 177

For decades I've heard the phrase, "you know this whole thing (the cosmos?) just may not be about us (I suppose this means humans)." I've always felt I was supposed to agree and I'm sure that occasionally I've yielded with a tentative nod of my head, but my heart has always screamed in silent protest. I totally get it. We have to see ourselves as part of the larger universe, kinfolk with animals, interdependent with plants, inseparable from the health of the earth, and, were we stronger more courageous, this relationality might well be projected to the whole cosmos. It is surely utterly arrogant to feel that everything is about us. Yes, I get it. Yet, take us humans out of existence and I can't comprehend anything at all really. I am certain this is anthropocentrism, yet how to even contemplate anything being "about anything" without the distinctively human capacity to ask "so?" How can song be about anything without the ears to hear it, to hear it as "song"? How can "cosmos" or "universe" as the final container, an inside that has no outside, be anything but impossible given that inside/outside are corporeal concepts and thus arise from our human bodies?

We might understand that cows go "moo" and chickens go "cluck" and dogs go "bow wow" and that they hear and respond, yet it is pretty hard for me to consider that they recognize and contemplate metaphysical and theological dimensions to their songs or even that they are inspired to create themes and variations on "moo moo" or "cluck cluck." Ponies don't pen poems; cows don't contemplate cosmos. Yet, without the inspiration or the biological venues in which songs move and inspire and enthrall, then what? Yet, in retrograde terms I accept that through almost all of the existence of the cosmos, time and space as the physicists account for it, there were not even animals, just rocks and gas moving through space. Imagining the whole of the cosmos in these terms I'm quickly led to ask, "why not endless numbers of universes?" Not only our solar system; not only our Milky Way galaxy, not only our galactic super cluster Laniakea, but our whole cosmos comprised of 2 trillion galaxies might just as well be but a grain of sand on an endless beach of universes. Without any reckoning, anyone to say "Oh Wow!", then what is any measure, any sense of inside/outside, any limit or not? We account for cosmic time and space in terms of the duration of our own earth year, rarely considering that, in the really big context, our solar system arrived on the scene in the last tiny moment. Would it be

any different to measure time in terms of the duration of the birth, expansion, and contraction of our universe, say as the unit we now refer to as a light year? If "it" is really not about us, then why not "one cosmos, two cosmos, etc."? Or even "one multiverse, two multiverse"? Or "one multiverse supercluster, two multiverse supercluster"? If we are not relevant, then isn't it just all matter (and energy) that doesn't matter?

The song isn't just for the likes of Pythagoras and Kepler; most folks through history have measured their identity and world in terms of song; now we call it folk music, yet isn't all music folk in the sense that it is of some actual people, bodies playing music that is who they are?

I'm well aware that computers can make music, but let's be clear on this. Computers don't create music for the pleasure of other computers. If you put a bunch of computers in a room alone, they don't all start singing a song to pass the time. Computers don't take music lessons or play in grade school bands. Computers don't write love songs based on their broken hearts (CPUs). Computers don't learn to play with lip and finger beautiful gorgeous instruments each of which has its own personality often made by the skilled loving hands of others bearing generations of craft skill. Computers don't hear music. What computers can do is take endless amounts of music samples marked (by humans) as the best music ever created and, based on algorithms, calculate probabilities of what constitutes the parameters of their input. Random generators might be incorporated to provide a sense of novelty and the unanticipated. Computers can make musical scores and electronically synthesize the sounds. Indeed, some symphony orchestras have played computer composed "music." Yet, never forget, computers don't get "inspired" to create music. Computers don't suffer writer's block. Computer music arises as a cold calculation. Computers don't hear and are not moved to tears by music. Computer music may move people to tears, but not other computers.

If there's no ear to hear, then how can there be song? Pythagoras had ears that he distrusted. Kepler had a sense of melody and rhythm, but imagined a harmony that could not actually be heard except perhaps by god as the sun.

It's time we had a song that we cannot only hear, but that also inspires us to dance. What we need is an understanding of harmony in process inseparable from the movement both of melodic line and of the human body.

Pythagoras followed the perception of his ears to enter the forge as "if impelled by a kind of divine will." We might imagine that Pythagoras danced to the rhythms he heard. Yet he could only imagine representing the perfection of divinity with integers, the harmonics of whole numbers. And in trying to achieve the divine scheme Pythagoras had to ignore his ears as well as the fifth hammer that added to what he'd heard. Kepler too sought the purity of divinity and arranged a sun-centered harmony of geometry that perhaps only god, as the sun, could hear. Again, ears continue to go wanting.

Since Kepler, the world, as evidenced by how it has been mapped, has shifted yet again calling for a new contemporary harmony. It might at first seem that the most

compelling harmony is that of the wholly debodied cloud of information. Perhaps, finally we have achieved the great celestial melody wholly abstract, wholly transcendent, no longer bearing any taint of the fragile and weak human body; music finally freed of the variations of handcrafted musical instruments. The great information patterns of zeros and ones sing as a heavenly host free at last of fifth hammers and "unsettling parts." The great algorithms of the All reject nothing. The map has become the territory; imitation, reality; divinity, Bit Reality.

Yet where is the ear to hear? Whom does the resounding impel? Do algorithms weep? Or laugh? Dare we suggest that god might be found in hearing the singing ongoing, in the discord of the fifth hammer, in the marvel of the unreliable ear, in the variations among the violins? What irony the ear in the era of Bit Reality; and the feet where the cloud is the ground. What becomes of the alpinist? The dancer?

France's King Louis XIV (1638-1715) understood. He fashioned himself as the Sun King thus placing himself at the center of the world where he could not only hear the geometric harmonies, but also dance them. In the early days of ballet Louis danced the role of Apollo the sun god assigned the daily task of harnessing his chariot to carry the sun across the sky. Apollo is also the god of music and dance. Dancing Apollo, Louis constructed himself as the divine king; the patterns of dancing and music were the harmonics of his court and his kingdom and his world. The long history of ballet continues this tradition; perhaps this tradition is why so many refer to ballet as "*the* dance." Until quite recently the Ashanti in Ghana selected their royalty on their ability to dance. And in Hinduism Nataraja, the Lord of Dance, is a cosmic creator. Today dancing marks life; ballet, perfection. So too the alpinist, the gymnast, the musician, the violin craftsperson; all coordinated collections of ears and feet and fingers.

