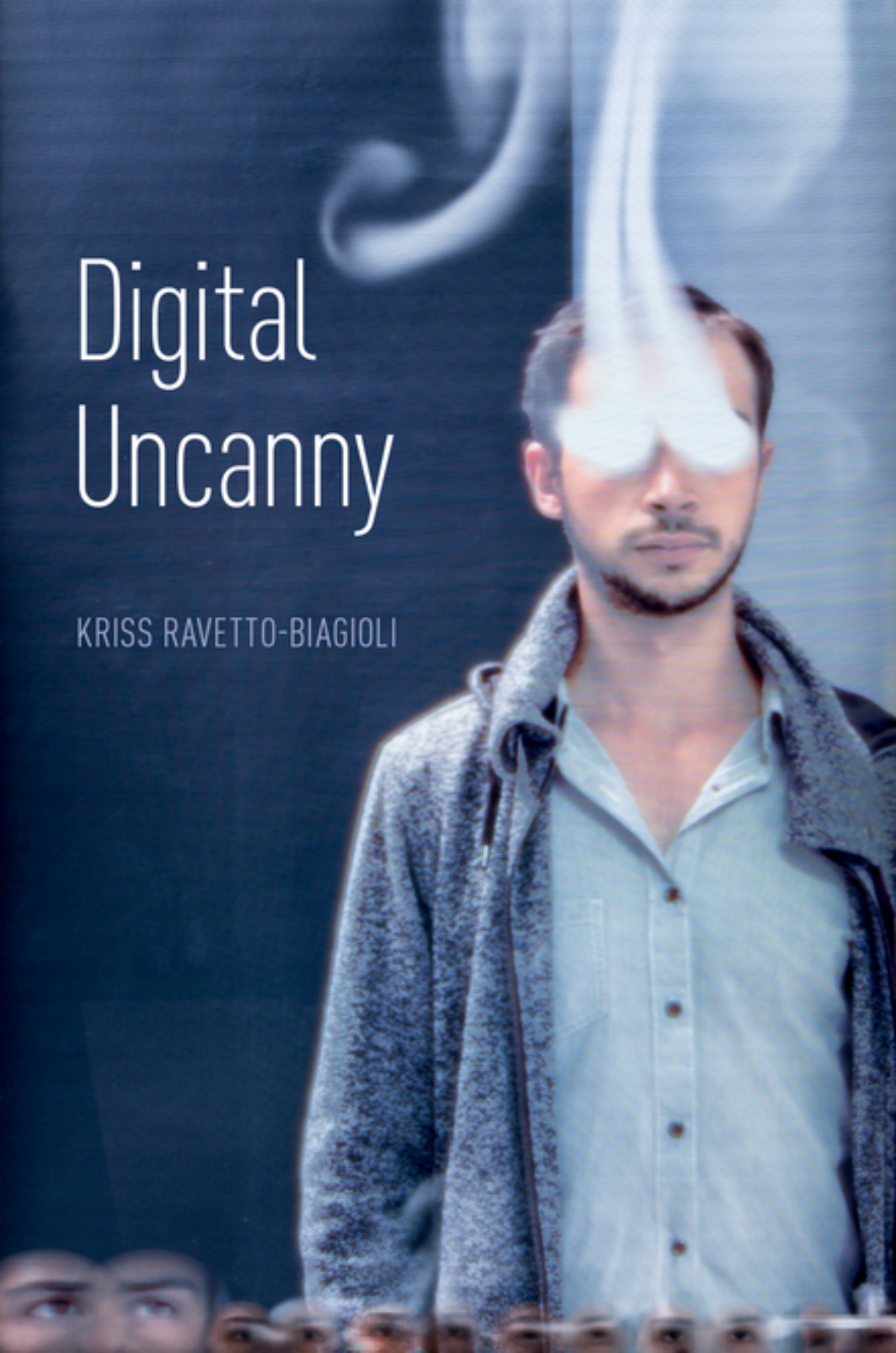
Digital Uncanny

KRISS RAVETTO-BIAGIOLI



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It is as if the uncanny evades every attempt by Freud to bind it to a general characteristic from which it cannot be separated. Freud therefore shifts his focus or, rather, expands it to include not just individual motifs or themes, but the *context in which they emerge* and consequently in which they have hitherto been concealed.

