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Orga is not Mecha: How Literal Readings of Fiction are Damaging the World

Abstract: This paper traces the fictional roots of recent claims by those in the AI industry that superintelligent machines pose an existential risk. This irrational anxiety, given that fiction is not science, that grants AI agency is not only a distraction from real concerns, but a psychological displacement, an unconscious defense that substitutes a new object, autonomous machines, in place of one that cannot be acknowledged: responsibility for the environmental and societal damage caused by a resource-intensive industry that persists, despite the climate catastrophe, with a mechanistic worldview, one that treats nature, including humans, as a lucrative commodity. Initially seduced by the story of AI evolution, Stanley Kubrick consulted computer scientists when he was making *2001: A Space Odyssey*, which was released a year before the moon landing. In the problematic cycle of fiction directing science, the film's depiction of AI has, in turn, shaped research in the field. Yet, if at first Kubrick embraced the scientists' vision of evolving, intelligent, immortal machines, by the time he was working on *A.I. Artificial Intelligence* in the 1980s, the field was entering one of its many winters and environmental concerns had dampened faith in technological progress. Kubrick again consulted AI scientists, but this time he returned the field to its fictional roots and presented AI as a dark fairy tale about a corporation that persists with the myth that it can turn 'mecha' into 'orga' despite the climate crisis.

Keywords: AI industry, environmental crisis, A.I. Artificial Intelligence, *2001: A Space Odyssey*, fiction versus myth.

Many prominent figures in the AI industry, including two of the "godfathers" of AI, Geoffrey Hinton and Yoshua Bengio; and the CEOs of Open AI, Sam Altman, and Google's Deep Mind, Demis Hassabis, have made headline news with their public pronouncements on the existential risk of AI. Along with others, they signed a short open letter published in May 2023 by the Center for AI Safety (CAIS) warning that a superintelligent AI might evolve, outsmart humans, and turn against us. "It would be difficult to tell if an AI had a goal different from our own because it could potentially conceal it," the executive director of CAIS, Dan Hendrycks, said (CBC News 2023). On its website of AI threats, CAIS includes the example of rogue AIs: "We risk losing control over AIs as they become more capable. AIs could optimise flawed objectives, drift from their original goals, become power-seeking, resist shutdown, and engage in deception" (Center for AI Safety). Politicians around the globe have invited Altman—a "prepper," who has stockpiled gas masks, guns, and gold; who has been funded by both Peter Thiel and Elon Musk; and who dropped out of Stanford after two years of computer science to work on a social mobile application—to discuss the risk of human extinction by machines that the AI industry argues is on the same scale as nuclear war and pandemics (Sweet 2023).

These claims have been met with an equal amount of skepticism and have been dismissed as the product of over-inflated egos. Invoking the threat of autonomous machines, critics argue, deflects attention from a resource-intensive industry that, while lucrative for some, continues to inflict harm on society at large and fails to address a myriad of problems, including the concentration of wealth and power in the hands of a few, copyright violation, biased data, intrusive surveillance, ghost work, deep fakes, and the dissemination of disinformation (Heaven 2023). Moreover, at the very heart of these claims of rogue machines is a mythic story about AI as an evolving, autonomous entity, which originates in fiction not science, and belies the reality of an industry that persists with a mechanistic worldview despite the climate catastrophe. If, in *2001: A Space Odyssey* (1968), Stanely Kubrick was seduced by a narrative spun by AI scientists, he returns the field to its fictional origins in *A.I. Artificial Intelligence* (2001), a film about a corporation that continues to spin a fairy-tale about turning fiction into science and 'mecha' into 'orga' amidst rising sea levels and flooded cities.

When Fiction Becomes Myth: The Fictional Origins of AI as an Existential Risk

Seo-Young Chu, in *Do Metaphors Dream of Literal Sheep?,* defines science fiction as "counterfigurative literalization," arguing that it engages in representations of cognitively estranging aspects of post-twentieth century life, like financial derivatives or globalization, that are both real and elusive (2010, 68; 80). Yet the argument falters in her chapter about robot rights that assumes that we will, at some future point, share the earth with "sentient robots" that deserve empathy, an argument that, as we will see, circles back to fiction and the figurative and not science and the literal (2010, 214; 216). Stephen Cave and Kanta Dihal organize the hopes and fears of AI under four broad categories, with reference to 300 both fictional and non-fictional narratives of AI, that they argue have inspired the development, interpretation, and regulation of the technology. Their goal is to offer a "more balanced discussion of AI's potential" (2019, 78). As they focus on the reception of the technology and group these narratives under general categories, the cultural and historical nuances of these narratives are necessarily lost. Furthermore, combining fictional with non-fictional narratives fails to acknowledge the differences between the two.

In the twenty-first century, a google search offers up scores of media headlines announcing that fiction is coming true, encouraging this collapse of nonfiction and fiction. Yet what is at stake when fiction is collapsed with science and literal readings of stories dominate?[1] When narratives abound, what happens to scientific evidence, facts, charts, statistics, balance sheets and other ways of knowing? In a "world taken over by narrative," Peter Brooks argues, the recent embrace of stories as explanations of reality have culminated in "political cant and corporate branding" about "lost elections" or "impending great wealth" (2022, 77; 8). We need to resist stories that seduce us into accepting "dominant ideologies," he maintains, and shining "an analytic light" on them will help prevent us from mistaking the map for the territory (21; 152). "Unanalysed stories, those that are propagated and accepted as true and necessary myths," he speculates, "may kill us yet" (152). Hence, this paper analyses the story the AI industry has been spinning about the inevitability of this technology, which purports it will either save or destroy humanity, a narrative that has long exploited fiction, in lieu of scientific evidence, to support its claims.