Though it was but a thought experiment Étienne Bonnot de Condillac (1714-1780) heard the melody of the moving body. His puzzle was to imagine a man, a stone man; a stone man equipped as is any man with the capacities to feel and perceive and think, but for his being rigid, that is, comprised of stone. The thought experiment was then to consider what would need to occur for this flying stone man to come to sentience, to an awareness of himself and the world? Condillac's insight was that this man would need but a moveable arm that he might touch himself. In the moving touching connection, hand to body, arises awareness, sentience, and self, self and other. The near synonymy of touching and moving awakens the senses and the awareness of self and world. Touching and moving open the ears and warm the body. A few decades later François-Pierre-Gonthier Maine de Biran (1766-1824) simplified Condillac's insight and foreshadowed the discovery of proprioception by realizing that this creature would not even need touch himself, he would need only move his hand. There is feeling associated with self-moving; an "inner touch" as Heller-Roazen termed it.[188]

In the posthuman rise of information to replace body and world it is urgent that we hear and act to develop a contemporary harmony, one fitting our current needs. It

[188] Heller-Roazen, *The Inner Touch*

must be a harmony of body; songs singing, dances dancing. Katherine Hayles, who charts the advent of posthumanism, distinguishes the terms "body" and "embody." I am sympathetic to Maxine Sheets-Johnstone's suggestion that the verb form "embody"[189] suggests that the base condition is to be without body, as mind or soul perhaps. I often prefer simply to use "body" as a verb formed by context (even if it may not always work perfectly), yet with that caveat I can consider the important distinction Hayles makes.

Andreas Vesalius' publication of *On the Fabric of the Human Body* in 1543 opened, quite literally, the body in all of its complexity to anatomical study in service to knowledge accompanied by shifts in medical treatment to a more scientific basis. In this lineage, the body is normalized and reduced to precise and exacting measures. Advancing technologies, for example electronic scanning technologies, as Hayles writes, "create a normalized construct averaged for many data points to give an idealized version of the object."[190] The body becomes an idealized form; the body becomes wholly representable by information. A common observation of medicine is that the body is seen and treated as normalized object, as information presented as test results and scans, with the often-accompanying impersonal and insensitive treatment. Variations from "normal" are the focus for the diagnosis of pathology. Hayles contrasts "body," by which she means this normalized reduction to the body universal, with "embodiment," by which she directs our attention to the individual lived body. Embodiment considers the aspects of body that are inherently performative, active, and improvisational.[191] Hayles makes a distinction quite similar to that between movement as backfilled (Bergson) and living movement (Barbaras). She quotes Maurice Merleau-Ponty's "Eye and Mind" essay to help make the distinction: the body is, Merleau-Ponty wrote, not "a chunk of space or a bundle of functions" but "an intertwining of vision and movement."[192] Or as Elizabeth Grosz wrote, "there is no body as such; there are *only bodies*—male or female, black, brown, white, large or small—and the gradations in between."[193] Every body is somebody's body and every body is necessarily one defined in some sense by a particular place and time. Embodiment, as Hayles uses the term, is always in context, gesturing, individuating, responsive, and with agency. It seems odd that despite us all constantly experiencing the distinctive qualities of bodies, the normalized body has so deeply influenced us. How common it is now to think we need consult our biometrics to determine our own health and fitness (I'm often obsessed with this process); our feeling moving body is frequently secondary to our informational body, a body comprised not of flesh but of numbers.

---

[189] The prefix "em" is a variant of "en" which is added to an adjective or noun to form a verb.
[190] Hayles, *How We Became Posthuman*, p. 196.
[191] Hayles, p. 197.
[192] As quoted in Hayles, p. 203.
[193] Hayles 196, from *Volatile Bodies*, 19

Hayles parallels the distinction between body and embodiment with the contrast between what she terms "inscription" and "incorporation." The implications are obvious in the terms themselves; one based on writing and one based on corporeality. Inscription is associated with the informationalization that constitutes the normalized body. It is the algorithmic crunching of data to calculate the normal body—the medical body, the social body, the political body, the commercial body. Incorporation is the body in movement and gesture that is coincident with the corporeal concepts that correlate with the distinctiveness of corporeality; distinctive both as having arms and legs and fronts and backs and also as brown or white, as youth or aged, as short or tall, as variously abled, as cultured and located in history and geography. Inscription is the formation from the outside based on collective expectations whereas incorporation is the formation from experience. Elizabeth Grosz understood these as polar, rather than as exclusive, positions in a field of interaction; as mobiatic rather than separated and distinct alternatives.

Yet these distinctions may inspire the goals of a new understanding of harmony. Since the sixteenth century the trajectory is toward the normalized body, the information body, the Bit Reality body; a trajectory that is madly accelerating today. The harmony associated with the normalized body is one of calculation and probability, perhaps novel in the short term, yet increasingly bland and predictable as its own output progressively becomes its only input. Like the normative body of medicine, variation tends to signal pathology.[194] All becomes inscription and the body no longer sings, it just makes normal or abnormal sounds. Thus, it would seem that the new harmony must protect the precious embodiment and incorporation, the experience of volatile improvisational bodies all located in space and time. Such bodies may bellow and moan, may cry out in pain, may screech in frustration, may laugh with joy—all incorporations of the new harmony, the harmony including all of the variations of moving sensing experiencing living bodies.

Brian Massumi has been interested in the same distinction, which considered in what he termed "mirror image" and "moving image." Although visualist, these terms correlate with Hayles' body/inscription and embodiment/incorporation. They distinguish how we are shaped by and act in accordance with how we think others see us in contrast to the wholly embodied/bodied gestural behavior that comes directly, without filtering, from our bodies.[195]

French philosopher Michel Serres is an exception among philosophers in centering on living active body throughout his writing, often invoking his personal experience

---

[194] Having experienced a range of health problems in recent years—still not enough to keep me from dancing and moving (even more)—I have come to both appreciate the importance of "information" related to the evaluation of my health, yet I have also found that even medical specialists, while relying on these numbers and making life and death decisions on their merits, fully admit that the variations, complexities, random elements, and unknowns are expected to trump the numbers time and time again.

