# Animation and Artificial Intelligence:
## Cartoons and the eclipse of semiosis



BY: **John Reid Perkins-Buzo**

ABSTRACT

In the second volume of *Technics and Time, Disorientation*, Bernard Stiegler finds that Artificial Intelligence (AI) profoundly shapes memory and, thereby, identity and time (2009:162-187). Through this shaping, AI weakens these two since it excludes human beings from the production of every sort, both material and intellectual. Human labor, with its concomitant radication in shared cultural and historical experience, is lost or diminished, creating a desiccation of meaning and the devaluation of human existence. Anthroposemiosis, described by John Deely as "the fulfillment of 'human nature' in the creations of 'culture,' scientific and literary alike" (1994:118), no longer perfuses the entire production of culture but is supplemented or even replaced by other-than-human "generative transformers." This is especially true of the art form of animation, which has striven to communicate human culture through moving images, mainly visual stories and motion graphics. As AI takes over larger and larger portions of the animation workflow, questions arise concerning the very nature of the activity. We can ask with Steigler, "Who animates what?" (2009:177). Will the who, as it becomes excluded, leave the *what* meaningless? By closely examining the AI generative image software, Stable Diffusion, and OpenAI's Sora, I will propose a tentative response to these difficult issues. Drawing on C.S. Peirce's essay "Man's Glassy Essence," I explore his musement that human beings truly exist on the level of shared cultural realities and that these "are no mere metaphors…" (1892:21). Animation which persists at the shared level of anthroposemiosis, and resists industrialized AI, maybe one way that "the semiotic animal … becomes aware of the historicity [νόμος] within human experience of nature [φύσις] as a whole" (Deely 2009:107).

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## 1. …ἔπλετο νείκεος ἀρχή

**[… came the beginning of strife]** (Homer, *Iliad* 22.116)

A few years before he died in 2020, Bernard Steigler commented on the state of artificial intelligence in 2016: "The first thing to understand is that artificial intelligence has changed and that today it's a *network* of artificial intelligence. It can produce artificial stupidity, and if we don't want artificial stupidity, it is necessary to understand well what it is" (2016: 0:24 seconds into the video clip).[1] Artificial stupidity occurs when artificial intelligence (AI) gets applied in a manner that obscures or confounds the intelligibility of the field of application. In a Large Language Model (LLM) like ChatGPT, this sort of algorithm behavior expresses itself whenever inaccurate, disconnected, or even fictional results are generated. The most egregious of these fictional results are termed 'hallucinations' and can be quite detailed and convincing. Medical researchers have noted the high rates of inaccurate and fictional references generated by ChatGPT 3, making it not recommended for scientific work.[2] Robin Emsley, the editor of *Schizophrenia* journal, writes in *Nature* of this type of algorithm behavior,

> This is outrageous. While concerns and cautions have been expressed in the rapidly emerging literature, I would have expected a stronger response. How could the use of such a profoundly defective tool as this be permitted without public outcry and calls for prohibition of its further use in the research environment? The phenomenon has been charitably referred to as hallucinations. This is a misnomer. Hallucinations are false perceptions. What I experienced were fabrications and falsifications (2023).

These 'hallucinations' occur frequently when user prompts fail to exhaustively detail a subject being queried, but sometimes even with a high level of detail (McGowan 2023). The fault potentially lies in the probabilistic outputs of LLMs, which derive from estimates of semantic similarity between texts, which allows a certain amount of "informed guesses, with bits of false information being mixed with factual information" (Emsley 2023). In Emsley's view, researchers should "use ChatGPT at [their] own peril … I do not recommend ChatGPT as an aid to scientific writing" (Emsley 2023). At this point, LLMs cannot help but generate false and confabulated results, and it is often tough to discern bad information from accurate results without expertise in the field of

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[1] My translation from the YouTube video, originally recorded in French.

[2] In a 2023 study using ChatGPT3, "115 references were generated by ChatGPT … Among these references, 47% were fabricated, 46% were authentic but inaccurate, and only 7% were authentic and accurate" (Bhattacharyya 2023). The authors conclude that researchers "are advised to verify medical information from reliable sources and avoid relying solely on artificial intelligence-generated content."

application. This is precisely the 'artificial stupidity' that Steigler warned against even before the construction of LLM transformer models (Wolfram 2023:6). This egregious behavior of AI algorithms is not limited to contemporary LLMs but is also present in the popular diffusion algorithms used to generate images, video, and animation. It is not noticed as much due to the visual nature of the output but causes frequent consternation when hands and feet do not render accurately, eyes slide around a face, or three arms sprout from a human figure. Beyond these examples of 'artificial stupidity' lies a more profound obstacle for the use of these diffusion techniques in the generation of art that Steigler identified in *Technics and Time*: AI de-forms human memory and, by doing so, distorts the relations of human labor (rooted in shared culture and history) to the meaning of human existence and identify. How does this come about?

In the second volume of *Technics and Time, Disorientation*, Steigler recalls his disagreement with Leroi-Gorhan over the idiomatics of early hominids (Steigler 1998:172-175; Leroi-Gorhan 1993:114-116; 229), which launches a discussion of Heidegger's Dasein as indeterminate: "Is Dasein the individualized who, or the group … of the *who* as *we*? In other words, where must indeterminacy finally be instantiated? – in the *I* or in the *we*?" (1998:67). This has a crucial significance since, if idiomatics is ethnicity, always already, as Steigler holds, then *Dasein* must be "a *we* [which] would inscribe indeterminacy firmly within idiomaticity which is consistent with Heidegger's last proposals" (Steigler 1998:67).[3] He then introduces a type of memory, following Leroi-Gorhan, that does not fit into a socio-ethnic level: "the appearance today of the pre-programmed machine as ejecting the *who* from its ethnicity while destroying its elementary operational and behavioral chains, and thus destroying ethnic unity …" (Steigler 1998: 67-68). The pre-programmed machine (which from the side of *Dasein* reaches its epiphylogenetic apex in contemporary AI algorithms) provides the *what*, which is "an essential aspect of technics *today*," in opposition to the *who*, which is always already embedded in some socio-ethnicity. Because of this embedding, the *who* is at some point expelled from the algorithm using a sort of "exteriorization of the nervous system and the imagination…" (Steigler 1998: 69). This is brought about by the introduction of indeterminacy, improbability, un-programmability into the algorithm.

