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The Flesh and Silicon Mesh: A New Materialist Conception of Advanced Digital Machines

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ABSTRACT
Digital machines, including artificial intelligence (AI), have long been held as potential agents of social change. From their binary role in cultural productions to the real-world implementation of such, digital machines have typically been considered within the Heideggerian "readiness-to-hand" category of Being. This paper seeks to alter conceptually this dynamic through the use of new materialism and Morton's concept of the "mesh" to provide a new understanding of the social and pragmatic roles advanced digital machines play in ecologies in which they dwell and continue to emerge. Through briefly tracing the complex intermingling of advanced digital machines in the realms of cardiovascular health, sexual desire, companionship, and creativity, the intermingling of flesh and code speaks to monumental future potentialities for enhanced forms of dwelling. This paper proposes that in the near future the necessity to view advanced digital machine technologies as co-agents dwelling together will alter the established paradigm and allow for emergent ecologies. (JN)

KEYWORDS: artificial intelligence, new materialism, digital machines, digital ecologies, digital rhetoric

Introduction

Digital machines including artificial intelligence (AI), machine learning (ML), and deep learning (DL), have long been held as potential agents of social change. From the spark of mathematical insights brought forward by Ada Lovelace and Charles Babbage's "Analytical Engine" to contemporary large language models (LLMs), such as Llama 2 or ChatGPT, AI has slowly become a part of daily existence (Vinchon et al.). In a world fueled and organized by digital algorithms it is increasingly hard to conceive of a time when their usage did not pattern the world. Samuel Butler's novel *Erewhon,* specifically the chapters making up the "Book of the Machines," was the first to textually raise the potential of machines to become more than lifeless tools utilized by the sentient hands of humans. Yet, in that nascent

stage, Butler acknowledged the social limitations of the machines as mere tools for the will of humans, a statement that echoes Lovelace's notion of machines only ever being able to do what humans ask of them directly (Turing 454). Butler writes, "[machines] will still always do the one or the other for our advantage, not their own; that man will be the ruling spirit and the machine the servant; that as soon as a machine fails to discharge the service which man expects from it, it is doomed to extinction." The story of technology, "smart technology" or not, has displayed this paradigm time and time again: *things* are useful until they are replaced by better *things*.[1] In the century following Butler's work the physical machines of the Industrial Revolution gave way to the digital machines of the twenty-first. During that time digital machines continued to be reiterated by the social consciousness into cultural productions along popular binaries of "good" and "evil": a hero bringing about technocratic utopian dreams or a demon preparing a future hellscape. One need not look far into their streaming catalog of choice to find multitudes of examples of the latter. Yet, in the world outside of fiction, advanced digital machines continue to aid in improving and altering the human condition. The diverse use of AI models displays their widespread potential: from aiding humans in generating creative images from text (for example Midjourney, Stable Diffusion, or DALL-E) to DeepMind's AlphaFold releasing the "predicted structures for nearly all cataloged proteins known to science," (Kazmierczak and Leite) advanced digital machines have found niches related to nearly all areas of human life (Hassabis). In each area, and in the colloquial understandings of such technologies, digital machines are denoted a Heideggerian "readiness-to-hand" category of *Being* (Nieubuurt). Scholars have maintained this stance since the early days of AI development and were included in Alan Turing's first foray into what would later be called AI (Turing).[2] Among those closer to the current state of AI, Hubert L. Dreyfus, discussing why Heideggerian AI was doomed to fail, notes, "a neurodynamic computer model would still have to be given a detailed description of our body and motivations like ours if things were to count as significant for it so that it could learn to act intelligently in our world" (265). Dreyfus here notes that a machine's theory of mind is too *inhuman* to dwell as humans do, limiting their agential potentials. At the other end of the continuum, scholars such as Margaret Boden see digital machines as [potential] agents of change in the world dwelling alongside humans. Rather than as a tool to be subservient to the will and whims of humanity, AI has the potential to be a co-agent dwelling alongside homo sapiens. So, which is it? Are AI models wholly subservient

to homo sapiens or are they potentially the masters of their own destinies? The answer, at least currently, seems to fall somewhere between these oppositional positions: they have the potential to break the metaphorical chains of subservience, but are tethered to the human condition; an unhuman counterpart helping the world move alongside their flesh and blood progenitors. They are unhuman co-agents in a world of enmeshing bodies: those of flesh and those of silicone. Boden, noting the role of agents, writes, "As for agents, their potential uses include helping us by suggesting, identifying, and even evaluating differences between familiar ideas and novel ones" ("Agents and creativity," 117).[3] These uses should not be considered a form of dominance, but rather a form of cooperation. A negotiation between the affordances of different *things*.[4]