—Samuel Weber, *Theatricality as Medium*

To historicize is less about present-past and more about intellectual and political energies including rhetoric, shifted to futurity, to ensure that the future has a future. . . . Chronology does not hold if the future comes first and last, and now.

—Sande Cohen, *History Out of Joint*

For Sam Weber and Sande Cohen

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Introduction

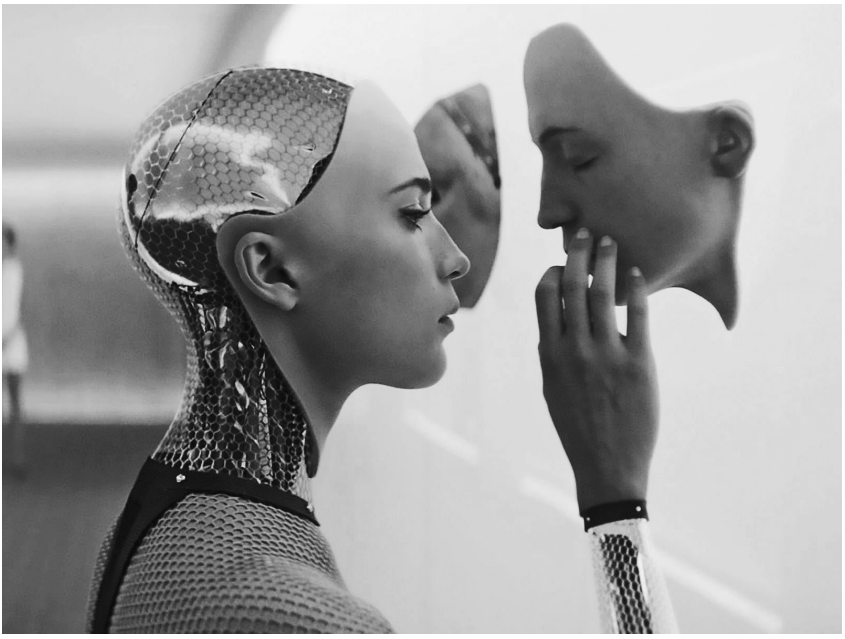

Figure I.1 Frame grab (fair use) from *Ex Machina*. Dir. Alex Garland. Universal Pictures, 2014. Ava examines a replica or the prototype of her face.

In the recent film *Ex Machina* (dir. Alex Garland, 2014), Nathan, the genius entrepreneur-programmer, creates a female humanoid robot named Ava (figure I.1). He then brings in Caleb, his company's sensitive and intelligent employee, to conduct a Turing test to determine whether or not the robot exhibits artificial intelligence. Caleb sets out to determine whether Ava has consciousness, but rather predictably he falls in love with it instead. There is,

however, a twist in this narrative: unlike the actual Turing test designed to see if a machine can exhibit intelligent behavior equivalent to or indistinguishable from that of a human being, Caleb knows it is a robot prior to initiating the test. Ava appears as a super-stylized, technologically advanced robot, but still little more than a composite version of a long history of male fantasies about women created to satisfy men's every desire (or to seduce other men): ranging from E. T. A. Hoffmann's dancing dolls to Auguste Villiers's *L'Ève future*, the machine vamp of Fritz Lang's *Metropolis*, the Stepford wives, the replicants of the original *Blade Runner* (dir. Ridley Scott, 1982), the android hosts of *Westworld* (creators, Jonathan Nolan and Lisa Joy, TV-series 2016–), and the erotic cyborgs of Steampunk.[1] Like its predecessors, Ava demonstrates intelligence and a capacity for self-awareness, feeling, and, most importantly, an ability to exude "feminine" seductive appeal.