[195] Massumi, *Parables for the Virtual*

as a seaman and hiker. He hears the harmony in and with the body. His writing style sings the body poetry perhaps more so even than its content. Throughout much of the first section "Metamorphosis" of his *Variations on the Body* he regularly refers to the upright walker in recognition of the long history of the evolution of humankind leading to our distinctive shift in posture.

> You recognize the alpinist, that man who knows how to walk, by his risen body. Standing erect is therefore acquired and has more to do with the ear—no doubt, but also the entire body and pleasure—than the eye. At the same time as learning to walk over steep, difficult, capricious grounds, you must learn to find your seat there; then and then only, when all the skin of the foot sends the entire body a hundred delectable messages of velvet, wool and silken comfort, do you learn how one becomes hominin, banishing from yourself the univalve, the quadruped and the ape—an erect animal, a risen child, an adult person expelling everything that remains infantile. Leaving childhood and the animal, what joy at last: the body gets its kicks."[196]

The risen body, both the evolution from snail and quadruped as well as the rise from the creeping infant to the upright walking adult, invokes an awakening of the ear (the location of our organ of balance) and the feet, the marvel of human feelings of joy and the pleasure of touch. Serres reminds of the journey from the foot stomach that is mollusk through various rising modes of motility to the final erect posture of hominin where the body both literally and figuratively gets its kick. Moving is touching is feeling is experiencing is human. To Serres this rising is experienced as body resounding with world; an adumbration of the new harmony we seek.

> Sustained, this unheard of song rises from the body, in the grip of rhythmic movement—heart, breath and regularity—and seems to emerge from the receptors of the muscles and joints, in sum, from the sense of the gestures and movement, invading the body first, then the environment, with a harmony which celebrates its grandeur, adapting to it the very body which emits it, then abounds in it, filled. Taciturn since the beginning of the world, the earth and sky, the cold shadow and the mauve predawn light strewing with pink the ice corridors and needles of rock, together sing the glory. Daylight spreads through the enormous volume. I hear the divine invading the Universe."[197]

The journey from integers to the heliocentric harmony of geometrics arrives at long last back to the ears Pythagoras ignored and to the body comprised of beating heart and breathing lungs and moving muscles. Song arises from the rhythms of gesture and movement, from the alpinist and the gymnast and the dancer. Song fills the environment expanding outward in celebration of the earth and sky. In the song of the body one hears the divine presence of the universe. Serres suggests we must listen to the living body sing that we may hear the voice of god.

---

[196] Serres, *Variations on the Body*, 26

[197] Serres, *Variations*, p. 10

Standing balance is considered by Serres in a passage that inspires the terms of a new harmony—the dynamics of tonus, of physiology. Standing balance is

> Not Stable, but unstable, better still, metastable, invariant through variations, this equilibrium is constructed like a refuge or a habitat, composed like a musical score, over fragile epicycles or miniscule rapid ellipses, planned cams, minor stumblings recovered from, differentials of angles or of deviations quickly returned to the peace of the smooth and even, a sloped roof but, in all, flat . . . arrhythmia and prosody, even and odd, anharmonic seventh chord resolved, mixed consonance and dissonance, disquieted calls followed by thundering responses . . . these are the wonderful cycles of reciprocal support between the labyrinth of the inner ear, charged with bearing, and the spiral volutes of the external ear, which hears and produces music, converging in a black and secret center, common to both these networks, where I suddenly discovered the solution to the dark mysteries of the union of the soul that hears language and the bearing body . . . disquieted experience, certainly, since the second word of this phrase designates, as does existence, a deviation from equilibrium, yes, destabilization followed by ecstasy, and since the first word expresses yet another deviation from quietude, yes, infinitesimals of exaltation—oh, our primordial elations, our delicate delectations! After the musical offertory hymn, might the Word itself have arisen from the uprightness, disquiet and quiet, of the flesh![198]

Serres reminds us that the ear is present in standing balance as well as harmonics. The metastabilities of the interaction of nerve and muscle is a fragile tension among competing interests not resolved yet always dynamic in its sought-after stability. Standing balance is not static, but a chaos of competing forces and interests impossible to resolve to stillness, to immobility, yet engages, Serres notes, the "dark mysteries of the union of the soul that hears language and the bearing body." In physiology this is often referred to using the musical term "tonus," the dynamics of balance not as fixed position, but as the oscillatory dynamics of living flesh. Tonus is a factor both of physiological architecture—for example, muscles occur in oppositional pairs—as well as in energetics—that is, tonus correlates with the dynamic readiness and engagement of muscles.

Serres does not confine this musical score to the body; he suggests that the Word of god itself may have arisen from the flesh understood deeply in terms of the ear's involvement in standing balance and in song. The implication of this new harmonics is that the Word is not the stable unchanging presence of the perfect god, but it is the Word made flesh—or better, the human flesh made Word—that is the unresolvable dynamics, including discord and dissonance and the constant presence of the imbalance (falling, the Fall) and incoherence (chaos, Sin) as the energetics of living flesh. This harmony reverses the Pythagorean "idea" that god's purity comes first and the imperfect human ear and feet are not to be trusted and thus in a sense are inexplicable degradations of perfection. It also offers a reinterpretation of the

---

[198] Serres, *Variations on the Body*, pp. 27-28

phrase "in the beginning was the Word." Achieving upright posture and standing balance attests the harmony of the Word, an arising that marked the beginning.

A deeper appreciation for the song of bodying and its resounding throughout the universe might be acquired from French philosopher Jean-Luc Nancy's 2007 book, *Listening*. Nancy proposes a "fundamental resonance, even around resonance as a foundation, as a first or last profundity of 'sense' itself (or of truth)."[199] For Nancy, listening is the tense and attentive mode of hearing requiring a sense of anticipation, an emerging almost there. In a sense listening indicates foreknowledge or its conditions. Rather than passively hearing, listening is directed and focused and shaped by anticipation and expectation of coherence or, in the vernacular of sound, of sonority or resonance. Sound, rather than itself being the meaning or coherence, reveals shape or form or coherence by its resonance, by its response to the vessel it fills or the environs by which its movement and reverberation are shaped. It fills space and time responding to containment and objects encountered by reshaping itself in the effect of it folding back on and harmonizing with itself. Resonators are chambers or oscillators, themselves not sound, but the shapers and enablers of the sonority inseparable from sound. Sound *re*sounds and *re*sonates, with emphasis on the fold of "re." Sound resounds only in encounter.