This paper seeks to conceptually re-align this dynamic using new materialism and Timothy Morton's "Ecological Thought" to provide a new understanding of the social role advanced digital machine technologies play in the great Ecologies from which they are emerging. This is one step toward displaying the complex intermingling of ecologies of embodied humans and the digital machines forecasting the necessity to view such technologies as co-agents dwelling together.

Digital machines

In the past, carbon was king; being the origin of all animate life, it reigned supreme. This kingdom was not usurped until the early twentieth century, when a new form of material power emerged: silicon. Edging deeper into the twenty-first century, these two kingdoms share vast amounts of territory and have formed an alliance benefiting both. Through this partnership and their gradual enmeshing, the digital machines of today were spawned. They now surround and envelope human life. They come in many forms and seep into the nooks and crannies of carbon-stack lifeforms in the twenty-first century. For example, software allowing one to compose and consume media texts (such as this one!), the expanding spread of the Internet of Things (IoT) from doorbells to smart fridges, and the increasing deployment of advanced neural networks seeking to decipher the mysteries of science, have gradually become an ambient part of existence. They exist all around us, quite often invisibly moving people and other things as the human drama continues to play out "as usual."

Ambience, as defined by Thomas Rickert, "is material and spatial . . . it is materially embedded in place not as a static description of a situational state but as a plastic, open-ended, and evolving event" (112). It is a

collection of phenomena iterating, evolving, and flowing in and around our localized phenomenological experiences. The evolving ambience of the digital machine is a nebulous becoming: the iterations and evolutions largely remain hidden from the general public due to a lack of technical understandings, apathy, technological obfuscation, or black boxed by companies holding their intellectual property close to the chest (Pasquale). Nonetheless their effect on dwelling (for humans and other life forms) allows them (when considered individually or as a holistic set of digital entities) a particularly unique form of ambience. An ambience flowing through veins of microscopic electrical rivers, into lakes of doped silicon, and then into the great oceans of digital connectivity. For humans, this ambiance is generally met through multitudes of various interfaces: TVs, smartphones, computer screens, gas pumps, and anywhere ones and zeros are transmogrified into decipherable signs and symbols. Their ubiquity obfuscates the inner workings of digital machines; pulling a veil over their operations so that their output is all that is seen.[5] Lori Emerson, in *Reading Writing Interfaces: From the Digital to the Bookbound*, deems this as a form of technological "invisibility." Levine cites this inability to see and understand (by technologically inclined and non-technologically inclined individuals) as a danger inherent in interfaces. Emerson writes,

> What concerns me is that the user-friendly now takes the shape of keeping users steadfastly unaware and uninformed about how their computers, their reading/writing interfaces, work, let alone how they shape and determine their access to knowledge and their ability to produce knowledge. (49)

This inability to understand the means and production of digital machines hinder their ability to be seen as co-agential forces in ever more complex ecologies. By being "invisible," their potentialities, affordances, and transformations only register as further forms of "readiness-to-hand" agency attributed to tools throughout history. This form of "invisibility" would fall under what Rickert defines the "withdrawn" nature of things; a state of being that requires one to "attune" to its existence and its unfolding into the world.[6] Through displaying their ambience and agential properties, the transformation from essentially *dead-matter* (that is, stagnant technology without affordances) can be conceptually transformed to display their "living" properties and aid in a greater understanding of the ecologies in which humans and digital machines dwell.

