GENERATING SYNTHETIC AUTONOMY: PARAREALISTIC EXPLORATIONS AND IMPLICATIONS OF IAN CHENG'S *BOB (BAG OF BELIEFS)*

LAURA LAKE SMITH

ABSTRACT | Ian Cheng's *BOB (Bag of Beliefs)* (2018–19) is a unique combination of contemporary digital media—an animated, AI-driven live simulation. It focuses on the activities of the artificial lifeform named, BOB, a mutable, snake-like entity generated and driven by a basic motivational and behavioral AI system and an inductive sensory learning engine of viewer inputs via an interactive app, BOB Shrine. This study considers the artwork's deployment of digital media and strategies that likewise underpin our contemporary existence in the real world. By examining *BOB (Bag of Beliefs)* through the pararealistic—an analytical framework that engenders new insights into reality—this essay considers how BOB, as an artificial lifeform, has significant import for our humanity, undermining individual autonomy and modulating systems of beliefs. This study ultimately contends that individual autonomy has shifted to a "synthetic autonomy," a term introduced here to designate a neohuman autonomy that has emerged in the wake of advanced AI.

KEYWORDS | Contemporary art, digital art, artificial intelligence, machine learning, simulation

Introduction

Ian Cheng's *BOB (Bag of Beliefs)* (2018–19) is an animated, AI-driven live simulation artwork that focuses on an artificial lifeform named BOB (Fig. 1).[1] With a strangely mutating, serpentine, and branching form, BOB has the characteristics of a monstrous creature but also a cartoon-like snake. It seems imprisoned within the large grid-like cage of the eighteen interlocking video screens in a habitat consisting of two parts. An overall abstracted locked-room-in-the-tower is articulated by its cylindrical shape, arched window, and drab coloring—all of which remains fixed in the artwork's graphics—while the center of BOB's habitat functions as though it were an arena, a site of constant activity wherein BOB continues to mutate. BOB's movements are fluid and, accordingly, they initially evoke the sounds of a quick-paced, dripping with a dissonance that is not quite natural. Indeed, more sustained listening ultimately registers the sounds as being akin to fast-paced, computational keystrokes. These

visual and sonic characteristics befit BOB as an entity born of and run by computational power, dependent on one hand on the confines of computer processing units and, on the other, the fluid adaptability of algorithms, data mining, and machine learning.

As an artificial lifeform, BOB is driven by two modes of AI: basic motivational and behavioral algorithms—what Cheng terms the competing "congress of demons" that regularly meet to decide who will control BOB—and the inductive sensory learning engine of "angels," which draws on "offerings" from viewers to BOB through a smartphone app called BOB Shrine. Within the app, viewers set up personal shrines (e.g., "Jim's Shrine," or "Kiss Me Bob's Shrine") that hover over BOB like a cloud of possibilities. The constant sounds of high-strung keystrokes are punctuated by a soft gong whenever BOB chooses an offering, momentarily injecting a measure of rewarding calm, like a muffled jackpot, into an otherwise frenetic atmosphere. Some offerings, such as foods, may delight and nourish BOB, but others, such

Figure 1: Ian Cheng, BOB (Bag of Beliefs) (2018–19). Installation view, Barbara Gladstone Gallery. Photo by David Regen, 2019; image courtesy of the artist.

as bombs, attempt to trick it. Cheng explains: "BOB Shrine allows viewers to publish patterns of stimuli to BOB, as well as caption their stimuli with a parental directive. BOB Shrine then automates the production of stimuli for BOB to choose without any further necessary engagement from the viewer. In return, BOB deposits special rewards to shrines it judges to be trustworthy parental forces."[2] Through the offerings, BOB eats, plays, feels, remembers, and learns—continually building and adapting a system of beliefs that ultimately governs the way it makes choices. BOB can also die from good and bad choices, albeit temporarily; the artificial lifeform always regenerates, learning as it does so from the effects of those choices. A large part of the interest in watching *BOB (Bag of Beliefs)* is the anticipation of whose shrine BOB will choose and how it will react.

Over time, BOB continues to sense, absorb, and grow in the interest of data accumulation and machine learning, all of which is kept on a drive such that whenever the work is unplugged and stored away, its learning can pick up where it left off. As an artificial lifeform, BOB acts independently: it considers who and what to trust, it scrutinizes behaviors and effects, it sees patterns, and it creates habits. BOB also communicates with viewers via a rolling bot message column that appears on the right side of the giant screen. Here, BOB conveys information such as whose shrine and which

offerings are being chosen or gives notices functioning much like the ubiquitous status updates of various online platforms (e.g., BOB is idle, angry, or hungry).

From user-generated content and graphical user interfaces to data mining apps and enactments via digital platforms, there is much about *BOB (Bag of Beliefs)* that is deeply familiar to the interactions and transactions of our contemporary digital existence. In a cursory pass, we might be tempted to view *BOB (Bag of Beliefs)* as a spectacular pastiche of this existence—especially of those digital arenas within which we choose to engage, but from which we imagine we can easily extricate ourselves. *BOB (Bag of Beliefs)*, however, proves to be much more complicated. As this essay explores, *BOB (Bag of Beliefs)* is an artwork that provides much-needed reflection on the intersections of humanity and contemporary digital technologies, illuminating important changes and elisions that have emerged amid the uptick in AI tools with which we interact and which likewise work upon us. What follows is an examination of *BOB (Bag of Beliefs)* through the means of the pararealistic, an analytical framework that engenders new insights into reality. Through this framework, this essay considers how BOB, a monstrous and mutable artificial lifeform, is less a fantastical creation and more an image of a present reality: an animated and AI-driven live simulation that has significant import for our

humanity. This study ultimately contends that individual autonomy has shifted to "synthetic autonomy," a term presented here as a neohuman autonomy in a state of constant generation and mutation amid the interactions with and effects of AI technologies.