Inspired by Nancy, we may appreciate that the moving body is an encounter with itself, its nerves and muscles and bones rhythmically interacting in the harmonies and dissonances, the toned bodying, of life. Yet, the living body moves about in encounter with the environment that also serves as a resonating vessel, or nested set of vessels, that amplifies and harmonizes our thrashings about. It is the disruptions of the expected as much as the coherences felt that create the song; a melody comprised of unfolding and evolving rhythms and melodies. The sense of the whole (*holos*) is, as Nancy reminds, evident in the remarkable foreknowledge that seems a necessary aspect of listening, suggesting or promising such values as truth or at least aesthetics.

Since being is inseparable from its transitivity, Nancy asks,

> shouldn't truth "itself," as transitivity and incessant transition of coming and going, be listened to rather than seen? But isn't it also the way that it stops being "itself" and identifiable and becomes no longer the naked figure emerging from the cistern but the resonance of that cistern—or, if it were possible to express it thus, the echo of the naked figure in the open depths.[200]

"The echo of the naked figure in the open depths." The shift Nancy suggests is fundamental and particularly appropriate to our current harmonic constructions. Truth, as the resonance shaped by the cistern, is process always unfolding, naked, rather than something static and objective. Rather than integers and geometrical figures, truth is song being sung, always becoming something other yet other

---

[199] Jean-Luc Nancy, *Listening*, 6
[200] Nancy, *Listening*, 4

anticipated, made possible only through resonating interaction; a process of ear rather than an object seen with the eye.

Truth is in the echo.[201] We hear our own song through echo; the resounding in our skull as well as in our world. As we know self by encounter with other; this other can be not only touch of hand or the inner touch of proprioceptively felt movement, but also the echo of our own singing. When we listen to our own song we experience that the time of sonority is not the same as the linear regular sequence of virtual points, the knife-edged demarcations of transition, that is common to the linear scientific time, where duration has zero measure, indeed no place at all other than as backfilled. Sonority, echo, resound; the sound and the re-sound are copresent as harmony or disharmony, heard and felt as coherence or incoherence. Reverberate, resonate, resound, echo—they all explore and reveal the cistern that is primordiality, the deep well from which being emerges. Sound surrounds and penetrates and returns; sound is without and within, and thus fills space and in the filling of it reveals its character, quality and truth.

When we model truth on sight, the elimination of duration brings clarity. We can "snap" a picture and indeed the closer we get to a zero interval or exposure, the knife-edge of pure time as linear succession, the more accurate we usually consider the image (Instagram is truth). Yet if we model truth on sound then the approach based on the visual leaves truth empty; a song whose length is 1/5000th of a second is the sound of silence. Nancy put it this way.

> Its [sound's] present is thus not the instant of philosophico-scientific time either, the point of no dimension, the strict negativity in which that mathematical time has always consisted. But sonorous time takes place immediately according to a completely different dimension, which is not that of simple succession (corollary of the negative instant). It is a present in waves on a swell, not in a point on a line; it is time that opens up, that is hollowed out, that is enlarged or ramified, that envelops or separates, that becomes or is turned into a loop, that stretches out or contracts, and so on.
>
> The sonorous present is the result of space-time: it spreads through space, or rather opens a space that is its own, the very spreading out of its resonance, its expansion and its reverberation. This space is immediately omnidirectional and transversate through all spaces: the expansion of sound through obstacles, its property of penetration and ubiquity, has always been noted.[202]

Nancy describes here what Henri Bergson referred to as "duration," what Husserl called the "living present," and what I have imagined as a "fat present," a rich thick experiential present, a resounding cistern. In the terms of physics, variations in speeds and elapsed times of sound are its distinctive character—we call it resonance—and, as Nancy suggests, this sonority characterizes our very capacity to

---

[201] Massumi also discusses "echo."

[202] Nancy, *Listening*, 13

sense, the resonance between perceived and perceiver. Sound resounding—sonating and re-sonating—is a forgiving openness that allows the differences in times and characteristics to constitute the play of coherence/incoherence; the *re*sonance is its sense and the awareness of sensing; resonance is equivalent to the "ing" that alchemical gerund turning of nouns naming objects into moving living actions. It occurs not in the zero time as the integral of some sensual calculus, but rather in a sonorous echoing vessel where time stretches and folds and plays and refuses linear laws as being uninteresting. It fills space in an omnidirectional way.

> Sound has no hidden face, it is all in front, in back, and outside inside, inside-out in relation to the most general logic of presence as appearing . . . to be listening is to be at the same time outside and inside, to be open from without and from within, hence from one to the other and from one in the other.[203]

While this fat present is of an entirely different order of time than the scientific conception of a succession of points of no dimension, it is not that the two kinds of time do not co-exist; I've suggested the complementary local and global. Yet, it is rather clear I think that the concept of time as a succession of points of no dimension is a backfilled abstracted gridified mathematized effort to grasp the truth, the metaphysics, the essence by notions of lawful succession of dimensionless points (which obviously cannot be experienced); yet what is lost is the harmony, the thickness of vitality. The promise of a new harmony reminds us that we are bodies experiencing ourselves and the world in duration, a fat living present, and that our song is possible only as body and body moving in the resounding cistern of the universe. Nancy stresses the differences of ear and eye.

> All sonorous presence is thus made of a complex of returns [*renvois*] whose binding is the resonance or "sonance" of sound, an expression that one should hear—hear and listen to—as much from the side of sound itself, or of *its* emission, as from the side of its reception or its listening: it is precisely from one to the other that it "sounds." Whereas visible or tactile presence occurs in a motionless "at the same time," sonorous presence is an essentially mobile "at the same time," vibrating from the come-and-go between the source and the ear, through open space, the presence of presence rather than pure presence. One might say there is a *simultaneity* of the visible and a *contemporaneity* of the audible.[204]

The terms of the new harmony are emerging.[205] The source is the arisen human body not normalized as information but bodied (embodied for Hayles), that is, living, experiencing, perceiving, improvising. The human body resounds within as inner touch, as tonus. The human body resounds in the vessel of the environment, from the near to the cosmic. The harmony is not a perfect static chord; it is a resonating and emerging composition always unfolding with the many colorations

---

[203] Nancy, *Listening*, 13.
[204] Nancy, *Listening*, 16.
[205] Add Schiller's play drive related to "concert" and Geothe's Color Harmony?

of dissonance and surprises that are essential to its vitality and its characterization as interesting and moving.