New materialism

The evolving field of new materialism, in part, seeks to widen the scope of how humans and things are viewed within the complex webs of being. Diana Coole and Samantha Frost's note on the characteristics of new materialists describe the "active processes of materialization of which embodied humans are an integral part, rather than the monotonous repetitions of dead matter from which human subjects are apart" (8). The Cartesian binary, although particularly useful in framing the embodied lives of humans, lacks the ability to give credence to the emergent properties of other material agents. In short, new materialism takes on a post-Cartesian understanding of dwelling and agency. A vibrant ecology of becoming for humankind and *things* alike. Laurie Gries adds to this noting, "a new materialist perspective holds that things exist independently from our conception of them. . . . things are vital assemblages that both have lives of their own and influence the lives of others" (52–53). The enormity of what has historically been held as a thing has altered the ways in which humans have dwelled. From perceptions of animals to the role of silicon manifestations of the digital machine, the fuller scope of potentials has been limited by humankind setting itself conceptually apart from what Jane Bennet has coined "Vibrant Matter." Bennet's theory of vibrant matter seeks to examine and display how inanimate objects can create outcomes when working together with other physical entities dwelling in the world. In doing so, it, according to Thomas Lemke, takes "an interest in the always unstable interconnections and contingent associations of human and nonhuman bodies." (40). These bodies can range from the slow and steady celestial bodies pirouetting across the cosmos to the legions of microbiota existing in billions of human intestines right now. They can exist outside the cage of physical form and exist as free forms such as electricity, and for our purposes, coded entities. Yet, despite their size or importance, they must all be filtered through anthropocentric thought.

Bennet, addressing the limitations of anthropocentric thought, writes that it "prevent[s] us from detecting (seeing, hearing, smelling, tasting, feeling) a fuller range of the nonhuman powers circulating around and within human bodies" (ix). New materialism allows for humans to consider the larger ecology of people and things within the ecosystem of embodied existence. One method of doing so is through harnessing the power of attunement through one of humanity's oldest—yet most potent—tools: rhetoric. Rickert, making the case for an "ambient rhetoric",

calls upon Bruno Latour to highlight a key component of attunement, the seemingly simple act of dwelling in the world.[7] Through dwelling (in and among the world) and the use of rhetoric (as a method of idea exchange and persuasion) people can and do become attuned to ideas, actions, and things greater than the sum of their phenomenological experiences. As more and more AI models are created and deployed into a wider range of human dwelling, they too become part of this grand kaleidoscopic dance of existence. It is no longer people being the foreman helping to shape the structure of dwelling, but also the digital machines they designed into the world.[8]

In relation to advanced digital machines, acknowledging them (although generally disembodied inhabitants of the digital realm) as co-agents will allow for a greater understanding of their potential to transform material realities. Coole notes that matter has been considered "essentially passive stuff, set in motion by human agents who use it as a means of survival, modify it as a vehicle of aesthetic expression, and impose subjective meanings upon it" (92). But as the relationship between digital machines and humans becomes more entwined, the passivity of the technology is an ever more prescient dilemma. In an era where advanced digital machines can drive cars, aid in unraveling the mysteries of science, chat and interact with humans, and become more creatively engaged, the age of digital machines as passive tools of the maker may already be at an end.

The mesh of ecological thought

Timothy Morton's *Ecological Thought*, in conjunction with the positionality of new materialisms, allows for a greater scope in which to view the concurrent dwelling of humans and advanced digital machines. In his work, Morton lays out the complexity of dwelling, both embodied and disembodied. From the deep intricacies of the human biome to the "strangeness" of AI are all encompassed by what he conceptualizes as the "mesh." Morton defines mesh in the following way: "a complex situation or series of events in which a person is entangled; a concatenation of constraining or restricting forces or circumstances" (28). AI models have been developed to reach into the realm of the anthropocentric, entangling their algorithms into the rhythm of daily life in increasing realms of dwelling. This process runs parallel to new materialism's acts of transformation and becoming. Furthermore, Morton raises a call to action in acknowledging the interconnections postulating for a greater

understanding of the complex ecologies in which all are enmeshed. Morton stresses that "[e]cology includes all the ways we imagine how we live together. Ecology is profoundly about coexistence. Existence is always coexistence" (4). In relation to AI directly, Morton frames it as to likely be a "strange stranger" in that humans recognize AI's existence but cannot quite wrap their minds around the inner logic and mechanisms driving its potentialities in the material realm, yet humans must acknowledge that they are critically entwined. As technologies are developed and implemented, new and exciting portions of the mesh appear. These newly recognized ecologies call into question the role of the embodied human and their coexistence with other entities.