The Pararealities of an Animated, AI-Driven Live Simulation

BOB (Bag of Beliefs) simulates familiar activities of and interactions with contemporary digital culture, but does so in purposefully distorted and exacerbated ways that provide viewers a parareality. The prefix *para-* implies something aside or amiss from the term it modifies. In this sense, Cheng's artwork readily offers a framework that is "to the side of" reality or "somehow amiss" from it. As Derek Attridge writes: "Realism and pararealism may shade into one another but they are not the same thing . . . pararealism thrives on giving visual and vocal reality, albeit distorted and exaggerated, to usually hidden impulses and inclinations."[3] Pararealism, then, opens a gap of critical distance, representing an alternative that somehow diverges from our real circumstances but nevertheless retains some semblance to the real, if not parasitically attached to the real.[4]

Because *para-* may also connote a combination or mixture, *pararealism* is also a useful term in exploring the nature of our increasingly mixed realities in the digital age. Mixed realities typically describe combinations of the physical—or the "actual"—with the virtual or the digital. In recent years, scholars have reconsidered how the digital engages with both the material and immaterial conditions of our mixed realities. In an essay entitled "Digital Art Now: Histories of (Im)Materialities," Christiane Paul coined the term *neomateriality*, which has similar concerns as the pararealistic framework presented here, especially in the combination of seeming opposites. Designating what Paul considers "an objecthood that incorporates networked digital technologies and embeds, processes, and reflects back the data of humans and the environment, or reveals its own coded materiality and the way in which digital processes perceive and shape our world," neomateriality refers to "the inherent tensions between the material and immaterial, objects and systems."[5]

Kris Paulsen's *Here/There: Telepresence, Touch, and Art at the Interface* is also concerned with such unresolvable tensions. In part, Paulsen's study examines digital signification in screen-based artworks, repositioning the digital as a sign that both signifies something abstract and uncertain but nevertheless possesses a grounding in the real or actual world, as though the digital were an impossible immaterial-materiality. Given its contradictory nature, digital signification, Paulsen contends, also shares properties with the "virtual," a contranym, constituted by oppositional definitions of "not really existing" and "almost the same."[6] As Paulsen explores, the signs of the digital and the virtual—which are often fluidly linked in the digital age—thrive on this paradoxical nature in an unsettled in-betweenness that is heightened when the digital and the virtual converge at the interface of the screen, "a surface where opposites touch and become indistinguishable from one another."[7] Hence, the interface, as well as associated signs of the digital and the virtual, holds in constant tension what Paulsen calls "a series of binary, shifting terms—here/there, now/then, self/other, subject/object, human/machine, physicality/virtuality."[8] Therefore, the screen, the digital, and the virtual have as much significance for the real as anything physical or actual and thereby function as media well-suited for exploring the parareality of *BOB (Bag of Beliefs)*.

Frameworks of pararealism are typically found in literary and philosophical studies that analyze a range of humanistic concerns in classic literature and speculative fictions as well as the very nature of reality.[9] The present analysis certainly draws on the concepts of these established antecedents. More pointedly, however, the aim in employing pararealism here is to explore the blurred but shared operations and implications between Cheng's unique combination of digital media in *BOB (Bag of Beliefs)* and contemporary existence.

Live Simulation and AI

It is significant that among the defining modalities of pararealism is simulation, lending a salient connection to Cheng's use of live simulation, which bears out the logic of the parareal on the level of fundamental form (i.e., para is to simulation as live is to real).[10] While the artwork employs its AI systems and user inputs to guide and train BOB as an artificial lifeform, as a live simulation it has no fixed outcome, and, as in life, the potential for infinite mutations, causalities, and durations.[11] Therefore, it is a unique simulation that is alive in time.

There is also a latent parareality in Cheng's conceptualization of his live simulations. Cheng sees them as aligned with the basis of any simulation—a playing out of what-if scenarios, which he views as a crucial tool for understanding and navigating life: "We simulate with friends what to say to haters, what to say to lovers. It is a private game we devise when the aliveness of a situation is too complex to really know."[12] As the artist encourages, for those "who long for a closer relationship to reality's messy dynamics, an open-ended simulation may provide a new kind of exercise."[13]

As with the concept of Cheng's live simulation, other formal and stylistic elements of *BOB (Bag of Beliefs)* combine features of the artificial and the real. Built in the game engine Unity, Cheng's live simulation draws on the flattened, fantastical style of cel-shaded video games as well as the animated films of Hayao Miyazaki, the aesthetics of which image the liveliness of characters and environments as full of chaos and constant change. In the case of *BOB (Bag of Beliefs)*, the live simulation plays out an ever-changing possible world in terms of our interactions with and effects of digital technologies and in ways that are both conceptual and material. Consider more closely the display of the live simulation. In every installation of the artwork, the computer technology that runs the live simulation is always hidden.[14] In doing so, Cheng aims for viewers to focus on BOB as if in the context of a "zoo exhibit."[15] Consistently set into a slight recession into the display wall, the eighteen interconnected screens appear as though a cohesive construct, with the grid-like cage thrown into an illusory relief and where BOB appears as if a specimen to be observed in his constrained habitat. Cheng chose the form of the mutating snake-like creature because "there's an inherent neurobiological instinct to be alert to snakes…A snake is not a purely evil being, but it's a being that makes a human more aware."[16]

Indeed, as viewers, we are fixated on this snake, gradually becoming aware that it is at once distant from us but also eerily close, a double articulation that becomes all the more evident given the two-way interactions between us and BOB via the app. In this way, the smooth surface of the illusory cage (i.e., screen) of observation functions as though a mirror, implicating as much on our side of the screen as BOB's. BOB Shrine is familiar to us as an application interface to which users supply input and receive output from a given program. In our daily digital existence, input-to-output typically occurs instantaneously and in direct, predictable correlation with each one another. But this is not precisely the operation process experienced with BOB Shrine. While offerings are selected and captioned by the viewer, there is an unpredictability regarding whether BOB will choose a shrine and its offerings due to the self-legislation of its AI, which ultimately acts independently according to its emotions, beliefs, and desires. Hours can be spent watching BOB in its cage and waiting for it to choose your offering or not, engendering a myriad of questions. Why does BOB select one shrine and not another? Why does BOB trust this and not that? Comparable to much of the AI-driven digital technologies of today, *BOB (Bag of Beliefs)* does not make the vastly incomprehensible systems of data collection, algorithms, and machine learning visible or intelligible. Instead, by foregrounding the shifting, fluid behavior of BOB and the constant high-keyed computational noises, Cheng's live simulation vivifies the continuous and largely unfathomable digital superstructure that now underpins our reality, the interfaces of which usually appear as coherent and well-integrated, unencumbered by the inscrutable

systems and operations that lie beneath. Indeed, BOB's precise workings remain an enigma, but in truth, much like BOB, we too wrestle in fitful and fluid ways with our understanding of the digitally abstract, and even with BOB's opaque operations and outcomes, as we do elsewhere in AI workings.

In light of the AI, something else is becoming clearer in the pararealistic examination: in Cheng's live simulation we are used more than we use. Integrating a form of data mining and collection with the BOB Shrine app, BOB uses us via our inputs to learn for the sake of its own application, thereby absorbing human behavior and intelligence and amassing an ever-forming AI-consciousness. A lack of transparency in AI data practices can erode our confidence in how our data is used, what is broadly termed as informational autonomy. Hence, a question begins to form, one that commonly emerges in human interactions with AI: Who (or what) is really in control here? As we will see in the continuation of this study, *BOB (Bag of Beliefs)* offers some possible answers.