Alan Turing and Irving John Good, mathematicians who worked together at Bletchley Park, were the first in the AI field to speculate about the possibility of superintelligent machines usurping humans, but the source of Turing's and Good's speculations is fiction not science. Samuel

1 Isabella Hermann also discusses the problems of literal readings of fiction, with reference to the films *Ex Machina* and *A.I*, arguing that "it can be problematic when science communication resorts to typical SF tropes in order to educate or raise awareness about critical aspects" of AI technology (2023). I have also pointed to the problems of literal readings of fiction and their influence on science in an earlier article, "Fiction Meets Science: *Ex Machina*, Artificial Intelligence, and the Robotics Industry" (2019).

Butler's *Erewhon*, a nineteenth-century novel, is listed in the bibliography of "Computing Machinery and Intelligence," a paper where Turing discusses birthing a "child" machine that will evolve and "eventually compete with men in all purely intellectual fields" (Turing 1950, 460). This novel is also referenced in the body of his "Intelligent Machinery, A Heretical Theory," where Turing, writing in 1951, concludes:

> It seems probable that once the machine thinking method had started, it would not take long to outstrip our feeble powers. There would be no question of the machines dying, and they would be able to converse with each other to sharpen their wits. At some stage therefore we should have to expect the machines to take control, in the way that is mentioned in Samuel Butler's 'Erewhon' (Turing 2020, 75).

Erewhon (1872) is a satiric novel whose title spelt backward, save one letter, is "nowhere." After engaging in a debate that playfully riffs on Darwin's theory of evolution as applied to machines, the Erewhonians destroy all machines dating back almost 300 years out of fear that they will take over. Even the mangle, a board with rollers that had long been used to wring out water from clothes and to press and smooth laundry and which operated with a hand crank until it was mechanized in the second half of the nineteenth century, falls under suspicion, requiring a discussion that persists for several years:

> In the end [they] succeeded in destroying all the inventions that had been discovered for the preceding 271 years, a period which was agreed upon by all parties after several years of wrangling as to whether a certain kind of mangle which was much in use among washerwomen should be saved or no. It was at last ruled to be dangerous, and was just excluded by the limit of 271 years (Butler 2020, chapter 24).

In the preface to the second edition of the novel, Butler, responding to those who thought his novel was being critical of Darwin, protested that the debate in fact exemplified a "specious misuse of analogy." In other words, he was not mocking Darwin, but humorously applying the recent Darwinian theory of the evolution of living things to machines as an erroneous analogy, one that has the allure of truth but is utterly fallacious. The debate over the mangle foregrounds the absurdity of the society's fear of evolving machines.

Yet, while Butler employed literary tropes to critique Victorian society, Turing, known for being overly literal, took the argument about machines

evolving into an autonomous immortal "they" that would outstrip humans seriously (Hodges 1992, see especially 232 and 243). If Turing's literal reading of Butler has, in turn, sparked anxiety about evolving machines and given rise to theories of AI as an existential risk, his substitution of thinking for imitation and intelligence for "the machine thinking method," a computational process that depends on deception within the parameters of a game, has also spawned a host of problems.[2]

In the sixties, Irving John Good, also referencing fiction, speculated that "the first ultraintelligent machine is the last invention that man need ever make, provided that the machine is docile enough to tell us how to keep it under control. It is curious that this point is made so seldom outside of science fiction. It is sometimes worthwhile to take science fiction seriously" (1966, 33). Fiction should be taken seriously, but as Butler had pointed out, figurative language and literary tropes should not be taken literally. In response to the question a pianist poses about whether literature is true or not, a novelist in Olga Tokarczuk's *The Books of Jacob* responds: "'I would expect you, being an artist yourself, not to think in a manner more suited to simple people. Literature is a particular type of knowledge, it is'—he sought the right words, and suddenly a phrase came ready to his lips—'the perfection of imprecise forms'" (Tokarczuk 2022, 14).

Fiction differs from science as it embraces the complexity of the world; it is expansive not reductive (which any good scientific model or algorithm needs to be); it makes no claim to facts or precision and instead foregrounds literary tropes and figurative language. When the openness of fiction is shut down and it is read literally and mistaken for the real, it gets redeployed as a totalizing myth, in the tradition of Plato, that, as such, serves the interests of a ruling elite. While fiction is often exploited by the AI industry, the type of intelligence that produces fiction, which requires extensive and careful reading, is undervalued. The AI industry lauds speed, calculation, strategy, games with a winner, and the correct answer; the chess prodigy is the model of a genius in the tech world, from John von Neumann to Demis Hassabis. It is not rogue machines or evolving mecha that we need to fear, but the imposition of this useful but limited version of intelligence on the world at large.

In the latter part of the twentieth century, the extropians and the singularitarians were, like Turing and Good, inspired by literal readings of fiction to place their faith in the power of machines. Male-dominated, these groups practiced secret handshakes, adopted new names as a sort of rebirth, and used psychedelic drugs; they believed in cryogenics, resurrection, immortality and held a religious-like faith in the transformative

2 I expand on these problems in Heffernan (2022).

potential of technology to enhance evolution. Dismissed as cultish, these groups had a hard time gaining mainstream legitimacy. In 1994, there were only about 300 members in the Extropy Institute (Regis 1994).