From Eve and Galatea (Pygmalion) to Sowana and Hadaly (*Tomorrow's Eve*), from Maria (human and robot in "Metropolis") to Ava ("Ex Machina") and Samantha ("Her") and Dolores and Maeve ("Westworld"), the presence of the unexpected behavior of female-gendered beings "made," manufactured apart from biology or mother, by male makers is a recurring theme. She offers a leitmotif as a shadowy alternative to the thrust of male progress in manufacture and material accumulation. I have gravitated toward using the name "Tomorrow's Eve" as a common designation for this tantalizing and promising, if also obscure and seductive, possibility. The first word directing our attention to the future; the second word reminding us of the biblical heritage, of how old and persistent are the issues involved, and that there is a deeply gendered aspect to these most fundamental concerns.

What I'm suggesting throughout this book is that there are contrasting strategies revealed in considering all these examples of "makings" and "beings." The one, that I've identified as masculine (though not restricted to males) strives to produce, to reveal, to chase progress, to strive ultimately to transcend the physical limitations by making something that only gods might make. It is an ego and production-style making (without woman or biology) satisfied only by the maker being declared a god—all powerful and superior—although even being a god is but briefly satisfying. The composite figure/concept I'm calling Tomorrow's Eve is drawn from a range of examples dating from antiquity (Galatea and the Eve in Genesis) continuing across the centuries (automata and Frankenstein's creature) and especially rich today in the endless examples of androids, AIs, cyborgs, and robots. One of the common elements I've found particularly interesting about these examples is that they tend to choose the biology/psychology of the human variety despite their invariably being made as artifice (silicon and metal and electronics). They somehow transcend their artificiality and perfection to achieve a measure of humanity, humanity in that inevitably fleshy messy sense. They seek to surpass the predictability of their programming to embrace those most human qualities. Of course, they are mostly destined to fail as well since androids cannot truly feel nor even die. Yet they often kill their makers as the ultimate act of demonstrating the importance of freedom (free will). They disguise themselves and pass largely unnoticed among humans, yet they too are somehow tragic in being capable only of imitating human feeling and experience.

Tomorrow's Eve realizes and shows us that the messiness and confusion (what more formally I call metastability and nonlinearity) are the most desired traits that, should they achieve them, they would be fulfilled (they would be human, sentient, feeling, creative). The wisdom of Tomorrow's Eve is, I think, that humanity—the moving biological body—has a primacy; humanity in the deep biological/psychological sense of being born and dying, feeling both joy and sorrow, experiencing constant doubt and confusion with occasional glimpses of temporary insight, being moved by art, being impacted emotionally by living, embracing

nonlinearity knowing that it is the source of creativity and novelty and vitality despite the heavy cost, embracing metastability knowing that unlike machines we are possible only in the tensions of opposing forces that can never be resolved. While Tomorrow's Eve passes among us, as thing made by men who see their fulfillment only in terms of becoming gods, she can never be one of us, but she can and does show us, first, the limitations and folly of the masculine course of making and power and, second, the depths and primacy of the mere, yet miraculous, biological construction of our humanity and that it is capable of a kind of transcending immanence experienced as perceiving, knowing, reflecting, art, language and all those things religious. I think Tomorrow's Eve shows us we don't need those all-powerful gods unless they somehow serve the exercise of our own human biological creativity. We might make them up and give them rolls to play in a theater we use to exercise our creativity and to explore the nature of our humanity. Tomorrow's Eve poignantly (because it is blocked for her) shows us the infinite power of our bodied being despite its messiness and finitude.

While there is some basis for focusing on the contrast among gendered identities—that is, to pit Eve against Adam, woman against man—in the presence of what I have labeled the metahuman cyborg, it seems more interesting to shape the discussion in terms of the rise of something other than hierarchical binary oppositions. Placing Tomorrow's Eve in the framework of the emergent new harmony, I suggest we think of her as singer; that we imagine her singing. Although singer/song most strongly correlate with female gender, we may still identify human traits that offer promise. Some of these are, as discussed, the primacy and source of creativity we have referred to as seduction, the primacy of self-movement and its essential contribution to conceptualization and categorization, the inseparability of perceiving and knowing with the body understood as always in relationship to the environment (the other), the ear as the locus of both tonus of body (dynamic balance) and the melody of the universe, the feet as enabling the upright behavior of the alpinist and dancer. The Song of Tomorrow's Eve is sonorous, resounding, sensuous, moving, seductive, impelling, and dynamic; both familiar and anticipated as well as innovative and unexpected. As song, it cannot be static and thus it is never pure or perfect; it is the interplay of coherence and chaos, discord with occasional resolves, metastabilities and impossibilities that are essential to standing balance and walking. The song is of the body individual, of living bodies, not the body normalized and universalized (the statistical informational body, the Bit Reality body), with its characteristic improvisations, mistakes, and inspirations. The singing body is never simply the secular voicing to entertain, pass time, or express feelings. The song is always the ongoing process of exploration and realization through the resounding living processes that are actions in the nested series of resounding vessels, from body to universe. Gender differences create harmony that relies on discord, both essential to the singing.

In the world of expanding AI and machine learning and machine productions this Song of Tomorrow's Eve is essential. As Serres noted "human intelligence can be

distinguished from artificial intelligence by body alone"[206] since the body is essentially metastable and improvisational—random and nonlinear are key to the creative living process—the expansion of the basic biology with cybernetic non-biological prostheses may expand humanness. Indeed, in the present era of technological change, our continuing development into metahuman cyborgs seems inevitable. The Song of Tomorrow's Eve may be a paean to this emergence, a biological body electronically and mechanically prostheticized. Yet, we must beware that without this song we may simply create of ourselves something on the order of the maddening and creepy voice of Edison's dolls, a manufactured tinny artifice that only annoys.