How does this happen, since an algorithm is at odds with un-programmability or indeterminacy? In 1958, much earlier than Steigler, Simondon wrote that "a machine

[3] Peter Trawny, editor of Heidegger's *Gesamtausgabe*, discusses this, concluding that "As *Dasein* 'anticipates death' and carries out 'finitude,' it becomes … sensitive to events that either stem from or correspond to its 'heritage.' … Moreover, *Dasein* is never alone in its comportment toward its 'heritage.' … 'fateful *Dasein* essentially exists as being-in-the-world as being-with-others.' Therefore, *Dasein's* 'happening' (*Geschehen*) is a 'happening-with' that Heidegger understands as 'destiny' (*Geschick*). The latter is the 'happening of a community or of a people.' Thus *Dasein's* 'historicity' entails that *Dasein* 'always already' belongs to a 'community,' i.e., a 'people' (*Volk*)." (Trawny 58-59). *Dasein* is a unified being which is both a *who* and a *we* in Trawny's view. This also aligns with John Deely's equivalence of *Dasein* with Aquinas' *esse intentionale* (Deely 1971:105-07); for more on this, see Kemple's illuminating discussion of Deely's insight (Kemple 2017: 327-330).

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that has regulation is in effect a machine that harbors a certain margin of indeterminacy in its functioning; it can, for instance, go fast or slow" (2017:152). For this reason, he held that as a machine reduces its level of indeterminacy through internal regulation, it restricts the information the machine can pass. From this, he concludes that,

> The notion of a perfect automaton is a notion which is obtained by confronting a limit, and so it harbors something contradictory: *the automaton is supposed to be a machine so perfect that the margins of indeterminacy of its functioning would be null, but which would be able nevertheless to receive, interpret, and emit information.* And yet if the margin of indeterminacy function is null, then there is no possible variation and consequently, this iteration has no signification … Information is all the more significant, or rather, a signal has all the more informational value as it acts in concordance with an autonomous form of the individual who receives it… [emphasis in the original]. (Simondon 2017:152)[4]

Simondon was writing before the diffusion of digital technology, and thus, his examples involve analog signal processors. Still, his objection to the exclusion of indeterminacy in information transmission retains its validity (Schwartz 2017:20-21).

The AI algorithm expels the *who* at the training phase by automating the socio-ethnicity of a presumed *who* (Steigler 2009:71-78). The automated compiling of datasets and training of large neural networks (LNNs) manufactures an ersatz simulation of the *who*, which can never be found in real-world circumstances.[5] This exteriorization

[4] Schwartz, et. al., point out two basic types of uncertainty (indeterminacy) in AI systems, *epistemic* and *aleatoric*, that is 1) uncertainty in the parameters of the computed model and 2) uncertainty in the datasets themselves. The computed model used in an LLM or diffusion-based algorithm relies on mathematical methods such as nonconvex minimization of an appropriately-chosen *cost function* to generate its internal neural-network connections (a *cost function* computes the 'cost,' usually a weighted distance, to link from one point in the neural-net to other points). Formulating the problem in this way introduces non-unique mathematical solutions, hence indeterminacy (Kochenderfer and Wheeler 2019:220-21). In some cases, augmenting the size of representative training data can make the space of solutions smaller, reducing the epistemic uncertainty. However, the mathematical methods can never exclude indeterminacy.
*Epistemic uncertainty* impacts the behavior of an AI system when employing real-world data, especially when there is a mismatch between the real-world and training data. Undesirable results will likely emerge in the AI system's robustness, resilience, etcetera —providing biased or hallucinatory output. More rarely, using convex formulations to compute the models (namely, multiple linear regression) may exhibit epistemic uncertainty when the formulation neglects an important decision variable.
*Aleatoric uncertainty* refers to the uncertainty inherent in the data, that is, the uncertainty of the process that labels the data making up the training dataset. Is this photo a cat? Or a dog? Or perhaps a rabbit? Aleatoric uncertainty is often non-systematic, especially when humans provide the labels. It remains an irreducible factor in dataset uncertainty, and so, in the computed model.
Indeterminacy occurs all the way down to the mathematics of AI algorithms.

[5] This has some affinity to Baudrillard's notion of the implosive nature of a society of simulation (1994: 81-82). The trained large neural-network (LNN) constructs a *retis memorias* (digital connections) which encompasses elements of economics, politics, art, fashion, sexuality, music, and other spheres of culture (Weng and Brockmann 2022). As such it implodes them inextricably. Yet it itself is simply a computed "decoction" of the real. As such, it emulates a hyperreal entity (Baudrillard 1994:1).

of the *who* is unlike the primal exteriorization of "the [hominid] cortex into flint … accomplished between the Zijanthropian and the Neanthropian, for hundreds of thousands of years in the course of which the work in flint begins the meeting of matter whereby the cortex reflects itself" (Steigler 1998: 141). In that primal event of technics, there was a unity of *who* and *what* in the memory-carrying link that was painstakingly transformed by exteriorization (Steigler 2009:176).