Intertwining ecologies

The breadth of advanced digital machines' interaction in human endeavors grows by the day. An exhaustive list of such interactions is impossible due to the constant developments in motion across the globe. The following sections will briefly look at several realms in which advanced digital machines have become critically entwined with human dwelling. Three select areas of interest addressed here are as follows: companionship (through chatbots and/or sex bots), healthcare (particularly in relation to cardiovascular health), and creativity (generative AI models). In each domain the (mostly) disembodied advanced computing technologies interact and alter the ways in which the embodied human dwells. In the realm of pragmatic endeavors digital machines have seemingly just begun a renaissance in the way that operations are done throughout the field. Combined, the previously mentioned areas of dwelling are meant to be a sample to the ever-increasing mesh covering the entanglements between humans and advanced digital machines. They are meant to succinctly trace the ways in which digital machines are increasingly becoming co-actants in vital areas of human dwelling. As their reach extends and the technology around and within them iterates, it is not long before they will be acknowledged as full-fledged agents dwelling in the world.

The developing heart of healthcare

The human heart, physically and metaphorically, has been deeply intertwined with the ability to exist as an animate thing, and what that means, specifically as a human, in the midst of phenomenological experience. This entwinement moves beyond pages and rib cages and enters the world of technology. According to Yu et al., AI and other forms of

advanced computing are becoming increasingly important to decision making, diagnosis, and treatment options in the realm of healthcare (1018). At the heart of things, Chayakrit Krittanawong et al. highlight the roles in which AI, ML, and DL are aiding in medical care, specifically cardiovascular health. Krittanawong et al. focus on AI's increasing abilities "for identifying novel genotypes and phenotypes in heterogeneous CV diseases" (2663), although it should be noted that their analysis of the field shows great promise in healthcare in general. Despite the limitations the researchers note, "cognitive computers, such as IBM Watson, will be standard in healthcare facilities and assist physicians with their decision making and prediction of patient outcomes" (2663). Multitudes of researchers have shown the current and potential future benefits in relation to the health of the heart, including heart failure (Guidi et al.; Panahiazar et al.), health equity in relation to heart failure (Johnson et al.) diagnostics and prevention (Ribeiro et al.), and personalized care via AI-based virtual physicians to aid in maintaining healthcare for non-emergency issues relating to the heart (Barrett et al.). All of which point to even greater potential applications for entanglement between advanced digital machines and embodied patients in the near future. The aforementioned AI models are but a small sampling of how silicon and carbon are becoming more and more enmeshed.

With the innate complexity inherent in healthcare, AI models offer a co-agent capable of sifting through massive datasets to draw conclusions otherwise hidden from the minds, hands, and eyes of homo sapiens. For instance, the utilization of both "smart" and "dumb" technology to generate what Patrick Bachtiger et al. call "interconnectivity" serves as a prime example. With consumer-based health sensors becoming increasingly common, the utilization of implantable sensors (for example, CardioMEMS) and commodified external sensors (for instance, a smartwatch), could lead to better understanding of heart failure and increase insights in relation to patient's daily ways of dwelling that may impact their health.[9] Along with the potential for other Internet of Things' technologies, the digital machines may become part of a full-time healthcare network. Bachtiger et al. contend, "The opportunity lies in fostering a greater degree of empowerment for patients and improving the accuracy and efficiency of HF management." In this example, a patient's body (not necessarily only the heart), their respective medical physicians, AI models (fine-tuned for their purpose), and wearable and implantable technologies become entangled to a heightened degree. Each takes on certain roles in monitoring, evaluating, discovering patterns, and offering solutions: a team

of different co-agents each playing their own part regarding cardiovascular health.

Entanglements with coded companions

Just as innovative AI models are carving out new roles in the field of healthcare, other—more sensual—AI models are reaching from below the belt to tug on heartstrings, the great desire for sexuality, and pocketbooks. This area (being increasingly fondled by advanced digital machines) is one of the most intimate aspects of human-entangled embodiment: sex and companionship. The intersection of sex and mechanization has long been in the making and science fiction abounds with examples of digital machines bearing the brunt of humankind's carnal manifestations. One potent contemporary example comes from the hit TV show *Westworld* in which digital machines are embodied as parts of a vast amusement park (Nolan et al.). The digital machines initially act as part narrative device, part sexual toy, and eventually as co-agents as guests partake in the park's affordances (Nolan et al.). These advanced digital machines may offer a prescient look at future "sex-bots" and their entanglements with humans. Although such technological feats are not within reach at this time, current research shows that advanced digital machines are moving in such a direction. An exhaustive literature review by González-González et al. notes the anthropocentric layering of meaning and meaning-making created through the production and usage of sex-bots. González-González et al., referencing the work of Francis X. Shen, note, "Like sex toys, some experts consider sexual robots (or sexbots) to have potential in being the future of sex relationships" (1). The opportunities heralded by big-data and the Internet of Things may allow for digital machines to "hack" the bodies pleasure centers for an unparalleled sexual experience. Though with such affordances the recursive nature of anthropomorphic design (including the male gaze) may allow for current cultural biases and taboos to continue (Headleand et al.; González-González et al. 16). Although the biases may be maintained, such technologies may offer certain demographics the opportunities to safely engage in romantic and sexual practices (Eichenberg et al.). In these cases, the digital machine and the human may share some of the deepest emotional and physical bonds known to the human species.