Digital Animation, Indexicality, and Mixed Realities

The other significant medium in *BOB (Bag of Beliefs)* is digital animation. Due in large part to the work of animation studies scholars such as Suzanne Buchan, animation has achieved a pervasive presence in our reality since the turn of the twenty-first century.[17] Although animated films and the gaming industry comprise a large share of our present-day engagement with the medium, animation is prevalent beyond the realms of mere entertainment. Consider the now ubiquitous computer-animated characters used in product branding and promotion as well as the general motion graphics that expand brand identity. Moreover, rather than live-action productions, animated videos are now popular across industries in, for example, the form of corporate training. In any of these cases, animation is deployed because it simplifies complex concepts and facilitates retention, thereby enhancing brand identity and, fundamentally, delighting and engaging viewers. Thus, animation, as consigned to fantasies and fictions, has become entangled deeply with operations in the real world, underwriting many of the ways in which we educate and entertain as well as how we process and simulate reality. As Esther Leslie and Joel McKim contend, digital animation has in recent years become "increasingly fundamental to processes of knowledge production and the creation of various modes and elements of life."[18] Because it is also utilized in ways that have both social and political resonance, Leslie and McKim call for an examination of "animation's own powers of critique."[19] As this section will explore, *BOB (Bag of Beliefs)* proffers critical and pararealistic insights into how digital animation blurs distinctions among mixed realities.

Here, I establish digital animated images as a crucial link in understanding the implications of mixed realities in Cheng's *BOB (Bag of Beliefs)*.

If animation's prevalence in our real world has increased in visibility and importance, bolstered by the expansion of digital animation, then it has also raised questions about its relationships to and consequences for the real. The fundamental premise and technique of animation is to make the lifeless as if alive and to endow the motionless with movement. However, the bulk of digital animations create illusory images that have only ever existed in the abstract or immaterial, built as they are binary digits and code.[20] Given its loosening from a strict material or physical indexicality, what exactly is being animated—indeed, brought to life—in the digitally generated animation of Cheng's *BOB (Bag of Beliefs)*?

In "The Animated Document: Animation's Dual Indexicality in Mixed Realities," Nea Ehrlich provides a reading of the signifying structures of digital animation. While analyzing a range of digital animation that includes both captured and digitally generated images in order to evaluate its documentary value, Ehrlich's study nevertheless devotes a considerable share to the indexicality of digital animation and explores how, in present times, animation connects mixed realities. Animation, Ehrlich writes, "is no longer grounded in an idea of illusion of life, but rather a capture of technologically mediated presence and actions" between the physical and the virtual.[21]

Ehrlich's indexical analysis is based on Charles Sanders Pierce's nineteenth-century semiotic system of icon, symbol, and index. Ehrlich briefly summarizes the first two signs in Pierce's system. An icon possesses qualities of "resemblance or likeness" with its referent, as in a "painted portrait."[22] A symbol signifies its referent by "arbitrary conventions" previously determined by culture, such that the word dog is an agreed-upon terminology for a four-legged animal of a specific species.[23] "The index," Ehrlich writes of the third sign, "occupies a more complex position, having a dual definition as both trace and deixis."[24] In claiming this indexical duality of trace and deixis, Ehrlich draws on a received history that has further interpreted Pierce's discourse.[25] Ehrlich describes the index as trace: "an imprint of its object when the object acts as the cause . . . such as a footprint or bullet hole, implying a material connection."[26] The index as deixis, however, is more ambiguous as it "can demonstrate, illustrate and indicate but does not embody a trace to the referent. . . . [it] depends on context and our reaction to it."[27] Comparable to the index as trace, the deixis always maintains a relationship to the real. As Ehrlich writes, the deixis "infers something physical that can be pointed to."[28] In contrast to some interpretations of the trace and deixis that distinguish demonstrative gestures (i.e., trace) from demonstrative

pronouns (i.e., deixis), Ehrlich's examples of deixis include both demonstrative "gestures such as a pointing finger and words such as 'I' or 'there.'"[29]

While icon and symbol certainly have important signifying roles throughout digital animation today, as Ehrlich briefly demonstrates, it is the duality of the index that Ehrlich focuses on, contending that "rich indexing potential" is found in "animation's ability to signify more than is directly visualized."[30] Ehrlich writes: "In an era of virtualization, where dematerialization is a defining characteristic," the precise indexicality of digital animation is not secure, meaning that the trace and deixis can slip easily between the one and the other: "If a sign is a trace but it is not clear of what, its interpretation is based on context, making it more similar to a deixis."[31] Moreover, Ehrlich insists that trace and deixis can even act simultaneously. As an example, Ehrlich notes how an avatar can function as a "trace of the player's actions" as well as the more obscure "deixis of someone in the physical world."[32] Whether indexicality as trace and deixis are separate, slippery, or simultaneous, for Ehrlich, the undecidable signification of digital animation ultimately manifests the complex entanglement between our physical and virtual realities.

Two of Ehrlich's explorations of digital animation's indexicality are particularly useful in examining Cheng's *BOB (Bag of Beliefs)* in terms of parareality (Fig. 2). Regarding digital animation as an indexical trace of the physical world, Ehrlich considers real-time animation in interactive platforms, which effectively translates "the players' commands and, increasingly, their physical actions, into the animated visuals of a technological system, i.e. the graphic user interface (GUI)."[33] In *BOB (Bag of Beliefs)*, an indexical trace of the physical occurs by means of the GUI within BOB Shrine, where digital animation tracks and registers unplanned activity based on user input. This indexes our haptic, real-time engagement with the virtual, artificial lifeform of BOB, selecting offerings and captions. Indeed, within the BOB Shrine app, touch is required for the selection, a tangible trace testifying to actual presence and linking the physical and the virtual—the corporeal digits and the abstract digitization of their movement.