But unlike its precursors or the object of the original Turing test (where human testers tried to assess the gender of the entity they were virtually interacting with), Ava was not built to trick those interacting with it into believing that it is human or even superhuman. Instead, it clearly looks like a robot—made of carbon fiber, metal, plastic, batteries, and structured gel—its explicit cyborg look appearing like haute couture, Gaultier-style. Caleb is more attracted to Ava in its fashionable robot form than when it tries to play the part of a woman—by donning a wig, putting on stockings, a somewhat frumpy dress, and a sweater. Counter-intuitively, no sense of the uncanny is produced when Ava looks like a robot. For Caleb, the uncanny appears only when he sees it performing as a woman, when it assumes human features like hair, clothing, and shape. It is in this quasi-human form that it confronts him by asking if he is attracted to it. It is this gap between being a robot and appearing too lifelike that Masahiro Mori calls the "uncanny valley." Ava's imitation of human attributes and behaviors points to the traditional uncanny that Sigmund Freud described as an affective experience of the uncontrollable responses of our own internal drives. These unrestrained psychic energies set off a series of mechanisms starting with the return of repressed desires for mother figures that are tangled up with fears of death and castration anxieties. Ava was indeed designed to seduce Caleb, who was selected by Nathan from a large database of candidates. Nathan is the CEO of Bluebook—an obvious reference to Google, since Bluebook is described as "the world's most popular search engine." It is through Bluebook's output of large-scale Internet search inquiries that Caleb is identified as a prime candidate for seduction; a good and ethical person who is alone, having neither a girlfriend nor family. This compilation of Caleb's search results also serves as input in Ava's design process: for example, its face is made to match Caleb's online pornography profile preferences. In fact, its appearance and interests are an aggregate of Caleb's online selections. Like Garry Kasparov, who in

1997 lost to the IBM computer (Deep Blue) that had access to a database with the history of all his chess moves, Caleb's fantasies about women are used to seduce and vanquish him. Peter Galison points out that prediction works rather poorly for one person's behavior based on another's data, but any one person's data proves that they are often self-consistent. Galison, who analyzed Norbert Wiener's World War II data on pilot behavior to create a program capable of predicting enemy pilot maneuvers, suggests "that a more refined predictor would use a pilot's own characteristic flight patterns to calculate his particular future moves and to kill him."[2] That is, prediction works when it can be "personalized."

While Caleb's search profile may assess his suitability "to test" Ava or to be tested by his attraction to it, it cannot reduce the uncanny to a return of repressed desires, fears, and anxieties. The profile that the search engine reconstructed from the traces Caleb left scattered throughout the Internet does not amount to his unconscious—it is a vast assemblage of surfaces that cannot be construed as depth. Also, while the uncanny is traditionally tied to uncertainty, what appears as uncanny in this film is the predictability of Caleb's reaction to Ava. The image of Ava as a humanoid does not evoke uncanny feelings. Instead, Ava is a distraction that averts our attention from what is really uncanny about the film. In the middle of *Ex Machina*, Nathan explains to Caleb how he made his breakthrough in creating the artificial intelligence that Caleb has come to know as Ava: in order for it to make human-like facial expressions and recognize these expressions in others, Nathan had to hack all the world's cell phones and Internet searches, capturing and analyzing the gestures and expressions formed in billions of interactions. Nathan's breakthrough tracks the real-life history of artificial intelligence (AI). After a long initial phase in which AI aimed at producing disembodied, discrete machines that were meant to be intelligent by design (electronic instantiations of the logos), it then reconceptualized its aims by producing embodied machines (like Rodney Brooks's "fast, cheap, and out of control" robots) that did not start out as intelligent but became smart by moving around (thanks to their bodies) and by learning from their interaction with the environment.[3] It was more their haphazard-behaving bodies than their logic-encoded minds that created the possibility of their intelligence. Next, Brooks's fast and out of control robots (growing intelligence by moving about and interacting quickly and randomly with their environment) were superseded by search engines that are neither cheap nor out of control but simply gather and organize in large databases the traces of millions of interactions as people "move" on the Internet. In the age of big data, intelligence is developed parasitically not by those who move around, act, and decide but by digital technologies that trace the traces of those actions.