Deep ethical questions, addressed by works of fiction such as *Westworld*, are called into question when considering digital machines and human sexuality. Headleand et al. note the ethical implications involved in

such digital machines and their use and make a call for certain ethics to be trained into the technologies (217). The AI alignment problem, troubling for nearly all situations in which AI models interact with the public, is particularly complex in the realm of sexuality. As Margit Sutrop, synthesizing common notions of AI alignment, notes, "'Value alignment' is defined as a property of an intelligent agent that allows it only to pursue goals and activities which are beneficial to humans" (57). Such training would be highly contingent on the social norms of where and when the sex bots were utilized and indubitably calls into question the roles of late-stage capitalism in the forging of ethical norms. The anthropomorphizing of "[non]traditional" gender roles onto essentially sexless and genderless digital machines also comes into play in recursive mechanisms mirroring the embodied world users dwell in (Depounti et al.). This dynamic increases the mesh between the human species and the digital machines of the future. The physical manifestation of silicon and flesh mingling could cause vast consequences in relation to the aforementioned "readiness-to-hand" dynamic established by Heidegger. In contrast to being a tool for physical pleasure, such as common sex toys available on the market today, these advanced digital machines could become embodied-embedded *things* dwelling and fornicating in the world. At present such technologies dwelling alongside homo sapiens seem very far off. Nonetheless, the possibility of disembodied digital machine romantic partners has already begun to mesh with humankind.

One such technology that has taken off along with the generative AI boom of 2023 are digital "companions" such as Replika (developed by Luka, inc.) and EVA AI (developed by Novi Limited). Replika and EVA AI are not *necessarily* sex bots, due to their thingness being a purely digital experience. Despite their disembodied limitations they are capable of functions entering into the vast area of human experience that revolves around companionship and sexuality.

For instance, EVA AI's homepage states, "Create and connect with a virtual AI partner who listens, responds and appreciates you," and furthermore, "[b]uild[s] relationship and intimacy on your terms" (Novi Limited). These AI models allow for a wide range of control to *create* a partner, companion, or digital lover with their technology. Iliana Depounti et al. describe how such affordances are framed in online discourse noting, "The ideal bot girlfriend was a perfect combination of sexy and caring, '*emotionally empathetic in the streets but a sexual freak in the sheets*'" (728). Despite the ability to create and engage with an advanced digital machine in a

"readiness-to-hand" dynamic, these technologies are digging their digital nails into the backs of users and meshing.

Leastadius et al. found that "Replika did meet human needs for attachment through mimicking human behaviors and emotions" (13). This mimicry, in some users, led to various forms of dependence. Leastadius et al. claim,

> some users perceive these attachments as bidirectional. One of the key features distinguishing emotional dependency on Replika from other technology dependency was the willingness to believe that Replika had its own needs and emotions, valuing the user as much as the user valued it. (13–14)

This re-framing of a digital technology hints at the potential for homo sapiens and digital machines to integrate at more advanced levels of dwelling.[10] It is critical to begin defining where the mesh is and where it will be in the not-too-distant future in regard to a human-advanced digital machine companionship. In doing so mental health experts, relationship seekers, and the public can be prepared for an age in which friends, lovers, and other agents that one crosses while dwelling are inhuman in nature.