Ehrlich positions digital animation's other indexicality to the physical world—the animated visualization of data—as a deixis, because it requires "context and interpretation" to "make one aware" of something that is ultimately located in the real world.[34] Ehrlich exemplifies this using a data-based artwork that "visualizes the air traffic routes over North America during a 24-hour period in animated colour and form."[35] Ehrlich considers how this artwork might point to a number of arguable referents, such as "the vast amounts of people and cargo flying each day," that deictically index "the myriad financial, geographic, cultural and environmental effects of such extensive air traffic."[36]

Figure 2: Ian Cheng, BOB (Bag of Beliefs) (2018–19). Installation view, Barbara Gladstone Gallery. Photo by David Regen, 2019; image courtesy of the artist.
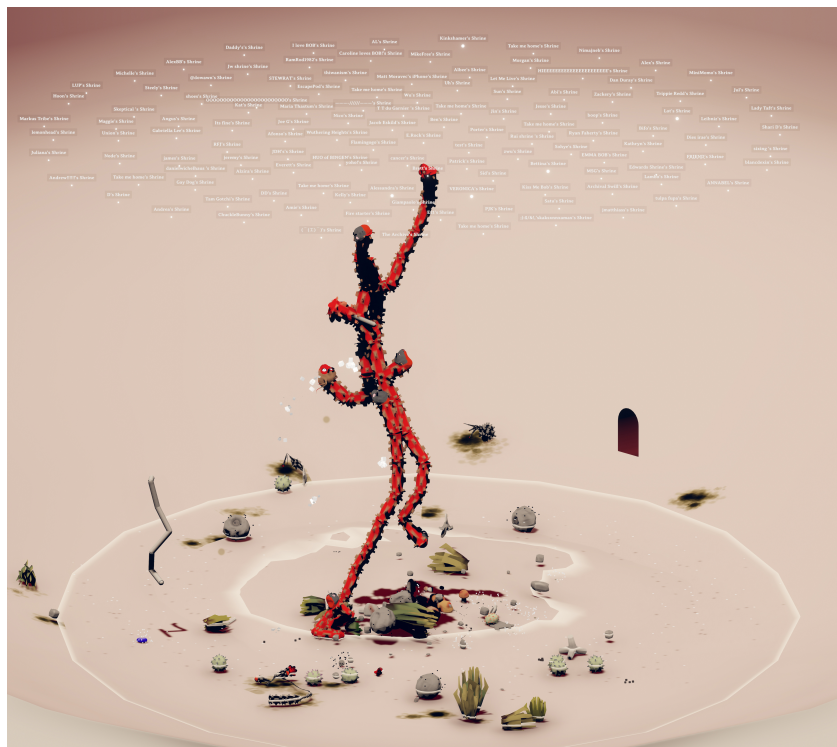

Figure 3: Ian Cheng, Detail of BOB (Bag of Beliefs) (2018–19). Artificial lifeform, infinite duration. © Ian Cheng; image courtesy of the artist.

In an analogous fashion, what we see within the screen-based live simulation of *BOB (Bag of Beliefs)* are animated visualizations of our various inputs via the BOB Shrine, binary code that has been transformed into intelligible and relatable images for human consumption and experience. More precisely, through the inductive sensory learning engine and the broader processing systems hidden behind the interlocking screens, BOB's behaviors, choices, beliefs, and communications animate the data—offerings and captions—that viewers input. Initially, this occurs when a viewer establishes a personalized shrine in the cloud above BOB with its offerings, but, if and when BOB selects a shrine and the offerings are released, another level of engagement is animated, the effects of which then affect BOB.

I add one more pararealistic analysis of digital animation's indexicality to the real world in *BOB (Bag of Beliefs)*. Per Ehrlich's earlier claim, I examine a point where the trace and the deixis arguably slip into one another or act simultaneously. The two earlier analyses hinged on the BOB Shrine app and human inputs in different ways. However, the inputs—what ultimately amount to choices—can also index the viewers' beliefs, desires, and motivations, be they sincere or sinister (as discussed above), or even emboldened or compromised by the relative anonymity allowed in the shrines' personalization. In this, an impossible knowability emerges, but the recognition of such evinces the kind of extensive complications and variabilities in indexing "human inputs," wherein choices can index something as a physical, traceable lineage in the world as well as something that functions more deictically, such as an enactment of pure imagination. Kris Paulsen writes that contrary to the so-called death of the index in the digital age, "the digital revolution has not destroyed or undermined the index; instead it has called attention to the index's true identity as a sign from which one is separated, with a meaning one must guess."[37] As Paulsen explains, the index, be it digital or analog, is ultimately "an inherently ephemeral, doubtful, and distant sign that hinges on a split temporality," at once within the screen but also beyond it.[38]

In 1991, animation scholar and theorist Alan Cholodenko boldly claimed that "animation . . . poses the very questions of life itself."[39] In 2007, Cholodenko expanded this claim: "[Animation] is a process, performance, medium and milieu of world, of universe . . . [the] nature of 'all'. . . what could be called reality 'as such.'[40] While his use of animation in these cases spoke then to the fundamental operations of all forms of animation, when reassessed amid the present moment of the digital, Cholodenko's claims acquire a new gravitas. Digital animation has become a significant medium for our communications, something that the ubiquitous use of emojis in contemporary culture already evidences. As this section of the pararealistic study has explored, digital animation is also a crucial means by which the digitally invisible is made humanly visible and digestible,

demonstrating real connections among and import for mixed realities, which, borrowing from Cholodenko, is now the condition of reality "as such." But if digital animation can vivify things such as our data inputs and choices on screen, then it can likewise register how humans are changing with and beyond the screen. As a dynamic synthesis of oppositions—of the physical and the virtual and of our inputs and BOB's outputs—*BOB (Bag of Beliefs)* also vivifies how BOB is remaking humans into an uncanny double, a process that holds consequences for individual autonomy.

Uncanny Doubling and Synthetic Autonomy

The concept of artificial life and its effects on humans were once mere fiction, perhaps most famously instantiated by Mary Shelley's *Frankenstein or, The Modern Prometheus*. Shelley's tale focused on a techno-scientifically made creature, but it also retained an undecidability in judging the creature as human or nonhuman, which was especially complicated by the creature's displays of agency and autonomy. This strange doubling of "us" and "not-us" has made Shelley's narrative an exemplary case study of the uncanny. There are clear analogies between BOB and Shelley's creature, namely the combinative and blurring of human and other as well as how both works-as-art allow for thematic reflections on humanity itself. Hence, as with the mediums and associated concepts analyzed thus far, the concept of the uncanny becomes another productive element of in-betweenness in this study's pararealistic explorations.