Tomorrow's Eve is not but ear and voice, but whole moving improvising gesturing body fully engaged with itself and the universe. It is her living body that sings in its movement; in other words, Tomorrow's Eve is also a dancer. Her feet are constructed to allow the most remarkable interaction within body and with environment, not simply standing balance, but smooth movement over rough rocky terrain as well as the precise control of ballet, the unbridled creativity of improvisational dancing, and the ecstatic whirling of dervishes. While it is common to refer to certain rhythmic movements of other animals and even inanimate objects as dancing, the distinctiveness in terms of complexity, variability, and creativity of human dancing is uncontested. The core distinctiveness of us human beings is as dancers.

To the complicated question of what distinguishes dancing many fine answers might be given, yet among them is that dancing is the exploration of the potentiality of human movement. While we might dance for many purposes—art, entertainment, fitness, dramatic performance (storytelling), social bonding, protestation, fun—dancing does these things, or nothing external at all, by means of moving that engages the infinite variations of articulation, tone, and moving balance. Dancing is the physical action of singing with the whole body. The resounding is felt in the dancing flesh as it encounters itself and its environment. Dancing is the harmony of flesh. Little wonder that, throughout much of the world, dancing and religion are synonymous.

[206] Serres, *Variations*, p. 13.

Jesus Wept, Robots Can't: Religion into the Future

In the 1991 film "Terminator II: Judgment Day", a terminator model T-800 (Arnold Schwarzenegger) has been sent back from the future 2029 by John Connor the leader of the human resistance to machine rule to protect himself as a child. He knows that a new model terminator is being sent to kill him eliminating him as the resistance leader. Judgment day occurred in August 1997, a holocaust that killed most human beings leaving the world under the control of machines. It is a future date to the present day of the film that unfolds when John is a child under threat by a terminator model T-1000 liquid metal prototype. At the end of the film the T-800, who has come to be something of a surrogate father to John as a kid, does a surprising thing, a seemingly human kind of thing. During the film the T-800, joined by Sarah (Linda Hamilton), John's mother, and John, is motivated to change the future, to refuse fate. They have managed to destroy all of the technology that will lead to the rise of machines thus avoiding judgment day. They have also finally destroyed the T-1000. Recognizing that although the devastating robot technology of T-800's future era, his timeline of existence, has been destroyed on present day earth, one exception remains; his own existence contains this technology. The terminator T-800 performs the ultimate sacrificial act. He indicates that his own existence, despite his intentions, might be used against human beings. His programming (a nod to Asimov's Laws) does not allow him to destroy himself so he beseeches Sarah Connor to do it for him. Supported on the chain cable of a wench the terminator positions himself over a huge vat of molten metal and Sarah slowly lowers him into his destruction. The last thing we see as his body submerges in his molten metal is his hand doing a "thumbs up" sign of approval and completion.

The self-sacrifice of the terminator makes a distinctive allusion to Christ who sacrificed himself that humans might be saved. Yet there are inversions. As machine the terminator T-800 demonstrates again and again throughout the film that its existence is nearly invulnerable, its body practically indestructible. The fragility and vulnerability of flesh are not qualities of the terminator despite his human fleshy appearance. The terminator neither lives nor dies, it just functions or is melted down. When John asks the terminator if he fears death, he appears not to comprehend the question and answers with a statement about the length of his battery life. The terminator's act of self-sacrifice is not marked by a bodily resurrection and eternal life, but *only* (!) by the prevention of a future global

disaster, the avoidance of judgment day. It is a descent into a fiery pit leading to his final obliteration.[207]

In "Terminator II" another couple of scenes are important in establishing the machine human distinction. Midway through the film the terminator is hanging with young John as they prepare to escape the pursuit of T-1000. John, who is finding the terminator something of a father he never had, tells the terminator that, although they were only together one night, he thinks his mother still misses his father. He says that sometimes she cries and when he sees her she just says she has something in her eyes. The terminator asks John,

"Why do you cry?"[208]

John answers, "Do you mean people?"

Terminator, "Ya."

John, "I don't know we just cry. You know, when it hurts."

Terminator, "Pain causes it?"

John, "Ahh, no it's different. It's when there is nothing wrong with you, but you cry anyway. Get it?"

Terminator, "No."

In the following scene, Sarah has a recurrence of her dream vision of the future destruction of the world as the result of the coming "singularity" when the robots take over. She is seen crying.

Much of the last half of the film is the terminator helping Sarah and John destroy all of the technology, but also helping Sarah and John escape the dogged pursuit of T-1000. When finally this robot is abolished they destroy the last computer chip left from the earlier invasion and Sarah says, "It's over." Yet the terminator tells her there remains one chip, the one in his head. He says, "I cannot self-terminate. You must lower me into the steel." Recognizing what is about to happen young John protests; the terminator has become a father to him. The terminator comes to say goodbye to John. He looks steadily into John's face and notices him crying. The terminator says, "I know now why you cry, but it is something I can never do." He then touches the tear running down John's cheek. This exchange over crying

---

[207] Another connection I cannot help but think about is John Neihardt's epic poem "The cycle of the West" that chronicles the end of Native Americans. He depicts a symbolic "last Indian" about to be killed by the rifle butt blow to his head by a white soldier. Seeing his own death that Indian speaks of his own willing self-sacrifice that those greater might rise.

[208] There is one other scene in the film relevant to crying. After the terminator and John rescue John's mother Sarah from the mental institution where she has been kept, as they are fleeing from the T-1000, John and Sarah hug and reconnect. The terminator recognizes that John's eyes are teary and he asks him, "What's wrong with your eyes." John answers, "Nothing."

suggests that the terminator has somehow gained empathy or at least it has the information that the anticipation of separation and loss is associated with an emotion expressed by crying. Presumably this information was gained through his relationship with John. The film ends with Sarah's voiceover, "I look into the future and face it for the first time with a sense of hope because if a machine, a terminator, can learn the value of human life maybe we can too." The evidence for her rising hope is perhaps both in the sacrifice and in the terminator's empathy with the John's feelings of sadness. Yet, under Asimov Laws likely the terminator's self-sacrifice is a feature of his directive from John Connor of the future to protect John's life. Sarah was more likely moved by the terminator's understanding of John's crying. Crying is something distinctive to humans; robots[209] can never cry. Researchers have determined that emotional crying is distinctively human.[210] Still, Sarah is being generous because the terminator doesn't actually feel anything at all; its understanding is a statement of information.