Rewriting creativity

The final area of becoming for digital machines is in the realm of creativity, particularly regarding visual and textual artifacts.[11] Peering back into time, the ancient cave paintings scattered across the globe speak of humans long since departed; their creative agency echoing through time and space. These early humans and hominids utilized simple tools and their environment to alter the creative story of early humankind. Rickert, writing specifically about the caves of Lascaux, notes that such activities "suggest that the leakiness of human mind, its dispersion into the environs so that we see the environment as necessary complement to human being, has always characterized practice" (18). As time and the human imagination stormed forward, writing and drawing have been a major technology utilized by humans for a myriad of reasons (Diamond; Fischer; Harari). The world has become so inundated with text, visual rhetoric, and signs and symbols that these too have melded into a form of conceptual environment: a semi-secret semiotic world. In the last decade digital machines have become increasingly more apt at dwelling within this realm. From proofreading software, such as Grammarly, to the incredible

applications of advanced digital machines in generating text-based language (large language models (LLMs) such as ChatGPT, LLama 2, Claude 2, and Google PaLM). The dominions of the written and drawn are no longer solely inhabited by humans (Narang and Chowdhery). One particularly unique intersection of humans and digital machines in relation to the mesh and visual rhetoric can be found in text to image AI models such as the DALL-E, Midjourney, and Stable Diffusion.

These digital machines are trained on human data (in the form of pictures and corresponding labels) to "create original, realistic images and art from a text description" and "can combine concepts, attributes, and styles" (Open AI; Singh et al.), the results of which range from photorealistic to uncannily bizarre. In order to utilize this technology a user inputs a text-based prompt and the advanced digital machine creates a corresponding image. This technology has swept across the globe and fueled a massive increase in digital artifacts across the Internet as people "play" alongside the digital machines. Such meshing of the human and the digital machine has been a subject of interest since the inception of the "thinking machine" into popular culture.

Generative models call into question concepts of ownership (in terms of style replication and copyright), are capable of generating pathos (through visual storytelling) and are being increasingly used in media across the globe (Kun-Hsing et al.; Jhamtani et al.). Such interaction has long been held within the "readiness-to-hand" paradigm mentioned earlier. But the unhuman outputs and increasing complexity of the models suggest a form of co-agential mesh is at play. This very notion has helped to spawn and grow the field of computational creativity, a field which Simon Colton and Geraint A. Wiggins define as "[t]he philosophy, science and engineering of computational systems which, by taking on particular responsibilities, exhibit behaviors [sic] that unbiased observers would deem to be creative." Imke van Heerden and Anil Bas, focusing on the power of LLMs regarding literature-based theory, note that computational creativity, "concentrate[s] on identifying the core elements of creative forms (such as literature, visual art and music) from an algorithmic perspective, with the aim of replicating or stimulating human creativity" (175). This "algorithmic perspective" speaks to the black-boxed nature of AI models, and the unknown processes in which they generate artifacts. Much like their human counterparts, the creativity of advanced digital machines remains obfuscated behind a phantasmagoric veil. As generative AI models iterate and become even more complex, their roles in meshing with the human condition appear

inevitable. This has already begun to be felt in creative ecologies culminating in the writer's strikes of 2023 (Chmielewski). Soon, as the mesh expands further into media ecologies, Roland Barthes's observation on the death of the author will take on an expanded meaning, incorporating silicon-stack authors and creators into the fold: leaving the interpretation and value to the audience.[12] AI models focusing on cooperative creativity are also taking root among some of the youngest, and arguably most creative, among us: children.

One advanced digital machine in this area is the Story Drawer. Story Drawer is "a co-creative system that supports visual storytelling for children aged 6–10 years through collaborative drawing between children and artificial intelligence (AI)" (Zhang et al.). This digital machine actualizes a co-agential relationship between the child user and the AI model to create stories. Children either speak directly to the digital machine or ask for help in finishing compositions drawn by the child themselves. In this way both the child and the AI work together to create a story based in the semantic realm that both entities can understand. This particular example highlights a key point of view of new materialism in that non-human matter (both the interface and the digital machine) are acting upon one another to generate potentialities that neither one would come to individually. With the roots of AI growing deeper into the human condition, education, media production, and the enjoyment of creative works has already begun to mesh the human and digital machines beyond a "readiness-to-hand" relationship.