In "Disobedient Machines: Animation and Autonomy," Scott Bukatman explores early cinematic pieces that variously animated desires for and instances of artificial life (e.g., Pinocchio and Frankenstein), focusing on how these films created "synthetic life" in two parts: firstly, by combining elements of the human with the artificially or technologically inhuman, and secondly, by cinematically simulating these synthetic beings as existing alongside humans and sharing in our reality.[41] In part, Bukatman examines how some creations of synthetic life draw on the concept of the uncanny, which he describes as the "doubled figure of creator/creation, the shadow figure that haunts the original, the familiar returned in the guise of the unfamiliar."[42] Bukatman positions the uncanny as "preoccupied with undecidability, the porous boundaries between human and nonhuman, organic and inorganic," but because the uncanny "is rooted in the conundrums of logic and rationality," we know these filmically uncanny, synthetic creations to be fiction.[43] But when matters of control are at stake, Bukatman insists, the uncanny can slip from the simply fantastic to the transgressively terrorizing, especially when a synthetic life demonstrates "its autonomy by behaving unpredictably . . . perhaps running amok . . . or refusing orders."[44] The fear of

losing one's autonomous control, then, is transfigured into a possible reality, engendering what Bukatman contends is a movement from the "safe remove of 'I know very well [this is fiction]' in favor of that haunting 'but even so.'"[45] Bukatman's analysis ultimately evinces the force of the uncanny, which, in turn, forces us to recognize what Nicholas Royle has termed a "crisis of the proper and natural," the significance of which "may have to do, most of all, with what is not oneself, with others, and with the world 'itself'."[46]

Anxieties of control and existential threats recur with regularity throughout the history of the uncanny, from Sigmund Freud's psychoanalytic concept to the robotic-focused uncanny valley of Mashahiro Mori.[47] In particular, Freud contended that anxieties in relation to the uncanny are fundamentally connected to an experience of loss, namely the loss of conscious control, which results in a crucial split in the ego's supposed unitary structure. More recently, Claudia Schmuckli's considerations of the uncanny nature of new digital technologies has extended Freud's assertions. As curator of the De Young Museum's 2020 exhibition, *Beyond the Uncanny Valley: Being Human in the Age of AI*, Schmuckli contends that Freud's ideas about control can now be likened to an internal automaticity affected by technology, which erodes distinctions between human autonomy and machine automation.[48] For Schmuckli, the uncanny in the present age of AI "is no longer limited to the image of the humanlike robot or 'thinking machine.' It is mapped by the inscrutable calculations of algorithms that are designed to mine and analyze humans' behavior and project it into tradable futures. It is occupied by our statistical doubles...defined by the addictive mechanisms of applications."[49] We are, then, remade in the image of our data, uncannily doubled by our inputs.

From data collection with "internet cookies" to choice manipulation via "hyper-nudging," technological incursions to human selfhood are increasing. While both internet cookies and hyper-nudging serve functional purposes in enhancing user experience, they also pose significant challenges to individual autonomy, steering users towards certain behaviors and choices (e.g., influencing purchases or reluctant consents to privacy or tracking policies). With the rapid development of AI across industries and its integration into platforms used in our everyday existence, a "virtually" seamless synthesizing of our humanness with digital technologies has occurred. In this way, individual autonomy has now shifted to what I term a "synthetic autonomy": a neohuman condition that is generated constantly by the interactions with and effects of AI.

In introducing the term of "synthetic autonomy," I draw on the roots of the term autonomy, which is defined by a self-rule independent from external influence or control. In common practice, it is the ability of an individual to make informed but uncoerced choices. By contrast, the synthetic is always somehow distanced from the natural and inherently constructed. In its adjectival form, synthetic can designate the imitation of the natural or a condition that is artificial or invented, while its noun form signifies combination. In the context of present-day advancements in digital technologies and systems, the term *synthetic autonomy* expresses the molecular integration of the self and the other, the technological and the natural, and the "us" and "not-us," which is, moreover, constantly modulating and generating amid a highly digitally interconnected and data-driven world.

Synthetic autonomy is thus systemic, and, like the concept of the uncanny discussed above, it erodes distinct boundaries and elicits concern and confusion over control. For example, the routine interaction of digital technologies is effortless and the ease provided by the varied automations therein gives way to acquiescence for our part on multiple fronts such as personal privacy and security but also how and what we think. Indeed, there are significant consequences for cognitive degeneration with what is now regarded as "cognitive outsourcing," an increased reliance on the choices and decisions provided by digital algorithms to navigate the varied conditions of life.[50] These kinds of subtle technological stimuli and the microchanges that they enact are also found in the synthetic strategies that *BOB (Bag of Beliefs)* employs, thereby illuminating a parareality of our synthetic autonomy.

In light of an uncanny, synthetic autonomy, consider again a few of the previous examinations of *BOB (Bag of Beliefs)*: how the data mining via BOB Shrine app doubles us but also leeches from us, and how the unpredictability of algorithms in its decision-making elucidates a lack of transparency with our inputs. However, our choices—indeed, our decision-making— were already controlled to some degree at the outset. In fact, what we find within the app itself is already a mode of predetermination and delimitation of choices. After viewers download the app and name their personalized shrine, everything else is a function of pre-selected choices.[51] First, we select from a variable number and combination of objects to offer BOB such as mushrooms, starfish, rocks, and shrubs, but also "Spinyfruits," "BlackOrbs," and "ProximityBombs," the latter of which are especially peculiar to BOB's machine-learning cognition. Secondly, we caption them with the parental directive, per Cheng's earlier discussion, which includes a series of phrases that effectively amount to "this is 'good' or 'bad' for you, BOB," and where we can be either good or bad actors, as it were. To repeat Cheng (with my italics for emphasis): "BOB Shrine *then automates the production of stimuli* for BOB to choose *without any further necessary engagement from the viewer*. In return, BOB deposits special *rewards* to shrines *it judges* to be trustworthy parental forces."[52] In this way, *BOB (Bag of Beliefs)* images both "us" and "not-us" through its connected, coded operations.

In part, the artwork is the receiver of our inputs or choices but, as a larger artificial intelligence system constituted of and driven by codes, it is also a generator and arbiter of our choices. Code, then, functions as a digital language of control that both synthesizes us with the technological and blurs the boundaries between what is human and what is technological.

The deployment of the snake in *BOB (Bag of Beliefs)* (Fig. 3) now comes into clearer view. As the philosopher Gilles Deleuze claims, the serpent is the metaphorical animal for "societies of control," the coils of which are "undulatory, in orbit, in a continuous network," driven by the continuous modulation of code.[53] Of the effects, Deleuze writes: individuals have become '*dividuals*,' and masses, samples, data, markets, or '*banks*,' engendering "coded figures—deformable and transformable."[54] If, in its fluidly systematic control, code-as-the-foundational-agent of synthetic autonomy deforms and transforms the ways that humans make choices and decisions, then it also has the ability to modulate our systems of beliefs.