Instead, in the case of AI based on large neural networks (LNNs), exteriorization proceeds through an iterative process: building digital connections (the *retis memorias*) in the LNN by using the broad range of competencies in the socio-ethnicities of the *whos* on which it is being trained (such competencies might be linguistic, imagistic, or audio-focused (Giannakopoulos 2020)). In particular, the success of the large language model paradigm (as used in ChatGPT or Google Bard) comes about in part by the production of *tokens* during training that implode diverse idiomatic modalities of text (including natural languages, mathematics, computer code) into unified digital objects (that is, a *token*). This tokenization exteriorizes the *who* from the neural network by reconfiguring *Dasein's* socio-ethnicities into digital objects with no counterpart in human memory. As the training of the LNN iterates, "the model evolves to produce increasingly accurate outputs," as each step edifies the internal connections that will guide the network when fully trained (Weng and Brockmann 2022). Through this production, every iteration expels more of the original *whos*, with their socio-ethnicities, from the model, finally terminating in a *who* simulation that has expelled all the originals. The source of the *hypomnesia* in the process (to adopt Steigler's term) is the trainer's goal to construct an LNN that acts in such a manner as to give accurate output in response to detailed prompts of text, image, or audio types (note that the prompts, and even the trainer, may be of human or algorithmic origin).

The algorithm's output – the simulated *who* the user invokes through the input prompt – constructs the *what* of an image, audio, video, or text. It is not the user that originated the prompt. The prompt can be said to have *incited* the output, but no further claim can be made. The output emerges from the trained LNN, which has successfully exteriorized socio-ethnicities through its training. Such an LNN is the quintessential 'black box,' defined by the Oxford Dictionary of the English Language as "a device which performs intricate functions but whose internal mechanism may not readily be inspected or understood … any component of a system specified only in terms of the relationship between inputs and outputs" (OED 2000).[6] The training process yields a

[6] Scabini and Bruno point out that "… black-box approaches [are] becoming usual in many applications… the lack of understanding of its [an application's] internal details causes some intriguing inexplicable properties to be observed in deep convolutional networks, one of the most popular ANN [advanced neural networks] architectures… It is widely known that different weight initialization can cause drastic changes in neural network behavior, such as some specific distributions which may make training particularly effective…" (Scabini and Bruno 2023).

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'black box,' entirely closed in on itself through its training; outside observers, including those data scientists who trained it, do not understand how it produces its output (Scabini and Bruno 2023). The LNN in a diffusion-based image transformer achieves the *what* based on the digital connections formed during its training. Just as 'simulated leather' has nothing in common with genuine leather except a marketing *nom du déploiement*, the *simulated who* functioning through the acts of the LNN is an entirely different entity from a who described by Steigler, Simondon, Leroi-Gorhan, et al. It is rid of *Dasein* altogether.

Recently, Yuk Hui (a student of Steigler), in *Art and Cosmotechnics*, has responded to 'black box' art produced by LNNs, writing that it has been "conceived to reduce organism to machine, life to calculation" (Hui 2021:185-240). In this text, he approaches technology from the perspective of art via *cosmotechnics*, that is, "a unification of the moral order and cosmic order through technical activities," but with particular regard for the local individuation of the cosmic order, which specifies its technics (Hui 2021:40-41, 184-186). In *The Question Concerning Technology in China*, he examines Keiji Nishitani and Mou Zongsan on Heidegger, finding in their work the continued importance of Dasein in understanding the technics of Japan and China, despite the implications of machine learning (Hui 2016:255-267). His *cosmotechnics seeks* to open the closed loop found in 'black box' AI algorithms using LNNs (Hui 2021:190).[7]

Stiegler reminds philosophers that the three types of memory common in human affairs rely on the *who* (Steigler 2011:13-20) in a fundamental 'cinematographic' manner, that is, it "unfolds through a montage of temporal objects – objects constituted by their movements" (Steigler 2011:26). Because of this the *who* has a 'cinematic consciousness' that conforms consciousness (the I) to the socio-ethnicity it is thrown into (the *We*)[8] (Steigler 2011:93-103). The fourth type of memory, 'the pre-programmed machine,' is situated *par excellence* in the current generative AI (Stiegler 2009:67-68). Trained generative transformers using LNNs (based on a closed-loop architecture)[9] rid themselves of the *who* and its socio-ethnicity and thereby exclude human beings from all sorts of material and intellectual production.

[7] Hui recalls the late Heidegger's challenge to these approaches in a 1967 essay, "The Provenance of Art and the Destination of Thought" (Heidegger). He quotes the essay, "… the basic principle of the cybernetically designed world is the control-loop. It is based on the possibility of self-regulation, the automation of a system in action. In the cybernetic world, the difference between automatic machines and living things disappears… The broadest control-loop encompasses the interrelation between human and the world. What is happening in this enclosure? The world relationships of man and their entire social existence are included in the domain of cybernetic science. The same enclosure, i.e., the same captivity shows up in futurology… So it is evident: The industrial society exists on the basis of the enclosure in its own power" (Hui 2016:188).

[8] Steigler, following Horkheimer and Adorno, develops how film and television have become the dominate force in shaping socio-ethnicities across the world, especially through the dissemination of films produced in the Hollywood system (Steigler 2011:37-40, 103-107).

[9] The structure of a generative transformer is well known. Wolfram offers a basic explanation but lacks a complete flow diagram (2023:68-78). Verma has a very succinct but good description and a helpful flow diagram of a transformer detailing its loop structure (Verma 2023). The paper of He et al., is a theoretical development of transformer architecture from earlier research into the field at Microsoft (He et al. 2015).

Human labor with its concomitant radication in shared cultural and historical experience (i.e., its socio-ethnicity, including Heidegger's *Weltgeschichtlichkeit* (Steigler 2011:36-37)) is lost or diminished, bringing about a desiccation of meaning and the devaluation of human existence (Hui 2021:212-218). By excluding the who, generative transformers also eliminate the human use of signs from their output and eliminate anthroposemiosis. Anthroposemiosis, described by John Deely as "the fulfillment of 'human nature' in the creations of 'culture,' scientific and literary alike" (1994:118), no longer perfuses the entire production of culture but is supplemented or even replaced by other-than-human generative AI applications.