The film cleverly demonstrates that the uncanny no longer emerges from our inability to tell what is a machine from what is human—as the Turing test was designed to do—but from the fact that it is no longer possible to make such distinctions. Artificial intelligence is better at reading humans than humans are at reading machines. Ava, for example, can tell when Caleb is lying by reading his micro-expressions, but Caleb cannot read Ava in the same way. Given that it has access to an archive of millions of human expressions (including Caleb's), which have been analyzed and correlated to whether they are true or false, Ava has an advantage over Caleb, who can compare the expressions on its face only to his much smaller personal database of liars and truth-tellers. Caleb's interactions with Ava lead him to question not its humanity but his own. Like Deckard, who at the end of *Blade Runner* realizes that he, too, is a replicant, Caleb becomes uncertain whether he is in fact human, cutting himself to prove that he can still bleed. Still, what he cannot prove is that his responses, interactions, and attraction to Ava were not somehow preset. Once he realizes he was selected to be more of a fall-guy in a typical noir film than a human tester in the Turing test, he asks Nathan, "What was the real test?" To which Nathan promptly answers, "You." So, while Caleb may remain the human tester in a Turing test, all his actions prove is that human will and desire can in fact be predicted, programmed, and controlled. In the age of big data, the Turing test can be gamed by "matching" the tester and the tested based on the tester's preferences, a technique used by Amazon. Using these techniques, the test still involves a human tester, but the response of that tester does not so much reflect on the qualities of the tested as on the quality of the matching of tester and tested, purchaser and product. And that match is not made by a human being but by a machinic entity, like the fictional Bluebook, the cloud-computing software used to program Ava. The terms have switched: the machine is a machine, but the human relates to it as if it were human because it is "personalized"—not in the sense of being turned into a person but rather matched to the personal preferences of the would-be user. The test is now about the quality of the relation—the match—between the two entities, not about the quality—the intelligence—of the second entity (whether human or AI).

In *Digital Uncanny*, I explore how digital technologies, particularly software systems working through massive amounts of data, are transforming the meaning of the uncanny that Freud tied to a return of repressed memories, desires, and experiences to their anticipation. The digital uncanny does not erase the uncanny feeling we develop when confronted with robots that are too lifelike or when we experience déjà vu. What it does do, however, is add another dimension to them, questioning whether

these responses are subjective or automated—automated by reducing one's subjectivity to data patterns and using them to design objects that would thereby elicit one's genuinely subjective (but effectively preset) response. While Caleb's feelings may not come "from" him, they are nevertheless completely, specifically, and genuinely based on him. With all their processing and profiling power and storage and retrieval capacities, digital technologies threaten to supplant the notion of change and emergence with prediction and control, while at the same time creating the appearance of "natural" emergence, not control. We are now confronted with a new type of uncanny experience, an uncanny evoked by parallel processing, aggregate data, and cloud computing. The digital uncanny does not refer to human anxieties projected onto nonhuman devices (automata, dolls, avatars, body doubles) but rather to how nonhuman devices (surveillance technologies, algorithms, feedback, and data flows) anticipate human gestures, emotions, actions, and interactions, thus intimating that we are machines and that our behavior may be predictable precisely because we are machinic. In fact, this anticipation is a feedback loop that we humans have created by designing software that can study our traces, inputs, and moves. Our collected data reveal us to be a series of patterns and selections, exposing us to new modes of surveillance, dataveillance, and marketing, rather than causing us to reflect on our place in the world. One could say, then, that the digital uncanny is a trick we play on ourselves. Even so, it is a trick we would not be able to play had we not developed sophisticated digital technologies.

Since the days of Freud (and Ernst Jentsch before him), the uncanny has gone through many permutations. It has been applied to robotics, film, photography, the experience of architectural spaces, the Internet, various digital technologies, and, most recently, computational media. To understand how computational media generate their own uncanny experiences, many media theorists have re-appropriated psychoanalytic concepts without realizing that computational media directly challenges them. Psychoanalytic thinking grounds the uncanny on castration truth and, thus, in the discourse of the subject, but in doing so it typically overlooks the role that technology and mediation play in the production of uncanny effects. "The impression of automatic, mechanical processes at work behind . . . ordinary mental activity" are interpreted by Freud as "manifestations of insanity."[4] Similarly, Lacan sees them as a sign of psychosis caused by the annihilation of subjectivity. But reducing all varieties of machinic, automatic, and self-organizing behavior to the category of insanity and paranoia would foreclose the possibility of a more productive reading of our relation to technology, one based on the appreciation of the specificities of different

technologies and their effects. The uncanny of film is not the same as the uncanny of the digital.