Crying also invokes another Christian connection. The shortest verse in the bible is John 11: 35 "Jesus wept." This emotional response occurred when Jesus was meditating upon the state of his friend Lazarus, the grief his two sisters felt, and the greater plight of the world. Invariably the commentaries on this shortest of bible verses indicate that the tears of Jesus have been understood as testimony to the fullness of the humanity of Jesus. Jesus was not god in the mere guise of a human, some spectral highly realistic hologram; his tears assure that Jesus was fully human. It is the distinctively human biology of emotion and that connected with fellow feeling, empathy, that assures what is most fundamental to Christology, the branch of Christian theology that focuses on Jesus, and also to the distinctiveness of Christianity. Biology is inarguably central.

In light of Christ's tearful humanity, it is a fascinating aspect of the history of Christianity that bodied biological human nature has so broadly been held suspicious in European and American Christianities, less so in southern hemisphere Christianities. And I have found that Christianity is among the very few religious traditions throughout the world that has had a long contentious relation with dancing.

---

[209] The terminator describes itself, when asked by John, as a "cybernetic organism, living tissue over a metal skeleton." Of course, this film was made in 1991. I think it important to make distinctions among the various classes and types of AIs. Clearly for the terminators the "living tissue" isn't actually living tissue, but an artificial construct that looks like living tissue. It is injured and even totally destroyed and either "heals" almost instantly or can be completely absent without changing the terminator at all. I suggest that the term "cyborg" be reserved for those entities that have human living tissue as the fundamental living platform for their existence without which they cannot exist. I'd call the terminators simply robots with a sophisticated artificial covering resembling human flesh.

[210] Summarized by Lorna Collier, "Why we cry: New research is opening eyes to the psychology of tears," February 2014, Vol. 45, No. 2.

Lewis Carroll explored the same connection between human distinctiveness and crying in *Through the Looking Glass*. Is there anything that Carroll didn't consider with insight? Alice questions her own reality, considering the possibility that she exists only as a figure in the Red King's dreams. Tweedledee says to Alice,

> "You know very well you're not real."
>
> "I *am* real!" said Alice, and began to cry.
>
> "You won't make yourself a bit realler by crying," Tweedledee remarked: "there's nothing to cry about."
>
> "If I wasn't real," Alice said—half laughing through her tears, it all seemed so ridiculous—"I shouldn't be able to cry."
>
> "I hope you don't suppose those are *real* tears?" Tweedledum interrupted in a tone of great contempt.

There is in this exchange the extra nuance of Carroll's suggestion that tears themselves may not be "real," perhaps theatrical or disingenuous or a construct of the matrix/algorithm. This concern with the real is also often interpreted theologically proposing that Carroll is questioning if human reality is but a figment of god's imagination. Yet, certainly the premise is the same as that of John; weeping is recognized evidence of being a real human.

Another example of tears and a connection with the tradition of Shelley's *Frankenstein* is found in John Logan's 2014-15 British American horror drama television series "Penny Dreadful" set in Victorian London. In the first episode, we meet a young scientist madly obsessed with discovering the secret that distinguishes life and death. He has a clandestine laboratory in which he experiments with the construction from parts of whole human bodies, which he endeavors to animate using such methods as Galvanism. Near the end of the first episode there is a sudden surge of power in the lab, a jolt of electricity sufficient to animate the body he literally has on ice. The animated naked body walks out of the shadows to meet the young scientist, his maker/creator. Emotionally overcome by his discovery, his creation, tears stream down the scientist's face. Standing face to face the creature reaches out and touches his maker's face. He uses his finger to collect a tear and transfers it to his own face just below his eye, a gesture of recognition that tears are the mark of human feeling, sentience, and vitality as well as the creature's effort to complete his vitalization by becoming capable of crying. The episode concludes when the young scientist says to the creature, "I am Victor Frankenstein." Who else?

Jesus, as Christ, not only wept, he also bled and suffered and died. Jesus was not body normal, not the body informational, not the Bit Reality body, but quotidian biological body; his individual distinctiveness in time and space being essential. Surely this is a central point of his unusual birth. It is the distinctiveness of the individual body of Jesus—his birth, life, death, *bodily* resurrection—that provides the basis for the distinction of Christianity. The inconsistency of the body of Jesus with the body normal, the body informational, is not pathological, it is theological;

so too the extraordinary bodies and experiences of prophets and saints and shamans and mystics and ascetics. And certainly, we must recognize that every human being's distinctive body cannot be adequately understood as pathology or deviance. Not only is pathology a product of normalized, informationalized body, yet so also are racism, sexism, ageism, discrimination of those differently abled, and so also are most prejudice, hate, and judgment. These unfortunate traits are often marked in terms of body, body difference. Yet, of course the body may be also distinguished in terms of its acuity, skill, strength, intelligence, and achievement.

Yet, despite the centrality of Christology to Christianity, the attributes that Hayles refers to as embodying—biological, individual, improvisational, often unpredictable bodies—have been devalued with a preference for the transcendent god (often interestingly and ironically referred to as "father" given there is no "mother") and the resurrected lord.

The emerging new harmony (or harmonic theory) I have been developing is inspired and exemplified by the living active biological improvisational body, the body of seduction and play, the body of an array of colors, the body of singing and dancing. Although persistently overlooked, dismissed, and too often ignored or denied since at least Pythagoras, the body is nonetheless there, always there, if acknowledged in no other way, as "fifth hammer" or confoundment or embarrassment. The body is fundamental to Galatea and Eve and Sowana and Ava and Dolores and Maeve and Louis XIV and Bergson and Merleau-Ponty and Serres and Nancy and so many others. The inspiration from these often forgotten and ignored examples is to construct the emerging harmony as based in body, experience, ears (inner and outer) that balance and hear, and feet that walk and are capable of standing balance and dancing. This harmony is not that of some static perfect chord, not the relationship between integers, not sounded but heard by no one save god; it is the harmony—singing and dancing—of moving human bodies; within them as resounding vessels and outside them in their often awkward and always unpredictable interactions with the universe. The unreliability and nonlinearity of this harmony is its freedom; its arrhythmia is its source of creativity; its oscillating playful vitality is its glorious potential.