## 2. ἀλλ᾽ ἄγε δὴ μετάβηθι καὶ ἵππου κόσμον ἄεισον δουρατέου

**[But come on, change the song, tell of building the wooden horse…]**
(Homer, *Odyssey* 8.492-3)

One of the major diffusion-based generative transformer applications is *Stable Diffusion*. It is created by the company Stability.AI. They claim to be "the world's leading open source generative AI company. We deliver breakthrough, open-access AI models with minimal resource requirements in imaging, language, code and audio" (Stability.AI website). I have worked extensively and taught courses with it at both the graduate and undergraduate levels in animation and image production. A critical part of the animation workflow in my work (and in my courses) has been an extension to *Stable Diffusion* called *Deforum*, which enables the creation of animations entirely within *Stable Diffusion*.[10]

*Stable Diffusion* was designed to produce single images, and it must be extended through additional code to make animations and other videos. *Deforum* adds the ability to keyframe[11] properties, allowing *Stable Diffusion* to create a series of images partially determined by properties gradually interpolating from one keyframe to the next. The user can provide inputs of text prompts and guide images to influence the output of *Deforum*. The goal is to produce an animated sequence that communicates the user's intention.

[10] Good sources for Deforum can be found on the *Deforum GitHub Repository Wiki*. See the References section for the web URI for this site.

[11] Keyframes (or key drawings) in traditional hand-drawn animation were significant story-telling frames drawn by lead animators (Thomas and Johnston 1990:225-226). Keyframes define the start and end points of an action. The transitional frames connecting these keyframes were known as 'in-betweens' which were drawn by animators called 'in-betweeners' with the intention of creating smooth and fluid motion in the animated sequence (Thomas and Johnston 1990:241). In digital animation, an animator will set up markers on a sequence timeline to mark the time-locations (called 'frames') that represent the beginning and end of an action. These are then referred to as 'keyframes,' since they play an analogous role to the earlier notion of key drawings. The digital algorithm will then automatically generate the frames between each keyframe to produce interpolated motion. Again, the intention is to produce a smooth and fluid change throughout the animated sequence.

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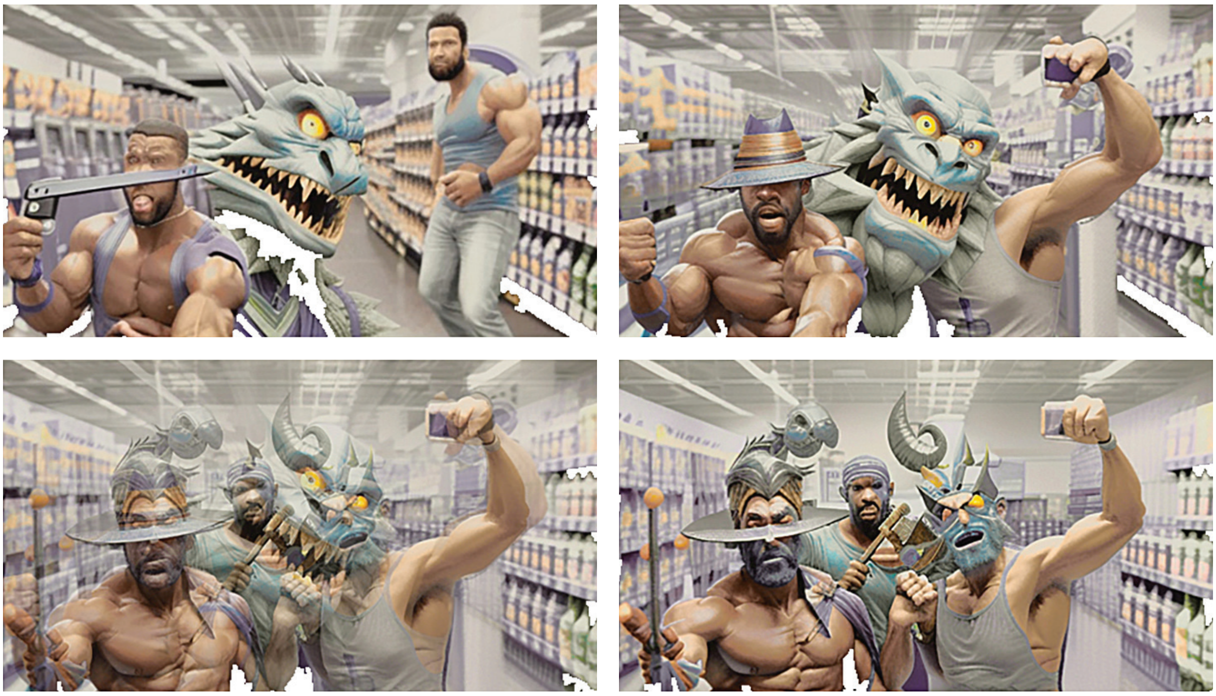

**Figure 1.** Four consecutive frames from a Deforum + Stable Diffusion animation (Student Work).

Another extension of Stable Diffusion, which can produce animations, is *ControlNet*. *ControlNet* adds a neural network on top of *Stable Diffusion*'s own LNN, providing an extra range of image parameters for greater control over image generation (Zhang 2023). There are several ways of using it to produce animations (and stylized video). Still, these fall into two types: keyframed approaches (similar to *Deforum*) and image-to-image approaches (*img2img* in *Stable Diffusion* parlance). One of the best of these ways at present is *AnimateDiff*. It takes a text prompt and a video input to produce a stylized animated video using Stable Diffusion. To do that, *AnimateDiff* uses its own trained LNN to influence the *Stable Diffusion* neural