In 1998, Nick Bostrom broke from the extropians and founded the World Transhumanist Association, seeking to gain recognition for transhumanism as a subject for serious scientific study and policy. In 2005, he rebranded himself as an "existential risk" theorist and founded the Future of Humanity Institute at Oxford, which closed in April 2024. Funded by the futurist, the late James Martin with further backing from Facebook co-founder Dustin Moskovitz and Elon Musk, the Institute also hosted the transhumanist Anders Sandberg. With support from donors, including Peter Thiel and Elon Musk, the Centre for the Study of Existential Risk at Cambridge and the Future of Life Institute at MIT soon followed, lending academic legitimacy to the idea of transhumanism. The Singularity University (co-founded by Ray Kurzweil and Peter Diamandis), which, despite its name, is not a degree-granting institute but a Silicon Valley company that sells expensive seminars and events, opened in June 2009 with the financial backing of corporations, including Google. In short, since the days of the Extropy Institute, with the support and funding of tech billionaires with lots of access to media, a relatively small group of men have exerted a great deal of influence over narratives about AI that have long cited fiction not science as evidence.

Artificial Intelligence and the Environmental Crisis

Bostrom, who has signed up for cryogenics, enthused that transhumanism embraces "a gung-ho techno-cheerleading, bring it on now, where are my life-extension pills" attitude (Khatchadourian 2015). His fellow transhumanist James Hughes, the Executive Director of the Institute for Ethics and Emerging Technologies, which he founded with Bostrom, writes about science fiction stables, such as "uplifted animals" and "sentient robots," as if they were a soon-to-be-realised reality: "Simple extrapolations of our early 21st century one-human-one-quanta will almost certainly be complicated by a growing diversity of robots and uplifted animals alongside our myriad forms of descendants. What if humanity being eclipsed by our animal and robot descendants is the best future for sentient life?" (Sennesh and Hughes 2023).

While AI science mimics scientific argumentation, as we have seen, fiction often stands in place of any proof. In contrast, for decades, climate science has been gathering empirical evidence about the impact of the

fossil-fuel industry, including plastics and petrochemicals. The scientific method involves the rigorous and reproducible testing of a hypothesis, based on observations, to find causal connections and to predict future patterns. Species loss, environmental degradation, and extreme weather can all be traced to the rapid industrialization and urbanization that has been enabled by petroleum products, climate scientists have found. Over the same decades that transhumanists have been mobilizing, instead of investing in the low-hanging fruit of proven technologies to address this escalating ecological crisis (to name a few: bicycles, renewable energy, affordable public transportation, electric trains, heat pumps, tree planting, habitat restoration, repairable electronics, and environmentally responsible materials) venture capital has financed high-tech sectors, with considerable support from tax dollars, the military, and heavily lobbied governments, and invested in resource-intensive "superintelligent" machines, from autonomous cars to robot soldiers. Billions of dollars have backed AI and the immortality industry with their fiction-fueled dreams of sentient robots, space colonies, uplifted animals, and downloaded brains while science-based climate research has met resistance, deferral, and denial as the world burns.

Perpetuating the worst aspects of Enlightenment philosophy, transhumanism subscribes to the myth of the autonomous liberal subject that understands itself apart from nature, which is there only to be mastered and overcome. In his discussion of the sublime, for instance, Immanuel Kant writes that the power of reason allows us "to judge ourselves independent of nature and reveals in us a superiority over nature" (2018 [1790], 453). The legacy of that thinking has led global industries to treat nature, on which economies depend, as an inert resource, a dead thing. As Ben Ehrenreich writes: "Only once we imagined it [nature] as dead could we dedicate ourselves to making it so" (2020, 76). Transhumanists and the AI industry, the culmination of centuries of colonialism, imperialism, and unprecedented industrial expansion, treat life, including humans, as a machine to be hacked, manipulated, and controlled instead of something to respect, nurture, and work with collaboratively. Fantasising about birthing a digital intelligence and colonizing barren planets, Silicon Valley tech elites exemplify the very thinking that has brought us to a global ecological collapse even as they now imagine being manipulated and enslaved in turn. In lieu of taking responsibility, the source of the problem, they argue, is not corporate-owned technology and the damage it has done but, instead, rogue machines.

"If it gets to be much smarter than us, it will be very good at manipulation, because it will have learned that from us, and there are very few exam-

ples of a more intelligent thing being controlled by a less intelligent thing," Hinton said in an interview on CNN (Kagubare 2023). The AI industry fears that just as humans have endangered mountain gorillas and other animals, so a superintelligent machine would not hesitate to wipe out humans. Rather than acknowledging that trying to dominate nature has come at our own expense as we continue to pollute the planet and wipe out our only known biological companions in the universe at an alarming rate, Hinton views violence and manipulation as signs of advanced intelligence and projects these traits onto machines. Beyond purely cynical motives, the anxiety on the part of true believers that a malevolent super AI will arise and wipe out humanity is a psychological displacement, an unconscious defense that substitutes a new object, autonomous machines, in place of disavowed knowledge: the societal and ecological damage inflicted by the AI industry that perpetuates a mechanistic worldview even in the face of climate catastrophe.

Instead of reading fictional accounts about the manufacturing of humanoid machines as a literal roadmap for the future, Turing, Good, the transhumanists, and the AI industry might have better approached fiction analytically. For instance, Karel Čapek's play *R.U.R* (*Rossum's Universal Robots*), first published in 1921, invents the term "robot" in order to expose the problematic logic of automation, production, and profit as a version of "progress." Old Rossum, a "frightful materialist," sets about to "scientifically dethrone God" and create humans, but he only produces short-lived monstrosities (7). The young Rossum, an engineer of the new "age of production," has no metaphysical aspirations but rather wants to create simplified artificial persons to work in factories as "the cheapest labour" (3). Organic rather than mechanical, these factory-produced robots are designed to serve rapid industrial expansion. As Čapek puts it, Young Rossum "chucked everything not related to work, and in so doing he pretty much discarded the human being and created the Robot" (9). Harry Domin, the play's central director, proclaims that: "It is great progress to give birth by machine. It's faster and more convenient. Any acceleration constitutes progress [...]. Nature had no grasp of the modern rate of work" (Čapek 2004, 18).