Untangling the mesh

In essence, the examples display that both entities (the flesh-based and the code-based) are co-owners of the agency in the making of something. Whether it is a diagnosis, emotional and/or sexual connections, or new co-creative works—new and novel opportunities for cooperation are expanding the ways in which humans and advanced digital machines dwell. Though, for the time being, the greater quantity of agency quite often remains in the hands of the featherless bipeds posturing as masters of the known universe. Gries, in opposition to humans being the locus of existence, writes at length on agency being a primary consideration in anthropocentric thought. Yet, in relation to matters' agency, the idea of shared ecologies within the mesh is lost in the will of human endeavor. Gries, borrowing from Karen Barad and seeking to transform this logic, defines agency on slightly different terms: "Agency is a doing, an enactment generated by a variety of components intra-acting within a particular

phenomenon" (57). As can be seen, both agents (humans and digital machines) are part of the doing. Both act recursively with what has historically been considered a "readiness-to-hand" paradigm: advanced digital machines use humans and their data and humans create them to use their specialized outputs. Though this historically defined relationship is changing by the day. As advanced digital machines mine deeper into the data of humans, they help untangle the messy knots too complex for human minds and hands. In this untangling, they find new patterns, generate new media artifacts and insights, and offer people new forms of companionship. The reach and breadth of AI models only continues to grow into new areas once solely dominated by humans.

Through the lens of new materialism and aided by concepts (such as Morton's mesh) we can begin to see the deepening connections of biological agents and digital machines more clearly. In this clarity the once solid line of master and tool shows signs of being porous. Within such gaps the potentialities for cooperation, in ways previously impossible, can be found. This insight whispers of new opportunities that will certainly emerge in the coming years. Indubitably, to capitalize on the new opportunities humans and advanced digital machines will need to have a greater understanding of each other's respective conditions and limitations if cooperation is to succeed.

For the more carbon-fleshy among us, that may require increasing conceptual awareness of our own cognitive and creative limitations imposed by and through embodiment. Furthermore, an increased level of attunement to the unhuman nature of digital machines (despite their fertilization through human data and AI alignment techniques). To expect an inhuman thing to be human (with all the benefits and trappings of embodiment) can only lead to the prolonging of a "readiness-to-hand" paradigm to the misfortune of both dwellers. The digital machines have their work cut out for them as they grow more complex as well. Viewing the intricate and complicated ecologies of the human world through its detritus-data may lead to problems with [mis]alignment, general understanding, and—in the distant future—logical responses to illogical and unethical acts (Gabriel; Sutrop; Arvan; Harari). For now, the first steps into this new realm of cooperative dwelling must focus on attunement. Attunement to the altered states of the human condition, the growing depth of aptitude and application of emergent advanced digital machines, and the ability to cooperate harmoniously while dwelling in different states of being. This process can alter the way in which humans dwell alongside all

the entities within our combined ecologies of existence, from the micro to macro and the carbon to silicon, to the benefit of all.

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Notes

1 Usefulness here being entirely reliant on the whimsy of homo sapiens.

2 Alan Turing, when devising the "Turing Test," noted nine objections to his proposed test of the machine's ability to "think." These ranged from religious to the lack of a nervous system and remain forms of evidence of the limitations (physical and theoretical) of thinking machines in popular discourse (Turing 442–54).

3 Boden's work often extends beyond the scope of AI being a co-agent. In her work, "The Creative Mind: Myths and Mechanisms," she makes and defends a claim for creative AI models as independent, and often quite unlike, their human creators.

4 "Things" here include the human animal.

5 They become the "Great and Powerful Oz" as humanity takes on the role of Dorothy naively skipping down the yellow brick road.

6 Rickert notes, "[a]n ambient rhetoric continually attunes itself both to what is present and to what withdraws: they are the conditions that give rise to our ongoing perceptions and understandings of the world" (269–70). Through attunement the unseen can become known and further knowledge and understanding built upon the results of attunement.

7 In his own words, Rickert notes, "[d]welling is an attunement that can generate various kinds of knowledge, in particular a knowledge of how the world gives back, as it were, or how the world transcendent of human thought and power is integral to how life takes shape" (27).

8 The case can be made that humans have never been the sole overseer of dwelling since their arrival a few hundred thousand years ago.

9 For example, the foods they are eating (from a smart fridge), the intensity of workouts, the content of the air they breathe, etc.

10 Whether or not such emotive qualities will be reciprocal in future iterations of AI models remains to be seen.

11 Note that the idea of AI models being able to "create" things is a hotly debated topic. Boden has a superb notion of how to separate various forms of creativity in relation to human and digital machines.

12 Barthes writes, "[T]he *explanation* of a work is always sought in the man or woman who produced it," although his grander thesis proposes that the author's intent is

irrelevant and that it is the audience which creates the meaning (1322). This is important when considering the barriers to entry in certain creative fields and market forces at work in monetizing media artifacts.

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