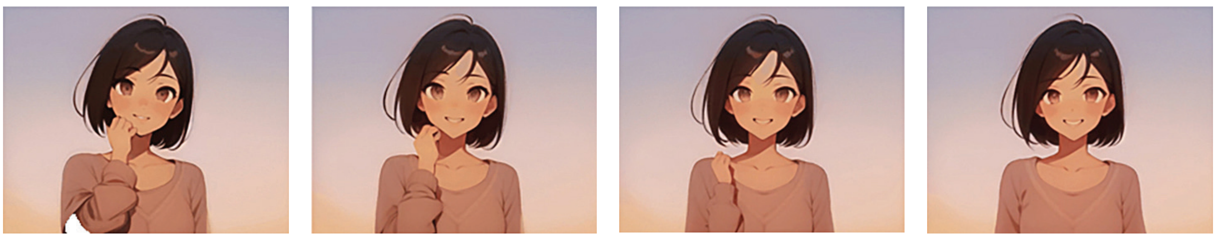

**Figure 2.** Four sequential frames from an AnimateDiff + Stable Diffusion animation. (Example is taken from the AnimateDiff GitHub site. See the References section for URI).

network (via *ControlNet* and its LNN parameters). The *AnimateDiff* LNN is trained with various short video clips most typically found on social media. Its LNN modifies the *Stable Diffusion* image generation process to produce images that look like the video clips it has learned. Since *AnimateDiff* follows the motion learned from its training dataset, it produces generic motion often seen in popular social media videos. When the initial video and the text prompt match the typical video found on many social media sites, it produces very high-quality results. As a general animation program, it cannot produce a video that follows a detailed sequence of motions listed in the prompt. Nor can it reproduce specific graphics not found in the training dataset. The quality of motion that *AnimateDiff* can produce relies on its training dataset. However, there are three ways of making its videos animate more tailored motion: 1) changing the prompt during video generation (a technique called prompt-travel), 2) using a reference video in *ControlNet* to guide the output, and 3) retraining the *AnimateDiff* LNN to a more congruent set of video clips.

**Figure 3.** Three frames from different Sora animations. (Examples are taken from the *Sora* website. See the Reference section for URI).

The third approach, called Sora, was unveiled by Open AI in February 2024. Sora is based on two other Open AI products, ChatGPT and DALL-E (Brooks et al.). According to Open AI's technical report *on Sora*, it is built on "a transformer architecture that operates on spacetime patches of video and image latent codes" (Brooks et al. 2024). Its largest model, named *Sora*, generates a minute or less of high-fidelity video. The larger goal for *Sora* is beyond merely producing video (and animation): "Our results suggest that scaling video generation models is a promising path towards building *general purpose simulators of the physical world*" [emphasis added] (Brooks et al. 2024). This does not mean Sora is only suitable for simulating the physical world. It can also simulate situations communicated to it in a text prompt, including many situations that would be impossible in the physical world. The examples on the Sora website show a few such physically impossible situations.

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*Sora* uses a large language model (LLM) approach to animation and video production. However, as discussed in §2, where LLMs have text tokens, *Sora* analogously has *visual patches*. Such patches effectively implode visual data into digital objects that the extensive neural network can manipulate. Visual patches are highly scalable and powerful for training generative models on diverse types of videos and images. It is important to note that visual patches are not visual data but rather a 'unification' (*implosion* in the Baudrillardian sense) of the original visual data, which then produces a non-visual digital object. As found in §2, with respect to the token in an LLM, the visual patch has no counterpart in human memory. It is entirely a construct made while training the LNN on the dataset. It is hidden inside the 'black box' of the AI application. Perforce, *Sora* is free from *Dasein* and the *who* has been entirely exteriorized through its training process.

The remarks in the previous paragraph about Open AI's *Sora* could also be made, *mutatis mutandis*, about the *Stable Diffusion* methods discussed above (i.e., *Deforum* and *ControlNet*). Each of these AI applications uses a diffusion transformer LNN that produces tokens due to the LNN training on the massive video and image datasets. These tokens implode ('unify' in the parlance of AI engineers) the datasets into digital objects unrecognizable to even human AI engineers. These are the integral contents of the 'black box' making up the application. Add to this that often, several LNNs work simultaneously to make the images and video output by the application, each trained on a particular dataset and creating their own range of tokens (i.e., digital objects). The example referenced above of *Stable Diffusion + ControlNet + AnimateDiff* has three different LNNs working simultaneously. It is also the case that most LNNs currently are constructed with multiple groups of digital neurons (intermediate layers) between the input group (initial layer) and the output group (terminal layer). This has led John Kelleher, Chair of Computer Science at Trinity College Dublin and Director of the ADAPT SFI Research Centre for AI-Driven Digital Content Technology, to say that LNNs "are possibly the least interpretable" (Kelleher 2019:245). As a direct result of this training, all these AI applications exclude the socio-ethnicities of any possible *who*, thereby cutting free of *Dasein* in their LNNs. In this way, they are also empty of anthroposemiosis, which, per Deely, is "the fulfillment of 'human nature' in the creations of 'culture,' scientific and literary alike" (1994:118). Images, animations, and videos produced by these applications no longer continue the human use of signs, the usage that formerly perfused the entire production of culture, but now supplement or even replace it with non-human generative transformers. The what has been severed from its relation to the *who*.