Like many in the AI industry, Domin promises that machines will usher in a return to paradise, where humans will be "free and supreme," humanity will emerge as the "master of creation," and there will be "so much of everything" for everyone that there will be no poverty and no need to work. One of his modern-day equivalents, Altman, sees a future with AGI (artificial general intelligence, which does not exist) as "increasing abundance and turbocharging the economy" (Altman 2023). In *R.U.R,* however,

this promise turns sour as the small group of robot factory owners accumulate enormous power and wealth while workers lose their jobs, governments use robots as soldiers, the robots kill humans that rebel, and the world meets its end. Only in the final moments of the play, when love, tears, and laughter return, none of which can be mechanically computed, is there hope that "life shall not perish" (Čapek 2004, 84). Despite Čapek's early critique, however, the mechanistic worldview persisted unabated, exemplified by Turing wanting to build a mechanical brain, envisioning human intelligence as nothing more than a mechanical process and fantasising about birthing an evolving "child machine" (1950, 456).

From *2001: A Space Odyssey* to *A. I. Artificial Intelligence*

While working on *2001: A Space Odyssey*, Kubrick consulted both Good, the Bletchley mathematician; and Marvin Minsky, the co-founder of the Massachusetts Institute of Technology's AI laboratory, who was also predicting the evolution of superintelligent machines that might one day harness the earth's resources in service of their goals. Trusting and embracing these predictions, Kubrick discussed the development of his character, the sentient supercomputer HAL 9000:

> One of the things we were trying to convey in this part of the film is the reality of a world populated—as ours soon will be—by machine entities who have as much, or more, intelligence as human beings, and who have the same emotional potentialities in their personalities as human beings. We wanted to stimulate people to think what it would be like to share a planet with such creatures [...]. Most advanced computer theorists believe that once you have a computer which is more intelligent than man and capable of learning by experience, it's inevitable that it will develop an equivalent range of emotional reactions—fear, love, hate, envy, etc. (Kubrick 1970, 307).

In the circle of fiction-inspired AI 'science' inspiring fiction that it is in turn inspired by, HAL continues to animate the AI industry, serving as a holy grail. Over fifty years after the film's release, the question—"Would it be possible to design a computer today that could reach or outreach HAL's capabilities?"—continues to motivate researchers (Stork 2018).

Shaped by the speculations of the 1960s AI industry, the film opens with the famous scene of an ape, who after encountering an extraterres-

trial monolith, throws a bone up in the air in triumph after he has used it as a tool to beat another ape; the next image is of an orbiting satellite four million years later. Alien life, technological progress, and super machine intelligence lie at the heart of this narrative, which is infused with a transhumanist faith that the mortal biological body will be cast off and be replaced by a machine and eventually intelligence will escape matter altogether, emerging as pure energy. Kubrick enthused:

> When you think of the giant technological strides that man has made in a few millennia—less than a microsecond in the chronology of the universe—can you imagine the evolutionary development that much older life forms have taken? They may have progressed from biological species, which are fragile shells for the mind at best, into immortal machine entities—and then, over innumerable eons, they could emerge from the chrysalis of matter transformed into beings of pure energy and spirit. Their potentialities would be limitless and their intelligence ungraspable by humans (Kubrick n.d.).

The MGM studios marketing campaign for the film emphasised the 'realism' of the film, promising that "everything in *2001: A Space Odyssey* can happen within the next three decades, and…most of the picture will happen by the beginning of the next millennium" (Castle 2005). Believing it would serve as a great advertisement for actual space technology, many corporations offered expertise and props in exchange for product placements in the film including Honeywell, Boeing, General Dynamics, Grumman, Bell Telephone, and General Electric. Kubrick also hired space consultants to ensure technical accuracy, and the film, although poetic and enigmatic, continues to be lauded for the realism of its representation of space travel.

Some critics have read the film as an indictment of technological progress, given the warring apes, the murderous computer (IBM retracted its support of the project when it heard about the plotline for the 'character' of Hal), nuclear satellites, and corporate-branded space, while others have read it as the triumph of quasi-religious technological advancements that foster evolutionary intelligence; from apes to humans to sentient machines to star children. Does technology produce us as dehumanised, sterile, inarticulate, and cold or does it facilitate our connection to awe-inspiring cosmic transformations? A deeply ambiguous allegory that is full of leaps and ruptures, the Kubrick-directed film privileges music, visuals, subjective impressions, and aesthetics over literalism despite the marketing hype that describes it as a soon-to-be realised future.