For instance, in the age of Edward Snowden and Julian Assange, and Christopher Wylie, one is unlikely to be diagnosed as psychotic for believing that one's every move has been watched, recorded, analyzed, and possibly predicted. The awareness of ubiquitous surveillance modifies our behavior, our speech, and possibly even our willingness to be politically active. Ubiquitous surveillance and mass data collection have a chilling effect not just on dissident organizing and activism but also on mundane speech acts, searches, and modes of expression. While surveillance by law enforcement and governing bodies can lead to self-censorship, in the hands of corporations like Facebook, Amazon, and Google it functions to profile our selections and, in turn, entice new forms of consumption. We need only to consider how predictive analytics, predictive marketing, body-language analysis, and neuromarketing operate to know that there are automatic processes at work behind our selections and possibly "our" desires. Like Caleb, we leave traces of our interests, purchases, conversations, and personal feedback online, and we can assume that we have left enough data to profile our income, age, marital status, sexual preference, political outlook, level of education, where we live, and where we have been. Uncannily, this information identifies us in minute detail and feeds us back to ourselves as algorithmically generated narratives and images (along the lines of Facebook's Timeline[5] or David Stillwell and Mikhal Kosinski's psychometric personality-profiling app, "mypersonality," which is also hosted on Facebook), making our personality profiles available to corporations, data analysts, programmers, or stalkers. Individuals willingly participate in their own psychological profiling by posting, sharing, and responding to such apps. For example, 40 percent of the respondents who used mypersonality offered to share their Facebook profile. Using the same software, the political consultancy and data analytics firm, Cambridge Analytica, rebranded the mypersonality app as "thisisyourdigitallife," harvesting information from more than 87 million users without their permission. Cambridge Analytica then boasted that it helped the Trump presidential campaign pull off a narrow victory in key swing states by using data it acquired from Facebook. With the data they microtargeted voters who were categorized as disgruntled, and subsequently, sent personalized messages to persuade them to vote or not to vote. Individuals who took the online personality test thisisyourdigitallife, would not have been aware that "sharing" their profile also meant opening the door to psychologically profiling their friends and acquaintances, as well as the exploitation of all of their user history. Ironically, we willingly offer all manner of personal information to social media and search engines similar to the fictive

Bluebook, but we are then concerned when figures like Nathan have access to that information.

In psychoanalytic theory, the uncertainty of the uncanny is interpreted as expressing a terrible certainty—what Lacan calls the irruption of the real.[6] Yet for Lacan, our confrontation with the real is contingent on our failure as subjects—the realization that identity is always fragmentary and virtual—and this reality is always subsumed by the phallus. The phallus is a symbolic marker of value, but it is also always an absent something that binds the symbolic to the imaginary and the real and provides us with subjectivity. It is the image of the phallus that does not haunt as much as it prejudices psychoanalytic thinking about the uncanny. The phallus (symbolic castration, the law, lack) may stabilize the discourse of the uncanny by providing it with an anchoring point that allows us to make an indefinite number of analogies. But the automation of analogies of all of our anxieties and traumatic experiences to the imaginary phallus, castration, or a determining negativity "leaves both the basic cause of repression obscure, as well as the specific mechanism by which repression produces anxiety."[7]