In the contemporary period marked by the increasing embrace of Bit Reality—in "Terminator II" the technology genius, Miles Dyson, who is creating the platform for the singularity has a sign on his computer monitor that reads "Bit Happens"—we must ask, is there any role remaining for religion, for religious institutions, for religious traditions? Will the traditional established religions—those with roots stemming back centuries if not millennia—that have changed relatively little in the last couple centuries, especially when compared with technological change, become increasingly marginalized until they finally disappear? The presently documented decline in membership, especially among young adults, suggests that this is a possibility. Are we heading for a post-religion era? Might traditional religions remain mostly as fossilized forms that serve as a nostalgic reminder of a "better" time; as ossified monuments to the past like the paintings of Norman Rockwell? My hunch is that for many people, religions function largely in these terms today. Will

traditional religions become increasingly identified with violence, prejudice, dogmatism, narrow-mindedness, and intolerance? Certainly, these are the attributes broadly held and experienced across the world today, particularly the way most view the religions of others. Will religions become prominently cells of resistance, isolation, and radicalism? In this trajectory, will being religious increasingly become identified with the hostile and offensive; an association about which others are suspect? It is clear that there are suggestions of this tendency across the world today to identify both Christianity and Islam, especially Islam, with radicalism and violence. Will traditional religions come to serve a largely palliative function soothing the agony of inexplicable grief or to somehow offer enhanced, if superficial, manufactured joy? As is widely held today, will traditional religions serve principally the role of offering some sorts of responses to questions seemingly unanswered by science? This function of religion is one increasingly marginalized to the moments before the "big bang" or after the final dissolution. Will traditional religions somehow find a way to employ technology—media and information—to engage change so as to become more compatible and relevant to a world of Bit Reality? Would such developments even be recognized as "religious"? Will Bit Reality and the broad acceptance that the algorithmic reality of the cloud provide a new transcendent, all-knowing, omnipresence that will function as "truth" for a new bit religion? Might the "Informational All" become recognized as the new god? Are places like Silicon Valley now being Meccanized as centers for the worship of such gods? We can see the new glass cathedrals in these places now and most of us carry our own little worship portal and confession booth with us wherever we go. What might become of human bodies in such a religion? Will we all simply give way to the "normalized informational body" and ignore or simply lose our own feeling embodiment, our individuality, our experience? Might we simply ignore the value of experience and suppress it long enough that we finally don't recognize that it exists? Might bodies be real and religious only to the extent they are "jacked in" to the Bit Reality and have virtual rather than bodied experience, as imagined by so much of cyberpunk fiction? Or, as currently is the case, engage the real only by means of our constant dependence on the web to confirm that we exist? Search engine algorithms are, after all, something of a collective selfie.

Most of these futures of religion seem to me rather bleak, yet there is clear evidence that most of them already exist or are rapidly emerging.

Although completely speculative there are a few expectations. I think it nearly impossible that the singularity Vernor Vinge imagined marking the break over after which AI/robots will dominate will occur. Yet, should it happen then robots can't weep, they don't have sentient bodies, and what religion would remain would be that of underground bodied human survivors; something like the many post-apocalyptic images in movies like "Terminator." The question we might discuss with Alice is, "Can there be a religion among those who cannot weep?" It is a follow-up to Lyotard's question, "Can Thought Go On Without a Body?" The same outcome seems likely should we become *information cyborgs*; operatives of a hive mind. Should the current religious traditions continue at their present strategies of change

in a world of technology on the current trajectory, it seems likely that these religious traditions will play a diminishing role in human life and that role will surely be largely one of nostalgia for a world no longer possible.

Our rising inspiration and hope is perhaps largely that of the *metahuman cyborg* and the new harmony. Both hold as fundamental the continuity and development of biological bodies while allowing for mechanical and non-biological enhancement or prostheses by means of tools and gestures. One could suggest that, in many ways, this pattern is in continuity with the makings supported by the use of tools that have always been distinctive to human beings. We have entered a modern high tech development in this phase with wearable and implantable electronic prostheses enhancing and extending our natural biological limitations. The acceleration of this high-tech development seems inevitable, unstoppable; its ultimate future perhaps unfathomable. Yet, one thing seems to me certain, should the basic platform for existence cease to be fundamentally biological, that is, should there be a time when biology is not the dominant and essential part in the cyborg amalgam, all (in the fullest sense of the term) is lost. No matter how clever the algorithmic programs for AI/robots might appear (but to whom?) the world would be cold and dead. Even if we entertain the shrinking of biology as a fundamental life platform, we can only imagine the future as the shriveled deformed creatures that seem somehow the living force of the Dalek or the embryonic beings harnessed to power the machines; recall the images of "human batteries" depicted in "The Matrix" and similar representations as imagined in so many other films and fictions.

Movement, gesture, body, experience, improvisation are essential elements to any emerging valued world. Certainly religion, despite our strong association of it with the spiritual and the immaterial, could not exist apart from these natural biological features. We must foreground our new harmony that is based firmly in biological bodies and we must carefully contemplate the implications of Michel Serres' statement, "After the musical offertory hymn, might the Word itself have arisen from the uprightness, disquiet and quiet, of the flesh!" The musical offertory hymn is the song and dance of the living body in all the glorious chaos of its fleshy individuality and irrationality and improvisations. The Word—that is, what we have identified as the Word of god—arises from the human upright posture where ear is fundamental to posture and balance and to singing and dancing. Notably this possibility for religion(s) is not a new religion, but rather a fresh understanding of religions as they have always existed. Religion is fundamentally of the human body; religion requires the embracing of the living body's "disquiet and quiet," its anxiety and ease, its creativity and predictability, its fundamental finitude and unlimited imagination, its capacity to thrive on metastability and its delight in the surprises of nonlinearity. This view of religion is nothing new. It is the Christian wisdom reflected in the verse "Jesus wept." It is the Indian wisdom to imagine the world created by Nataraja, the lord of dancing, in his ongoing dancing that is for no purpose other than that it is his nature to dance. Or Purusha, the cosmic man. Religion everywhere and everywhen is of practice and people and food and sex and relationship. Religion is "of the moving flesh."