Kubrick collaborated with author Arthur C. Clarke (1917–2008) on the script and concurrently worked on a novel that was published after the release of the film, with Clarke listed as the sole author. Clarke was a tech optimist who had grown up on a mix of science and fiction, including a November 1928 issue of A*mazing Stories,* the first science fiction magazine; and David Lasser's self-published 1931 non-fiction work, *The Conquest of Space*, which featured a fictional representation of space travel that Clarke cited as a major influence on his life. In keeping with transhumanism, Clarke's novel holds that humanity is not an end, but only one stage in evolution and that humans will migrate to robot bodies. James Randi, the magician, science skeptic, and investigator of pseudoscience, recounted that Clarke, at the premiere screening of *2001*, left in tears at the intermission, following an eleven-minute scene of an astronaut jogging inside the spaceship (Randi 2008). The scene was cut before the general release of the film, but its point was to convey the tedium of space travel. Clarke's prescriptive novel, full of concrete detail, plot exposition, and technical explanations, mimics a "scientific" style that foregrounds precision, objectivity, and a cause and effect logic. In sharp contrast, Kubrick, with his enigmatic style, valued the inconclusiveness, imprecision, and openness of artistic renderings of the world and welcomed the critical debates about the film, refusing to offer a definitive guide.

By the time Kubrick was working on *A.I. Artificial Intelligence*, the pre-moon landing dreams of space travel and intelligent cosmic machines had receded, and computers had become a lucrative business. In the eighties, scientific consensus about the greenhouse effect had solidified while the grandiose promises of AI had not been realised, and the industry was headed into one of its many winters. In 1984, Minsky, the computer scientist whom Kubrick had consulted when he was working on *2001*, was warning of the impending collapse of the field. Kubrick again invited AI researchers to consult on his new project. Among them were Cynthia Breazeal, director of the Personal Robots group at the Media Lab at MIT who works on military-funded 'emotional' robots inspired by the *Star Wars* franchise and discusses AI, in the tradition of Turing, as like a 'child'; as well as Hans Moravec, the transhumanist, computer scientist, and cofounder of the Institute of Robotics at Carnegie Mellon University.

Kubrick had read Moravec's *Mind Children: The Future of Robot and Human Intelligence* (1988) about human brains transferred to super-intelligent self-improving immortal robots that could thrive in a post-biological universe long after humans and other life had disappeared. Based on many highly questionable premises, including that electronic constructs can be substituted for brain neurons and that consciousness, understood

as a computable process, can be downloaded into a computer, Moravec's book fantasises about giving birth to machines that would transcend nature. Moravec was part of John Brockman's Edge Foundation, which, despite its penchant for promoting fiction-inspired 'science,' had begun as the 'Reality Club' in 1981.

Ten years later, Brockman published his "The Third Culture," referencing C. P. Snow's 1959 work "Two Cultures," which was about the gulf between scientists and literary intellectuals. Snow was irritated that in the 1930s, literary intellectuals and "men of letters" had, in his view, excluded the most influential scientists of the early twentieth century from their ranks, and he wanted to encourage a dialogue between the two cultures to create a third culture. While readers of modernist fiction might challenge Snow's divide, Brockman argued that scientists and tech elites, backed by billionaires, should simply dethrone literary intellectuals and, as the new 'public intellectuals,' bypass peer review and take scientific ideas straight to the public. The 'digerati' were to dethrone the 'literati.' Nerds rebranded as 'cool'—all big ideas, big money, big egos—and proffering headline-grabbing ideas about the future were disseminated to media outlets like Wired Magazine, Ted Talks, and the Edge, that have been so influential in pushing the idea that technology can engineer its way out of any limit, even death. As Kevin Kelly wrote about the Third Culture movement: "Publishers [...] discovered that cool nerds and cool science can sell magazines to a jaded and weary audience" (Kelly 1998).

Brockman describes the contributors to the Edge as "third-culture thinkers or intellectuals...focused on science-minded pursuits based on evidence and empiricism." While interesting discussions have taken place on the Edge, not much evidence-based and empirical research grounds its authors from the tech elite, like Moravec. Kelly points out that:

> The purpose of science is to pursue the truth of the universe. Likewise, the aim of the arts is to express the human condition. (Yes, there's plenty of overlap.) Nerd culture strays from both of these. While nerd culture deeply honors the rigor of the scientific method, its thrust is not pursuing truth, but pursuing novelty. 'New,' 'improved,' 'different' are key attributes for this technological culture (1998).

The pursuit of 'new' and 'improved' technology has more in common with selling lucrative products to address manufactured problems than with truth-orientated science and has enabled what Evgeny Morozov has described as the "third culture" takeover, the "perfect shield for pursuing entrepreneurial activities under the banner of intellectualism" (Morozov

2019). Pushing a corporate-driven story about the future, the tech elite market 'science' by rendering fiction literal, emptying it of its non-teleological symbolic power that keeps the discussion of what it means to be human open.

Fiction is not Science and Mecha is Not Orga

In the early seventies, Stanley Kubrick had bought the rights to a short story called *Super–Toys Last All Summer Long* by Brian Aldiss, the inspiration for *A.I.* Over the decades, the filmmaker invited a number of writers to adapt the story for the screen and decided in the mid-eighties that Spielberg would make the ideal director. After Kubrick's death in 1999, Spielberg started working on the film based on the notes and artwork of the late director. It was released in 2001, a tribute to *2001: A Space Odyssey*.

The difference between the two films rendering of technology is stark. *2001: A Space Odyssey* treats machine evolution seriously, while *A.I.* treats technological evolution as a fairy tale that meets the reality of climate change. Having drunk the AI Kool-Aid in the 60s, had Kubrick grown skeptical about its claims? If *2001* is inspired by the potential of space travel, immortality, and a disembodied cosmic consciousness, *A.I.* returns to earth and corporate power. In 1992, Clarke, the tech optimist, was once again approached as one of the many screenwriters invited to write a treatment of the film. He told the *New York Times* that his treatment was "'rejected instantly!' Kubrick 'hated it and asked me to tear it up'" (Greiving 2021).