## 3. …εἰσότε κούρη εἵλετ' ἀπ' ἀθανάτων ὤμων θεοείκελα τεύχη Παλλὰς Ἀθηναίη

**[…til the maiden Pallas Athena had shed from her immortal shoulders the armor of divinity]** (Homer, Hymns, 28.14b-16a, *To Athena*)

This severing is especially true of the art form of animation, which has striven to communicate human culture through moving images, mainly visual stories and graphics. As AI takes over larger and larger portions of the animation workflow, questions arise concerning the very nature of the activity. One must ask, following the thoughts of Steigler, "*Who* animates *what*?" (2009:177). Will the *who*, as it becomes excluded, leave the *what* meaningless?

As discussed in §2, an AI application that has been specialized for producing animation must implode, by virtue of its training, all visual elements included in the training dataset into non-visual digital objects. These digital objects have no counterpart within *Dasein* and can rightly be termed *inhuman* in Lyotard's second sense (Lyotard 1991:2). It may then manipulate these digital objects as the LNN(s) at the core of the application operate. As image sequences are produced in response to text and/or image prompts, the *what* coming forth is only loosely and indirectly founded on the original prompt.[12] Instead, it directly arises from the trained connections enclosed within the application's neural network(s), which join and disjoin in ways that are very different than human understanding – which is the foundation of anthroposemiosis (Deely 2002:110-118). Perforce it is *machine semiosis* producing the *what*.

Is machine semiosis possible? Deely's work on *physiosemiosis* indicates that such semiotic action indeed occurs. He points this out in one of his final papers,

> … Peirce had the genius to recognize that it is not the fact of an *interpreter* being involved that is essential to the relation constitutive formally of the action of signs, but simply that there be a *third term* indirectly attained along with the direct relation of the sign vehicle or "representamen" to the object signified or "significate." Hence, Peirce correctly asserted that the "third term" attained in the triadic sign relation "need not be of a mental mode of being," and hence

[12] In most contemporary diffusion-based AI image generation applications, there is a parameter called *Classifier Free Guidance* (CFG) that can be adjusted to tighten the effect of the text prompt on the output of the algorithm. Ho and Salimans in their foundational paper in this area describe how CFG works: "… it [Classifier guidance] decreases the unconditional likelihood of the sample while increasing the conditional likelihood. Classifier-free guidance accomplishes this by decreasing the unconditional likelihood with a negative score term …" (Ho and Salimans 2022:9). The method is *not* a direct control over the image output but works *indirectly* by adding or subtracting noise during the iterative production of the image. CFG often has unintended side effects such as increased color saturation and decreased realism (comic-book-like images).

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> that *there need not be an interpreter* in order for semiosis, i.e., the action of signs, to occur in the physical universe. But, furthermore, Peirce's idea of "being *in futuro*" as sufficient for the notion of Interpretant opens the way to semiotic understanding *even of the universe's physical evolution prior to the advent of life*: for when an Interpretant as a physical situation results indirectly from a direct *dyadic* interaction that *changes the relation* of the universe in the direction of being closer to being able to sustain life, that new *situation* must be regarded as a Thirdness in comparison with the presupposed Secondness. (Deely 2015:343-44; emphasis in the original)

A machine can produce 'virtual' signs that involve a third term, an interpretant, that is not mental and need not exist in the present. Thus, an AI application with LLN transformer architecture can exhibit mechano-semiosis.

It produces an output that accords with its internal neural network, its own *retis memorias*, which, albeit the application was incited to semiosis by the input prompt, outputs a *what* that signifies outside the provenance of anthroposemiosis. Before Peirce, such semiosis was not even considered a possibility. Taking two examples, in 1607, the Conimbricenses (following Bonaventure) specified that "in any sign, there are two directions or respects, one to a thing signified and the other to a potency to which it signifies" (*in quovis signo duas esse comparationes, habitudinesve unam ad rem significatam, alteram ad potentiam cui significat*) (Conimbricenses 2001:38-41). Poinsot (following Aquinas), in the 1632 *Tractatus de Signis*, defines a sign as "that which represents something to a knowing power" (*quod repraesentat aliquid potentiae cognoscenti*) (Poinsot 2013:125). It had seemed obvious that only beings with the power to comprehend their *milieu*, namely animals (including human animals), could interpret the sign as representing this or that object within its *Umwelt* (Deely 2020:313). Peirce's insight put this assumption to rest and freed the understanding of the range of action of signs, semiosis, to virtually all reality.[13]

But where does this leave us with the question of the *what* produced by mechano-semiosis? It has no origin in Dasein but instead gets made through a generative transformer that has exteriorized the socio-ethnicities of all human sign systems and built its own inhuman *retis memorias* to produce its output. How can it mean anything to humanity? Looking to Peirce, there may be a place to catch a glimpse of an answer. Between 1891 and 1893, he wrote a series of five essays for publication in the *Monist*

[13] "For the proper significate outcome of a sign, I propose the name, the interpretant of the sign. … it need not be of a mental mode of being. … it seems to me convenient to make the triadic production of the interpretant essential to a 'sign'," (Peirce c.1906: CP 5.473) while four years earlier he had noted that, "It is not necessary that the Interpretant should actually exist. A being in *futuro* will suffice" (c.1902: CP 2.92).

through an agreement with the publisher, Paul Carus. On April 24, 1892, in the middle of writing the essays, Peirce had "a sudden and overwhelming mystical experience" (Brent 1998:208-209). As Joseph Brent writes in his biography of Peirce, "[t]hese five essays, written during an intensely promising and threatening time, clearly exhibit the impact of his mystical experience on his philosophical perspective … which reappears consistently in his work for the rest of his life" (Brent 1998:215).