However, technological media questions phallocentric models of thought. As Bernard Stiegler suggests, humans are co-constituted with technology—anthropogenesis is contingent on technogenesis—and thus our skills, modes of relating, and creating meaning change with the technologies we develop. With the introduction of modern media, Friedrich Kittler argues that "the fictional elevated phallus shrivels up,"[8] and the uncanny becomes unhinged from the subject.[9] Prior to that, it was possible to sense an uncanny presence of the author/subject in the text—"as long as the book was responsible for all serial data flows, words quivered with sensuality and memory"—but all that changed when memories and dreams could be recorded, when the dead and their ghosts became technically reproducible and repeatable.[10] And repetition is not simply a doubling or a return of repressed traumas and anxieties; it means "[m]achines take over functions of the central nervous system."[11] Ghostly images and sounds return out of joint, thus showing that repetition is, in fact, transgression.[12] They are neither inscribed in the context of their capture nor are they beholden to any represented foundation. Like the uncanny, they are unstable, capable of an infinite possibility of returns, assemblages, and re-assemblages; they cannot be said to have any inherit meaning. The gramophone, telephone, film, and typewriter generate their own specters—disembodied voices that linger in space, turning the receiver and recorder into ghostly devices. By reanimating shapes, film turns the uncanny into entertainment: "The age of media renders indistinguishable what is human and what is machine, who is insane and who is faking it."[13] With digital media, memory becomes tertiary (that is, nonlived), the real cannot be clearly distinguished from

simulation, and the human returns as an aggregate of images, events, texts, and locations. What is "human" is collected, sorted, stored, mined, and transformed into a profile or a data double that confronts us with devastating accuracy.

The uncanny is bound up with subjective emotions like dread, terror, uneasiness, and anticipation. It is an affect often triggered by and understood as an aesthetic experience, though one that points to unrestrained psychic energy and to an uncertain subjectivity and inability to judge. The uncanny, though, is an affect that cannot be understood as an emotion the way that affects usually can. It remains intangible—an aesthetic experience that is not fully empirically describable. Symmetrically, the digital uncanny is not a stable concept either. The uncanny can only be accessed aesthetically, through the senses. There are, however, crucial differences between producing digital uncanny effects through digital art and producing a narrative about the digital uncanny through a film like *Ex Machina*. While film is immersive, it is not interactive and therefore cannot directly address the spectator nor install her in a feedback loop. Even the most nonnarrative cinema is experienced sequentially—one image is added or juxtaposed to another image or sound. Cinema constructs time and space through montage and addresses its spectators through the registers of perception (we see as the camera sees), recognition (we recognize situations and events), and identification (we identify characters and identify with their situation). With installation and interactive digital art, however, the spectator is not always interpellated—called on or addressed as a subject—but remains within the sensory, within the aesthetic element. Unlike *Ex Machina*, contemporary interactive artwork does not simply point to the digital uncanny by using human actors to play the part of robots. Rather, it elicits the sensation of being beside ourselves by exploring our relation to digital technologies.

While a discussion of *Ex Machina* has allowed me to illustrate the concept of the digital uncanny, this book focuses mostly on the artwork of Rafael Lozano-Hemmer, Bill Viola, Simon Biggs, Sue Hawksley, and Garth Paine that, unlike film, is interactive but not always immersive. Because this type of work does not provide us with an anchoring point from which we can understand ourselves in relation to the work itself, it allows us to undergo new kinds of uncanny experiences. I analyze these contemporary artists who work with interactive media, surveillance technologies, motion capture, and data-visualization techniques to make us aware of how digital technologies question the status of the human. Where does embodiment take place if it inhabits so many screening devices that present it as virtual and untimely? How have information and communication technologies blurred the line between the human and the technologies that mediate what it means to be human? And what is the role of affect

when emotions can be predicted, simulated, and controlled? Rather than just remediating (doubling and redoubling uncertainties already present in earlier technologies), the digital uncanny asks us to examine how screening, tracking, and data-capturing technologies have reconfigured our various experiences (e.g., social engagement, political activism, knowledge production, tuning in, participation, etc.), and with it our understanding of subjectivity, embodiment, and experience.