A.I. follows the sentimental story of a robot yearning to be a real boy that unfolds in a brutal stunted world of robot factories and climate change. Emotionally arrested humans, incapable of accepting death, live in an uneasy relationship with factory-built humanoid machines, referred to as "mecha," which are designed for service. In the arc of the story, David, a mecha child model programmed to love, is first adopted and then rejected and abandoned by its owners, the couple Monica and Henry Swinton. Hoping to gain Monica's love, the mecha child sets out with his faithful teddy bear, an old model of a "super" toy, on a quest to be "orga," a real boy, only to find that his maker cannot make his wish come true. Centuries later, long after humans have gone extinct, super mecha find this earlier model and are also unable to grant David's wish though they do stage a simulation for him.[3]

3 This analysis of the film *A.I.* builds on earlier published work (Heffernan 2018).

While *2001* is often considered to be Kubrick's most "realistic" film for its technically accurate portrayal of space, Kubrick envisioned *A.I.* as "sentimental, dream-like—a fable" (Baxter 1997, 355). He insisted on referring to *A.I.* as a fairy tale and wanted to call it Pinocchio after Carlo Collodi's nineteenth-century children's story about a fairy with turquoise hair who helps transform a wooden puppet into a boy. "Kubrick always wanted to include global warming, the eventual triumph of the robots, and one other factor: the Blue Fairy," said Aldiss, one of the invited script writers. "It was fucking Pinocchio! The Blue Fairy! I worked with him for about six weeks, and I couldn't get rid of that Blue Fairy," Aldiss complained (Baxter 1997, 356). Unlike *2001*, where Kubrick takes seriously the claims of computer scientists with their predictions of evolving machines, *A.I* draws on fairy tales, which revolve around magic and enchanted worlds; and fables, which tell stories of anthropomorphised animals or inanimate objects to illustrate a moral.

Echoing the findings of scientists, who had been documenting rising sea levels and the climate catastrophe caused by human interference since the early 90s, the film's prologue imagines a future where melting polar icecaps and rising seas, caused by greenhouse gasses, have already spelled the end of coastal cities from Amsterdam to New York to Venice. As millions are displaced by brutal weather and people in poorer countries starve, wealthier countries close their borders and restrict pregnancies. To address the much-diminished labour force, the elite build single-tasked androids that do not require food or sleep—nannies, chauffeurs, chefs, secretaries, security guards, and sex models. Described as the essential "economic link," the mecha keep the corporate machine churning and free-market logic alive in the ruins of the world. The action opens in a flooded New York City, where Dr. Hobby, the head of Cybertronics, is seemingly oblivious to the irony of announcing to his employees that he is proud of "how far" they have come and proposes they now explore the still untapped market of a mecha model that "loves." Recalling Rossum's Universal Robots with its focus on industrial production and Harry Domin's mantra that "any acceleration constitutes progress," the corporation in *A.I.* perseveres even as the world succumbs to climate chaos.

Like Mary Shelley's grieving Dr. Frankenstein, who sets out to discover the secret of life and builds his man/monster after the sudden death of his mother, Hobby embarks on his project to defeat death after he loses his son. His arrested grief, Godlike aspirations ("didn't God create Adam to love him," he queries), and unwavering belief in corporate capitalism lead him to dream of building a little mecha for a "completely new market." He wants to manufacture "a perfect child caught in a freeze–frame;

always loving, never ill, never changing," that, when its program is activated, would bind unconditionally and eternally to a human. His plan succeeds and Hobby's nightmarish warehouse fills up with boxes of identical Davids (and Darlenes, the girl version) ready to be shipped to childless couples and grieving parents.

Monica and Henry Swinton are one such couple. Targeted by Hobby's corporation, which scrapes data about its employees' private lives, Henry meets the criteria for testing a prototype of a mecha child: lifestyle, loyalty to the firm, and a family tragedy. The couple have a sick child, Martin, who has been suspended in a cryogenic tank for the past five years. On a visit to see Martin, the hopeful father asks the attending doctor about the latest "cutting edge" research involving "virus locators" and "microscopic synthetic hunter killers." The doctor's jaded response suggests that he is familiar with the hype about "break-through cures" trotted out by a profit-hungry technoscience industry. The doctor tries to gently shift the discussion from Henry's questions about cures to helping Monica mourn her son, even as he acknowledges that the medical industry deems mourning "inappropriate." Echoing the doctor's skepticism, the paintings on the wall that serve as a background for this conversation about technological miracles depict various fairy tales. Most prominently and tellingly is the tale of *The Emperor's New Clothes*, a tale by Hans Christian Andersen about vanity, deception, fraud, and speaking truth to power: the crowds watching the royal procession see that the emperor is wearing no clothes, and yet, despite the evidence, they disavow this knowledge until a little boy exposes the obvious.

The first part of the film unfolds from Monica's point of view as she struggles with the disturbing mecha, David, which follows her around the house, mimicking her behaviour. Distressed, she locks it in a cupboard. One evening, however, while remembering her son suspended in his tank, she, with all her undigested grief and depression, launches David's imprinting algorithm. Doing so activates the attachment program, prompting the mecha to call her "mommy" and to hug her. Henry, who opts out of the imprinting program, reminds Monica that the mecha is only a toy. She responds, but he looks "so real on the outside" and continues her uncomfortable relationship with the mecha. At least she does until her less than "perfect" Martin returns home.