"Man's Glassy Essence" was the fourth of the series and appeared in 1892. One of the essential abductive inferences that Peirce explores in the essay is a musement that human beings truly exist on the level of shared cultural realities and that these "are no mere metaphors…" (Peirce 1892:21). The unity of feelings found in various gatherings of humanity leads him to write "there should be something like personal consciousness in bodies of men who are in intimate and intensely sympathetic communion" (Peirce 1892:21). Such ordinary consciousness forms the everyday habits that undergird the socio-ethnicities vigorously tracked by Stiegler and Hui. Seen this way, Peirce has been held to have found a homologous mapping of *Dasein avant la lettre* (Kemple 2019:244). A semiosis that operates from outside this 'Being-there,' indeed from another 'there' altogether, as *mechano-semiosis* genuinely does, cannot produce the *what* (in this case, animated sequences) as has been done through the human use of signs (that is, anthroposemiosis).[14] It is just not the same.

So, how do we recognize the animations and videos produced by these AI applications? The answer is simple for Peirce: by habit. In later writing, he explains, "multiple reiterated behavior of the same kind under similar combinations of percepts and fancies, produces a tendency – the *habit* – actually to behave in a similar way under similar circumstances in the future …" (c.1906, CP 5.487). He continues a few lines later that, "*reiterations in the inner world – fancied iterations – if well-intensified by direct effort, produce habits*, just as do reiterations in the outer world; *and these habits will have the power to influence actual behaviour in the outer world*" (c.1906, CP 5.487, emphasis in the original). Since we have the habit of understanding animated film as it has been produced by us (i.e., humans), it is now *zuhanden*, integrated into *Dasein*. Although it is possible, in roles that we may take up as AI engineers, to interpret the outputs of the AI applications as *vorhanden*, part of our scientific study of AI, this will be outside of the usual care we bring to an animated film and limited to a very few specialists in AI.

The fact that it is less and less produced-by-us – incited by prompts input by a human-with-intentions – drastically minimizes human labor in the production of

[14] Flusser and Bec, in their work, *Vampyroteuthis Infernalis: A Treatise*, construct just such a premise: a uniquely other sentient creature interrupts the human philosophical monologue with a serious critique (Flusser and Bec 2012:36-43).

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the animation. Steigler, Simondon, and Deely have stressed that this minimization strips cultural and historical experience from animation, replacing it with visual patches or tokens that LNN(s) have calculated by implosion during the training process. Through habits gained from "*well-intensified direct effort*," we mistake mechano-semiosis for anthroposemiosis, thereby losing and diminishing our culture and history. This desiccates meaning and eventually devalues human existence. It would be the end result of the 'artificial stupidity' that Bernard Stiegler warned of before his death.

Animation, which persists at the level of anthroposemiosis and resists production by AI, may be one way that "the semiotic animal … becomes aware of the historicity [*νόμος*] within the human experience of nature [*φύσις*] as a whole" (Deely 2009:107). It will not be possible to stem the tsunami of AI in animation production, but it is possible to resist it in many ways. As an animator, I will resist this onrushing tide, which is destructive of human labor and meaning, as much as I humanly can.

## References

AnimateDiff GitHub site 2024. *Demo*. https://github.com/reidbuz/sd-webui-animatediff/blob/master/docs/demo.md

Baudrillard, Jean 1994. *Simulacra and Simulation*. Ann Arbor, MI: University of Michigan Press.

Bhattacharyya, Mehul, Valerie M. Miller, Debjani Bhattacharyya and Larry E. Miller 2023. High rates of fabricated and inaccurate references in ChatGPT-generated medical content. *Cureus* 15(5). https://doi.org/10.7759/cureus.39238

Brent, Joseph 1998. *Charles Sanders Peirce: A Life*. Revised and enlarged edition. Bloomington, IN: Indiana University Press.

Brooks, T., B. Peebles, C. Holmes, W. DePue, Y. Guo, L. Jing, D. Schnurr, J. Taylor, T. Luhman, E. Luhman, C. Ng, R. Wang, and A. Ramesh 2024. *Video Generation Models as World Simulators*. San Francisco, CA: OpenAI. https://openai.com/research/video-generation-models-as-world-simulators

Conimbricenses 2001. *The Conimbricenses: Some Questions on Signs*. Trans. John P. Doyle. Medieval Philosophical Texts in Translation, no. 38. Milwaukee, WI: Marquette University Press.

Deely, John 1971. *The Tradition via Heidegger*. The Hague: Martinus Nijhoff.

Deely, John 1994. *The Human Use of Signs.* Lanham, MD: Rowman & Littlefield.

Deely, John 2002. *What Distinguishes Human Understanding*. South Bend, IN: St. Augustine's Press.

Deely, John 2009. *Purely Objective Reality*. Berlin: De Gruyter.

Deely, John 2015. Building a scaffold: Semiosis in nature and culture. *Biosemiotics* 8: 341–360. https://doi.org/10.1007/s12304-015-9237-0

Deely, John 2020. *Medieval Philosophy Redefined as the Latin Age*. South Bend, IN: St.Augustine's Press.

Deforum GitHub site 2024. *Deforum Wiki*. https://github.com/deforum-art/sd-webui-deforum/wiki

Emsley, Robin 2023. ChatGPT: These are not hallucinations—they're fabrications and falsifications. *Schizophrenia* 9(1). https://doi.org/10.1038/s41537-023-00379-4

Fazi, M. Beatrice 2021. Beyond human: Deep learning, explainability and representation. *Theory, Culture & Society* 38(7–8): 55–77. https://doi.org/10.1177/0263276420966386

Flusser, Vilém and Louis Bec 2012. *Vampyroteuthis Infernalis: A Treatise, with a Report by the Institut Scientifique de Recherche Paranaturaliste*. Trans. V. A. Pakis. Minneapolis, MN: University of Minnesota Press.