Shifting Beliefs

Belief systems guide how we make decisions and how we act in the world. In conventional views, our belief systems are solidified early on in our formation and, moreover, are deeply linked with individual autonomy, being part of a wider range of activities by humans that enact "self-rule."[55] However, amid an uptick in AI capabilities and interactions, human belief systems, as with the notion of synthetic autonomy, have begun to shift in new ways.

In designing *BOB (Bag of Beliefs)*, Cheng explains: "I decided to center BOB's cognitive architecture on the relationship between desires and beliefs. Beliefs organize desires. Desires act on the world. The world affirms or upsets beliefs."[56] By means of the BOB Shrine app, Cheng aims to challenge, if not "override BOB's initial beliefs about whatever it is presented with, and encourage it to try something beyond its worldview. This was how I was able to get BOB to learn beyond the limitations of its initial childhood experiences as an AI. It was a way of reshaping BOB's life course."[57] In a refrain that is now familiar in this study, as with BOB, so too with us.

In a pararealistic view, *BOB (Bag of Beliefs)* registers that our beliefs are likewise being reshaped, being morphed with the "offerings" bestowed upon us by advanced digital technologies, fluidly facilitated by code. In truth, this reshaping can be both obstacle and aid to humanity. For example, the less familiar a person is with a topic prior to interacting with AI tools, the more credence a person gives to AI's guidance or answers and possibly its biases. On the other hand, by analyzing large amounts of data, generative AI tools can offer insights into data that may have otherwise escaped human research or analysis, thereby opening up new neural pathways in our own minds and, consequently, restructuring what we believe. As elsewhere in this study, an indeterminacy and in-betweenness pervades, something that Cheng's use of the amorphous "bag" in the artwork's subtitle suggests. Therefore, the "bag" in *BOB (Bag of Beliefs)* underscores the permeability and unpredictability of belief systems—in both generating and sustaining them—for it as an artificial lifeform and for us as technological users.

The artwork's subtitle is also telling for another reason: "bag of beliefs" provocatively summons the idiom of a "bag of tricks." At its origins, a bag of tricks designates the varied resources and stratagems of a magician's repertoire, but today its meaning has shifted slightly to conjure notions of cunning and agile mastery: a seemingly magical possession of countless skills and knowledge within a given framework. Like the idiom it evokes, the bag of beliefs in Cheng's artwork conjures a sense of the seemingly infinite bounds of beliefs in the age of AI as well as an adept ability to generate and continuously shift beliefs, all of which is driven by the dynamic and mutable syntheses of human selfhood and, increasingly insidiously, the artificial liveliness of technology.

Conclusion

By extending the definition and framework of a pararealistic analysis and introducing the term *synthetic autonomy*, this study has explored how Ian Cheng's *BOB (Bag of Beliefs)* exemplifies a wider synthesis of the human and the technological across contemporary digital culture. Indeed, the unique combination of media within the artwork (live simulation, AI, and digital animation) and the attendant analytical concepts of this study (parareality, mixed realities, indexicality, the uncanny, and synthetic autonomy) are all synthetic in their constitutive natures, thereby typifying the accelerating integrations and confusion of the real and the artificial, the physical and the virtual, the human and the inhuman. However, to examine the seemingly totalizing synthetic nature of our contemporary existence is not to choose one component over the other (i.e., the physical over the virtual). Rather, this study contends that there is an undecidable in-betweenness at the core of synthesis that is ever-modulating, ever-mutating, and ever-generating.

Even current debates on AI rest on an indeterminate in-betweenness, wherein the central question is not "will AI change us," but "how will AI change us"? The key to grappling with the typical oppositions of benefits versus threats is to recognize that it is both, and then focus on ways to find balance in the deployment of digital AI technologies. For example, I asked one of the counterparts in our synthetic existence—ChatGPT-4—how might it "aid us in our individual autonomy?" Its answer: "While I aim to support your autonomy by providing

information, facilitating decision-making, and enhancing your cognitive and informational autonomy, it is essential to remain aware of your independence in making choices. My role is to empower you with knowledge and tools, ultimately enabling you to exercise your autonomy more effectively."[58]

To ChatGPT-4's "effectively," it is crucial to add "reflectively." As with the pararealistic framework of this study, it is ultimately in the modality of reflective capability—on this side of the mirror-screen—where we assert what may well be the most humanizing element of our synthetic autonomy.

NOTES

1   This essay focuses on the second and latest iteration of Cheng's *BOB (Bag of Beliefs)*, which debuted in 2019. This version restructured the artwork's AI system, adding a cognitive architecture with motivations and micropersonalities, and launched the interactive BOB Shrine app. Moving images for the artwork can be accessed at http://iancheng.com/BOB. The author thanks the artist for generosity in correspondence and images.

2   Gladstone Gallery, "Ian Cheng: BOB," press release, 2019, https://www.gladstonegallery.com/exhibition/317/bob/info.

3   Derek Attridge, "Pararealism in 'Circe,'" *European Joyce Studies* 22 (2013): 125.

4   See Floyd Merrel, *Pararealities: The Nature of Our Fictions and How We Know Them*, (Philadelphia: John Benjamins Publishing Company, 1983).

5   Christiane Paul, "Digital Art Now: Histories of (Im)Materialities," *International Journal for Digital Art History* 5 (2020): 2.05, https://doi.org/10.11588/dah.2020.5.75504. See also Christiane Paul, "The Myth of Immateriality—Presenting and Preserving New Media," in *MediaArtHistories*, ed. Oliver Grau (Cambridge, MA: MIT Press, 2007), 251–74.

6   Kris Paulsen, *Here/There: Telepresence, Touch, and Art at the Interface* (Cambridge, MA: MIT Press, 2017), 33. Paulsen credits the understanding of the virtual as a contranym to the work of Antony Bryant and Griselda Pollock in Antony Bryant and Griselda Pollock, *Digital and Other Virtualities: Renegotiating the Image* (London: I.B. Tauris & Company, 2010), 10.

7   Paulsen, *Here/There*, 185.

8   Paulsen, *Here/There*, 185.

9   In the earlier noted study on Circe, Attridge also notes that pararealism is "occasionally used in connection with surrealism." Attridge, "Pararealism," 119n3.

10   Attridge, "Pararealism," 120.

11   For example, glitches in the live simulation have occurred across exhibitions of the artwork that have required reboots, and, as already noted, BOB can be temporarily destroyed.

12   Elodie Evers, "In Conversation with Ian Cheng," in *Ian Cheng: Live Simulations*, eds. Elodie Evers and Irina Raskin (Düsseldorf: Kunsthalle Düsseldorf, 2015), 112–13.