After an incident at the swimming pool involving David, where Martin almost drowns, the father convinces his wife that David is dangerous and must be returned to the factory to be destroyed as the corporate contract stipulates. Monica cannot follow through with the contract and instead abandons David in the woods. David clings to Monica and begs her

not to leave him, reminding her of Pinocchio and crying after her "if you let me, I will be so real for you." Monica had read David the tale of Pinocchio, yet David, not understanding the difference between fiction and reality, continues to hope that the blue fairy will turn him into a real boy. The mecha insists, against the protests of Monica, that "stories are real" only to discover in the course of his quest that she was right, they are not.

Read as a fable, David's tale is part of a long tradition of stories about artificial people who function as liminal figures that help negotiate the ever-shifting boundaries of what it means to be human. Teddy, David's faithful toy companion, is much more kind-hearted and compassionate than any of the emotionally stunted humans in the film and more emotionally sophisticated and clever than any of the most advanced mechas. In the generic conventions of fantasy, the old model super toy plays the role of the wise guide to the young hero, offering a corrective model to a world gone wrong. Like the robots in *R.U.R*, David and the other mecha might well be read as representatives of a dehumanised underclass produced at the intersection of global capital and the climate crisis. While a depressed Monica and her husband Henry live a luxurious existence in a retro suburban house with a swimming pool, access to the latest in high-tech gadgets and medical care, David joins the ranks of the masses of poor "illegals" that are hunted down in the wastelands and sent to the "Flesh Fair," where mecha are shot out of cannons, strung up, torn apart, and set on fire for the amusement of humans. The brutality of the jeering human crowds with their lust for violence sharply contrasts with the gentle caged machines and the innocence of the mecha boy. These scenes recall a dark legacy—from gladiator fights to the burning of witches to the lynching of slaves to the holocaust—of one group of humans claiming an imagined purity or authenticity while abusing other humans whom they designate as less than human. The mecha hunters with their metallic masks, helmets, and bikes are fully integrated with their machines, just as Martin is, who returns from the hospital in a motorised chair, exposing the faulty logic of purity and autonomy. "History repeats itself," one of the caged mecha bemoans.

Yet, the film might also be read as a comment on the AI industry and its belief in evolving machines, corporate-driven technological progress, and its inability to distinguish, like David, between fact and fiction. The film audience is encouraged to side with the crippled humanoid robots at the Flesh Fair, but the reality that they are machines that do not feel as they are blown up or melted down punctures the dramatic tension. In the opening sequence Professor Hobby stabs the hand of Sheila, a secretary mecha model, and she shrieks. Hobby asks her how she feels, to which she

responds, "I don't understand." He then asks her to undress, and Sheila begins to strip. Hobby stops her and opens the human–like mask, exposing a metal frame, removes a computer chip, and reveals Sheila to be no more than a "sensory toy." It is then that the Professor proposes the next level of mecha: "a robot, who can love."

For-sale models built with simulators that use "neurone sequencing technology" that perform 'love' as a widening of the eyes, a quickening of the breath, and a warming of the skin are replaced by mecha boys and girls that are built by "mapping the impulse pathways in a single neurone" that perform 'love' as never-ending attachment. Dr. Hobby not only proposes a dark dysfunctional version of love but claims he can turn "mecha into orga."

The redneck show runner at the "Flesh Fair" warns the audience not to be manipulated by the mecha boy that is, following Turing, designed to "imitate our emotions." When David pleads with the crowd "don't burn me;" "don't make me die," he wins their support, convincing them he is human. Yet when David tries to eat in order to imitate his human brother, who eggs him on, the child facade melts exposing mechanical parts. As he undergoes repairs, his hardware is exposed as the technicians clean the spinach from the circuits. Monica holds his hand, but David tells her, "It's ok mommy. It doesn't hurt," which causes her to momentarily step back in distress as the illusion is shattered by the realization that David can perform but not feel. So too, when Martin, trapped in David's grasp, struggles at the bottom of the pool on the verge of drowning, the mecha lies calmly with unblinking eyes that are always open.

The film audience, like Monica and the Flesh Fair crowd, watch the emotionally charged scenes of Martin tormenting David, Monica abandoning David in the woods, David crying out at the Flesh Fair, and David in despair at finding that nothing can make him real; and we are also forcefully interrupted with reminders that the child we are watching is a programmed machine. We know David does not feel, but we suspend that knowledge as we follow David on his fairy-tale quest to be a real boy, with his companions Teddy and Gigolo Joe, the mecha escort who is also an illegal. On a meta-level this is the nature of film, which requires the suspension of disbelief—the audience both know actors are performing parts (in this case a stuffed toy, robots, a mother, and various other characters) at the same time they emotionally respond to the characters as if they were real.

While there has been a long history of theories about the function of fiction—dating back to Plato, who decried fiction as lies and as emotionally manipulative, and Aristotle, who valued fiction for its cathartic

effect—none mistake fiction for reality. Fiction opens a space for imagining the impossible. Fiction that refuses to acknowledge itself as fiction is myth or, as Frank Kermode argues in *The Sense of the Ending*, the difference between myth and fiction is that the former is "a fiction not consciously held to be fictive" and "dangerous for that reason" (Kermode 2000, 190). Where fiction is open, myth is totalizing, and from Plato's "noble lie" on, myth has often been propagated by an elite in the interests of power.