Giannakopoulos, Theodoros 2020. Intro to audio analysis: Recognizing sounds using machine learning. *HackerNoon*, September 12. https://hackernoon.com/intro-to-audio-analysis-recognizing-sounds-using-machine-learning-qy2r3ufl

He, Kaiming, Xiangyu Zhang, Shaoqing Ren, and Jian Sun 2015. Deep residual learning for image recognition. *arXiv*. https://doi.org/10.48550/arXiv.1512.03385

Heidegger, Martin 1967. The provenance of art and the destination of thought. *Journal of the British Society for Phenomenology* 119–128. https://doi.org/10.1080/00071773.2013.11006794

Ho, Jonathan and Tim Salimans 2022. Classifier-free diffusion guidance. *arXiv*. https://doi.org/10.48550/arXiv.2207.12598

Homer ca. 800 BCE. *Iliad*. http://data.perseus.org/citations/urn:cts:greekLit:tlg0012.tlg001.perseus-grc1:22.111-22.130

Homer ca. 800 BCE. *Odyssey*. http://data.perseus.org/citations/urn:cts:greekLit:tlg0012.tlg002.perseus-grc1:8.469-8.520.

Homer ca. 800 BCE. *Hesiod, the Homeric Hymns and Homerica*. Trans. Hugh G. Evelyn-White. Hymn 28 to Athena. http://data.perseus.org/citations/urn:cts:greekLit:tlg0013.tlg028.perseus-grc1:1

Hui, Yuk 2016. *The Question Concerning Technology in China: An Essay in Cosmotechnics*. Falmouth, UK: Urbanomic.

Hui, Yuk 2021. *Art and Cosmotechnics*. Minneapolis, MN: University of Minnesota Press.

Kemple, Brian 2017. *Ens Primum Cognitum in Thomas Aquinas and the Tradition*. Leiden, Netherlands: Brill-Rodopi.

Kemple, Brian 2019. *The Intersection of Semiotics and Phenomenology*. Berlin: De Gruyter.

Kelleher, John D. 2019. *Deep Learning*. Cambridge, MA: MIT Press.

**Punctum.** International Journal of Semiotics | **10:**01:2024
ISSN 2459-2943 | DOI: 10.18680/hss.2024.0009 | **punctum.gr**

Kochenderfer, Mykel J. and Tim A. Wheeler 2019. *Algorithms for Optimization*. Cambridge, MA: MIT Press.

Leroi-Gourhan, André 1993. *Gesture and Speech*. Trans. Anna Bostock Berger. Cambridge, MA: MIT Press.

Lyotard, Jean-François 1991. *The Inhuman: Reflections on Time*. Stanford, CA: Stanford University Press.

McGowan, Alessia, Yunlai Gui, Matthews Dobbs, Sophia Shuster, Matthew Cotter, Alexandria Selloni, Marianne Goodman, Agrima Srivastava, Guillermo A. Cecchi, and Cheryl Corcoran 2023. ChatGPT and Bard exhibit spontaneous citation fabrication during psychiatry literature search. *Psychiatry Research* 326: 115334. https://doi.org/10.1016/j.psychres.2023.115334

*Oxford English Dictionary* 2000. Oxford, UK: Oxford University Press. https://www.oed.com/

Peirce, Charles Sanders 1866–1913. *The Collected Papers of Charles Sanders Peirce*. Vols. I–VI ed. Charles Hartshorne and Paul Weiss, Vols. VII–VIII ed. Arthur W. Burks. Cambridge, MA: Harvard University Press, 1931–1935, 1958.

Peirce, Charles Sanders 1892. Man's glassy essence. *The Monist* 3: 1–22, reprinted in CP 6.238–271.

Poinsot, John 2013. *Tractatus De Signis*. Corrected Second Edition. Ed. by John Deely a nd Ralph Powell. South Bend, IN: St. Augustine's Press.

Scabini, Leonardo Fortunato and Odemir Martinez Bruno 2023. Structure and performance of fully connected neural networks: emerging complex network properties. *Physica A: Statistical Mechanics and its Applications* 615: 128585. https://doi.org/10.1016/j.physa.2023.128585

Schwartz, R., A. Vassilev, K. Greene, L. Perine, A. Burt, and P. Hall 2017. *Towards a Standard for Identifying and Managing Bias in Artificial Intelligence*. Gaithersburg, MD: National Institute of Standards and Technology. https://doi.org/10.6028/NIST.SP.1270

Simondon, Gilbert 2017[1958]. *On the Mode of Existence of Technical Objects*. Trans. Cecile Malaspina and John Rogove, Minneapolis, MN: Univocal.

Stability AI 2024. About Us. https://stability.ai/about

Stiegler, Bernard 1998. *Technics and Time 1*. Stanford, CA: Stanford University Press.

Stiegler, Bernard 2009. *Technics and Time 2*. Stanford, CA: Stanford University Press.

Stiegler, Bernard 2011. *Technics and Time 3*. Stanford, CA: Stanford University Press.

Stiegler, Bernard 2016. "L'intelligence artificielle doit créer de l'espérance | IA & Appliquée." [Video]. https://youtu.be/R-0X2RFd4GA

Thomas, Frank and Ollie Johnston 1990. *Disney Animation: The Illusion of Life*. New York, NY: Abbeville Press.

Trawny, Peter 2019. *Heidegger: A Critical Introduction*. Trans. Rodrigo Therezo. Malden, MA: Polity Press.

Verma, Hitesh 2023. Attention mechanisms in transformers. *CloudThat*. https://www.cloudthat.com/resources/blog/attention-mechanisms-in-transformers

Weng, Lilian and Greg Brockman 2022. T*echniques for training large neural networks*. Open AI. https://openai.com/index/techniques-for-training-large-neural-networks/

Wolfram, Stephen 2023. *What Is ChatGPT Doing ... and Why Does It Work?* Champaign, IL: Wolfram Media.

Zhang, Lvmin, Anyi Rao, and Maneesh Agrawala 2023. Adding conditional control to text-to-image diffusion models. *arXiv* preprint. https://doi.org/10.48550/arXiv.2302.05543

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