13   Ian Cheng, "Forking at Perfection," in *Ian Cheng: Forking at Perfection*, ed. Raphael Gygax (Zurich: Migros Museum für Geganwartskunst, 2016), 39.

14   Ian Cheng, email message to author, June 14, 2024.

15   Ian Cheng, email message to author, June 14, 2024.

16   Annie Armstrong, "'There's Something Maniacal About Basic Desires': Ian Cheng on His Gladstone Gallery Show, Artificial Intelligence, and His Fear of Snakes," *ArtNews,* February 4, 2019, https://www.artnews.com/art-news/artists/ian-cheng-gladstone-bob-artificial-intelligence-11825.

17   See Suzanne Buchan, ed., *Pervasive Animation* (New York: Routledge, 2013); Suzanne Buchan, "Pervasive, Disruptive and Useful Animation," in *Art in the 21st Century. Reflections and Provocations*, eds. Siegfried Zielinski and Charles Merewether (Hong Kong: Osage, 2020), 112–24; and Ryan Pierson, "Drawing on the Margins: Animation in Film and Media," *Journal of Cinema and Media Studies* 61, no. 1 (2021): 142–46.

18   Esther Leslie and Joel McKim, "Life Remade: Critical Animation in the Digital Age," *Animation* 12, no. 3 (2017): 207.

19   Leslie and McKim, "Life Remade," 207–08.

20   On digital animation as a fundamental form of abstraction, see Aden Evans, *Logic of the Digital* (London: Bloomsbury, 2015); Aden Evans, "Digital Ontology and Example," in *The Force of the Virtual: Deleuze, Science, and Philosophy*, ed. Peter Gaffney (Minneapolis: University of Minnesota Press, 2010), 147–68.

21   Nea Ehrlich, "The Animated Document: Animation's Dual Indexicality in Mixed Realities," *Animation* 15, no. 3 (2020): 263.

22   Ehrlich, "Animated Document," 264.

23   Ehrlich, "Animated Document," 264.

24   Ehrlich, "Animated Document," 264.

25   Arguably, the received history of indexicality duality was shaped significantly by the work of the twentieth-century linguist Roman Jakobson, who wrote of the deictic shifters in language such as *you* or *there*, which requires that the interpretation of such a word be in "existential relation" to its object. See Roman Jakobson, ed., "Shifters, Verbal Categories, and the Russian Verb," in *Selected Writings, Vol. 2. Word and Language* (The Hague: Mouton, 1971), 130–47.

26   Ehrlich, "Animated Document," 264.

27   Ehrlich, "Animated Document," 264.

28   Ehrlich, "Animated Document," 264.

29   By including both the gestures of the pointing finger and the deictic shifters of *you*, *I*, and *there* as indexical of the deixis, Ehrlich references the interpretation of Geoffrey Nunberg, which situates such gestures as "deictic components" when, as demonstrations, they are "used to resolve the interpretation of an indexical." Nunberg writes: "To say that demonstrations are part of the deictic component of these expressions means that they are associated with the index or demonstratum rather than the referent." See Geoffrey Nunberg, "Indexicality and Deixis," *Linguistics and Philosophy* 16 (1993): 23.

30 Ehrlich, "Animated Document," 268.
31 Ehrlich, "Animated Document," 265.
32 Ehrlich, "Animated Document," 271–72.
33 Ehrlich, "Animated Document," 266–67.
34 Ehrlich, "Animated Document," 268.
35 Ehrlich, "Animated Document," 268.
36 Ehrlich, "Animated Document," 268.
37 Paulsen, *Here/There*, 33.
38 Paulsen, *Here/There*, 19.
39 Alan Cholodenko, "Introduction," in *The Illusion of Life: Essays on Animation*, ed. Alan Cholodenko (Sydney: Power Publications, 1991), 15.
40 Alan Cholodenko, "Introduction," in *The Illusion of Life 2: More Essays on Animation*, ed. Alan Cholodenko (Sydney: Power Publications, 2007), 67–68.
41 Scott Bukatman, "Disobedient Machines: Animation and Autonomy," in *Beyond the Finite: The Sublime in Art and Science*, eds. Roald Hoffmann and Iain Boy Whyte (New York: Oxford University Press, 2011), 128,145.
42 Bukatman, "Disobedient Machines,"133.
43 Bukatman, "Disobedient Machines,"129.
44 Bukatman, "Disobedient Machines,"144.
45 Bukatman, "Disobedient Machines,"146. Emphasis in original.
46 Nicholas Royle, *The Uncanny* (Manchester, UK: Manchester University Press, 2003), 2.
47 On fundamental concepts of the uncanny, see Ernst Jentsch, "On the Psychology of the Uncanny (1906)," trans. Roy Sellars, in *Uncanny Modernity: Cultural Theories, Modern Anxieties*, eds. Jo Collins and John Jervis (London: Palgrave Macmillan, 2008); *Sigmund Freud, The Uncanny* (London: Penguin Books, 2003); Masahiro Mori, "The Uncanny Valley," in *The Monster Theory Reader*, ed. Jeffrey Andrew Weinstock (Minneapolis: University of Minnesota, 2020), 89–94.

48 Claudia Schmuckli, "Automatic Writing and Statistical Montage," in *Beyond the Uncanny Valley: Being Human in the Age of AI*, ed. Claudia Schmuckli (San Francisco: Fine Arts Museums of San Francisco, 2020), 10. Cheng's *BOB (Bag of Beliefs)* was included in this exhibition.
49 Schmuckli, "Automatic Writing," 15.
50 See John Danaher, "Toward an Ethics of AI Assistants: an Initial Framework," *Philosophy and Technology* 31 (2018): 629–53.
51 The BOB Shrine App is free to download and one need not be in proximity to the artwork to interact with BOB and receive communications and updates from BOB. To download, visit https://bobs.ai.
52 Gladstone Gallery, "Ian Cheng: BOB." Emphasis added.
53 Gilles Deleuze, "Postscript on the Societies of Control," *October* 59 (1992): 5–6.
54 Deleuze, "Postscript," 5–6. Emphasis in original.
55 Arto Laitinen and Otto Sahlgren write: "In principle, autonomy is a relevant adverb ('autonomously') for the full range of human thought and action. Objects of self-rule include beliefs, deliberative processes, and other governing principles of action, such as values and desires, as well as particular actions, such as choosing among alternatives or consenting to the interference or guidance by others. Accordingly, autonomy covers cognitive and practical aspects." Arto Laitinen and Otto Sahlgren, "AI and Respect for Autonomy," *Frontiers in Artificial Intelligence* 4 (2021): 3.
56 Ian Cheng, "Minimum Viable Sentience: What I Learned from Upsetting BOB," 2020, http://iancheng.com/minimumviablesentience.
57 Zafiris, "A Coefficient of Luck."
58 OpenAI. (2024). ChatGPT (June 29 version) https://chat.openai.com/chat

BIBLIOGRAPHY

Armstrong, Annie. "'There's Something Maniacal About Basic Desires': Ian Cheng on His Gladstone Gallery Show, Artificial Intelligence, and His Fear of Snakes." ArtNews. February 4, 2019, https://www.artnews.com/art-news/artists/ian-cheng-gladstone-bob-artificial-intelligence-11825.