Dr. Hobby, the head of Cybertronics, profits from myth with his promise to turn mecha into orga and fiction into fact. In the Vegas-like Rouge City, David and Gigolo Joe find Dr. Know, a gimmicky holographic information machine run by a corporation, "where fast-food for thought is served up 24 hours a day, in 40,000 locations nationwide" for a price: David asks the holograph how he can find the blue fairy. When a digital image of the blue fairy appears, David lurches at it, mistaking it for the real thing, asking "but if a fairy tale is real wouldn't it be a fact, a flat fact?" That is when Professor Hobby takes over control of the answer machine, advertising his book "How Can a Robot Become Human" and lures David, with the promise of making him real, back to his shiny corporate headquarters at the top of the Rockefeller Centre, which looms out of the ruins of a desolate, flooded, and uninhabitable Manhattan.

There, David encounters another David, an exact replica of himself. In his first act of violence, reminiscent of the humans at the Flesh Fair who attack the mechas, David destroys the android that resembles him. David flies into a rage insisting he is "unique" and "special," yelling at his rival "you can't have her; she is mine." Trying to calm him, the professor, who has made David in the image of his dead son, tells the mecha that he is his "blue fairy'" and that David is "real" because, like humans, he has chased a dream beyond logic and reason. Yet having encountered the other David, the mecha rejects the doctor's explanation, responding: "I thought I was one of a kind," to which the Doctor responds glumly: "my son was one of a kind." The mecha then wanders into the nightmarish factory that produces identical David and Darlene models, row upon row in boxes or hanging from hooks, awaiting shipment. The curtain is pulled back and Dr. Hobby, like Dr. Know, is exposed as a charlatan who is incapable of making David real and turning mecha into orga, even as his corporation continues to rake in profits in "the lost city in the sea at the end of the world."

The irony at the heart of the film revolves around a "never changing" machine, built by those who never learned to accept death as part of life, that yearns to be mortal. Unable to terminate his program, David waits with Teddy before a lifeless statue of the blue fairy that lies beneath the

vestiges of a theme park on Coney Island, praying in vain to her to make him a real boy. The narrator recounts the passing of time as the world slowly fades and freezes over:

> Eventually the flood lights dimmed and died, but David could still see her, paley by day, and he still addressed her, in hope. He prayed until all the sea anemones had shriveled and died. He prayed as the ocean froze, and the ice encased the caged Amphibicopter and the Blue Fairy too, locking them together where he could still make her out—a blue ghost in ice. Always there. Always smiling. Always awaiting him. Eventually he never moved at all. But his eyes always stayed open, staring ahead forever all through the darkness of each night. And the next day. And the next day.

In Shelley's novel, Dr. Frankenstein pursues the secret of life and immortality only to spend his final days trying to kill his creation in order to restore mortality to the world and save humanity. In contrast, a grieving Dr. Hobby persists with the pursuit of a "perfect child caught in a freeze–frame…never changing," and his project concludes with the end of all life.

After the passage of two thousand years, the super mecha discover David beneath the ice and reboot him on a now barren planet where humans have long been extinct. The mecha approaches the statue of the blue fairy, and it shatters before him. Curious about this last connection to the human race, the mecha read David's memories and stage a drama for him. Appearing as a blue fairy hologram, a super mecha explains to David that despite his wish, she cannot make him a real boy and that his mother can never come home as she is long dead. Teddy, his faithful companion, arrives to supply a strand of Monica's hair so that she can be cloned via DNA, another fantasy technology popular with the cryogenics and transhumanist crowd.[4]

Nothing like the enigmatic AI and iconic monolith with "ungraspable" intelligence in *2001*, the super mecha in *A.I.* all have a generic Hollywood humanoid look—big heads, long limbs, and small waists, while Ben Kingsley supplies the voice of the lead specialist. The super mecha direct a fantasy for a corporate-built robot that is the last connection to the now extinct human race in order to make him "happy," just as the Hollywood entertainment industry produces this film, full of CGI and special effects with a "happy" ending, where the super mecha recover enough of David's memory to create a simulation that reassembles his first home. Long dead, Monica is revived as the gentle happy *ersatz* mother that she never was and David, "never changing," still remembers what Monica likes in her

4 See for instance George Church who founded the bioscience company, Colossal: https://colossal.com/george-church-the-future-without-limit/.

coffee after several millennia. The narrator tells us that "there was no Henry, there was no Martin, there was no grief, there was only David," and Monica tells David that she has always loved him. This "perfect day" ends with Monica and David (for the first and last time) falling asleep never to wake again as Teddy sits on the edge of the bed.

The specialist explains that Monica's "return" can only be temporary and that while the mecha were able to clone humans from DNA samples, their experiment to discover the "meaning of existence" from humans was a failure. They discovered that humans "had created a million explanations of the meaning of life…in art, in poetry, in mathematical formulas," but with the disappearance of humans, so too went this ongoing conversation. The mecha find the space–time continuum stored all the "information" of the past, but once "the individual space–time pattern had been used," it could not be reused. Uniqueness—the trait that humans and David, the last link to humans, had so valued—has vanished. The very precarity, uniqueness and irreplaceability of life on the planet, the very thing that the AI industry is trying to replicate and render immortal, is destroyed in the attempt, throwing a wrench in the AI engineers dreams of turning mecha into orga.

The narrator concludes this fable with a moral about a mecha boy who finally gets "the everlasting moment he had been waiting for," and when that paradoxical "everlasting moment" passes, David goes to that place "where dreams are born." The fairy-tale of a robot who believes that stories are real and longs to be mortal is punctured by a dark world of corporate-driven mechanization that treats death as something that can be overcome and life as something that can be manufactured for profit even in the face of an ecological crisis. If the roboticists Kubrick invited to consult on his film were convinced that they could make fiction come true just as David believes that the blue fairy will make him human, the film is here to remind us that the blue fairy shatters, life without death is not life, and fiction remains fiction.

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