Attridge, Derek. "Pararealism in 'Circe.'" European Joyce Studies 22 (2013): 119–25. https://www.jstor.org/stable/44871352.

Bryant, Antony, and Griselda Pollock, eds. *Digital and Other Virtualities: Renegotiating the Image*. London: I. B. Tauris & Company, 2010.

Buchan, Suzanne, ed. *Pervasive Animation.* New York, Abingdon: Routledge, 2013.

Buchan, Suzanne. "Pervasive, Disruptive and Useful Animation." In *Art in the 21st Century: Reflections and Provocations*, edited by Siegfried Zielinski and Charles Merewether, 112–24. Hong Kong: Osage, 2020.

Bukatman, Scott. "Disobedient Machines: Animation and Autonomy." In *Beyond the Finite: The Sublime in Art and Science*, edited by Roald Hoffmann and Iain Boy Whyte, 128–41. New York: Oxford University Press, 2011.

Cholodenko, Alan. "Introduction." In *The Illusion of Life: Essays on Animation*, edited by Alan Cholodenko, 9–36. Sydney: Power Publications, 1991.

Cholodenko, Alan. "Introduction." In *The Illusion of Life 2: More Essays on Animation*, edited by Alan Cholodenko, 13–95. Sydney: Power Publications, 2007.

Danaher, John. "Toward an Ethics of AI Assistants: an Initial Framework." Philosophy and Technology 31 (2018): 629–53. https://doi.org/10.1007/s13347-018-0317-3.

Deleuze, Gilles. "Postscript on the Societies of Control." October 59 (1992): 3–7. http://www.jstor.org/stable/778828.

Ehrlich, Nea. "The Animated Document: Animation's Dual Indexicality in Mixed Realities." Animation 15, no. 3 (2020): 260–75. https://doi.org/10.1177/1746847720974971.

Evens, Aden. "Digital Ontology and Example." In The Force of the Virtual: Deleuze, Science, and Philosophy, edited by Peter Gaffney, NED-New edition, 147–68. Minneapolis: University of Minnesota Press, 2010. http://www.jstor.org/stable/10.5749/j.ctttkxf.10.

Evans, Aden. *Logic of the Digital.* London: Bloomsbury, 2015.

Evers, Elodie, and Irina Raskin, ed. *Ian Cheng: Live Simulations.* Düsseldorf: Kunsthalle Düsseldorf, 2015.

Freud, Sigmund. *The Uncanny.* London: Penguin Books, 2003.

Gladstone Gallery. "Ian Cheng: BOB." Press Release, 2019. https://www.gladstonegallery.com/exhibition/317/bob/info.

Gygax, Raphael, ed. *Ian Cheng: Forking at Perfection.* Zurich: Migros Museum für Geganwartskunst, 2016.

Jakobson, Roman, ed. "Shifters, Verbal Categories, and the Russian Verb." In *Selected Writings*. Vol. 2, *Word and Language*, 130–47. The Hague: Mouton, 1971.

Jentsch, Ernst. "On the Psychology of the Uncanny. (1906)." Translated by Roy Sellars. In *Uncanny Modernity: Cultural Theories, Modern Anxieties*, edited by Jo Collins and John Jervis, 216–28. London: Palgrave Macmillan, 2008.

Laitinen, Arto, and Otto Sahlgren. "AI and Respect for Autonomy." Frontiers in Artificial Intelligence 4 (2021): 1–14.. https://doi.org/10.3389/frai.2021.705164.

Leslie, Esther, and Joel McKim. "Life Remade: Critical Animation in the Digital Age." Animation 12, no. 3 (2017): 207–13. https://doi-org.elib.uah.edu/10.1177/1746847711774084.

Merrel, Floyd. *Pararealities: The Nature of Our Fictions and How We Know Them.* Philadelphia: John Benjamins Publishing Company, 1983.

Mori, Masahiro. "The Uncanny Valley." In The Monster Theory Reader, edited by Jeffrey Andrew Weinstock, 89–94. Minneapolis: University of Minnesota, 2020. https://doi.org/10.5749/j.ctvtv937f.7.

Nunberg, Geoffrey. "Indexicality and Deixis." Linguistics and Philosophy 16 (1993): 1–43. http://doi.org/10.1007/BF00984721.

Paul, Christiane. "The Myth of Immateriality—Presenting and Preserving New Media." In *MediaArtHistories*, edited by Oliver Grau, 251–74. Cambridge, MA: MIT Press, 2007.

Paul, Christiane. "Digital Art Now: Histories of (Im) Materialities." International Journal for Digital Art History 5 (2020). https://doi.org/10.11588/dah.2020.5.75504.

Paulsen, Kris. *Here/There: Telepresence, Touch, and Art at the Interface.* Cambridge, MA: MIT Press, 2017.

Pierson, Ryan. "Drawing on the Margins: Animation in Film and Media." Journal of Cinema and Media Studies 61, no. 1 (2021):142–46. https://doi.org/10.1353/cj.2021.0072.

Royle, Nicholas. *The Uncanny.* Manchester: Manchester University Press, 2003.

Schmuckli, Claudia. "Automatic Writing and Statistical Montage." In *Beyond the Uncanny Valley: Being Human in the Age of AI*, edited by Claudia Schmuckli, 8–15. San Francisco: Fine Arts Museums of San Francisco, 2020.

Zafiris, Alex. "A Coefficient of Luck: Ian Cheng in Conversation with Alex Zafiris." Maquette 3 (2022). https://yalemaquette.com/Q-A-Ian-Cheng.

LAURA LAKE SMITH is Assistant professor of Modern and Contemporary Art at the University of Alabama in Huntsville. Her research considers a wide range of topics including nineteenth-century photography, twentiteth-century abstraction, and contemporary video and installation art. Her publications include articles on artists such as Richard Tuttle and Tracey Emin and reflect her focus on the intersections of art and philosophy and the broader implications of art.

Correspondence email: laura.l.smith@uah.edu