The interactive and experimental art works of Lozano-Hemmer, Viola, Biggs, Hawksley, and Paine demonstrate how interactive and computational media have changed the way we experience the uncanny. Their interactive installations elicit uncanny visceral effects, at the same time they challenge us to think about how communication technologies often double as surveillance technologies, confusing the role of a user-activated display with that of an automated tracking and profiling system. Works such as Lozano-Hemmer's *Surface Tension* (1992), *Under Scan* (2005), *External Interior* (2015), and *Zoom Pavilion* (2017); Viola's *Silent Mountain* (2000), *Quintet of the Astonished* (2000), and *Ocean Without a Shore* (2005); and Biggs, Hawksley, and Paine's *Bodytext* (2010) and *Crosstalk* (2012) produce a sense of indeterminacy, and in the process rework the uncanny as a concept. These works are not concerned with whether the user or spectator can or cannot determine if something is animate or inanimate. Rather, they confront users and spectators with the problem of determining whether their responses or images are their own or just as programmed as those of the machines they interact with. By analyzing these artists and their artworks, I would like to show how they help us rethink the uncanny.

Technology is central to the debate over what constitutes the "uncanny" (*das Unheimliche*). Freud opens his classical text on the subject by questioning Jentsch's claim that the uncanny emerges when a "doubt as to whether an apparently living being really is animate and, conversely, doubt as to whether a lifeless object may not in fact be animate."[14] Jentsch was referring to the character of Olympia in E. T. A. Hoffmann's "Der Sandmann"—a lifelike automaton that confounds the protagonist (Nathanael), who falls in love with it. In an attempt to overturn Jentsch's view that humans automatically take automata to be human when they see them behaving like humans, Freud develops a different reading of the short story, focusing not on Olympia but on the "theme of the Sand-Man who tears out children's eyes."[15] This allows him to connect the uncanny to what he sees as more "organic" processes of repression, and thus to castration anxiety, rather than to Jentsch's machinic responses to machines.[16] To Freud, the uncanny is not a direct neurological reaction to mechanical devices but a psychologically mediated form of automaticity that is realized as an aesthetic or affective experience—déjà vu, the appearance of

doppelgänger, delusions of grandeur, paranoid behaviors, and so forth. The uncanny is driven by the compulsion to repeat, but while automatic, that compulsion is more than a simple reaction to technology. The uncanny is an automatic but also intentional and embodied (though symptomatic) response to "something which ought to have remained hidden but has come to light."[17]

This debate has been revisited and re-enacted numerous times throughout the twentieth and early twenty-first centuries—from Mori's study of our responses to dolls and robots that are too lifelike to the discourse of remediation that traces the effects of bringing back to life or capturing the image of death on film, in a photograph, on a phonograph, or on other recording media that can be replayed (or reanimated).[18] Something has changed, however, with the rise of digital communication and transmission, distributed networks, smart devices, Brooks's learning machines, and immersive 3D environments. These developments have triggered a new wave of interest in the uncanny, but they have also elicited a profound transformation of that concept away from both Freud's and Jentsch's formulations. The digital uncanny builds on the uncanny's relation to uncertainty, automation, and repetition, but it does not take a different form of emotional intensity or embodied perception than that described by both Freud and Jentsch. Rather than hinging on an individual's internalization of affect or emotional states of intensity, the digital uncanny exemplifies an irresolvable uncertainty as to whether those very affects and intensities amount to preset responses or programmed gestures triggered by media stimulation. That is to say, it is not about Nathanael mistaking Olympia for a woman—a mistake that is necessarily rooted in the assumption that there is a distinction between humans and automata—as much as about ungrounding our assumptions about Nathanael's humanness and Olympia's automaticity. In *Ex Machina*, Caleb clearly realizes that the line dividing the human and the automatic is irremediably blurred when he asks Nathan if he has programmed Ava to flirt with him, implying that his response to what he perceives as her flirting might be just as preprogrammed as her seductive behavior.

Sophisticated technologies that can detect, trace, and map out otherwise imperceptible expressions or patterns of behavior cannot single-handedly account for the conceptual shift between the analogue and the digital. Such distinctions change the feedback derived from human-machine interchange. Lydia Liu argues that this shift is best articulated as the difference between the robot and the automaton: whereas "a robot is digital and is based upon the idea of communication networks of finite-state machines. An automaton is widely understood to rely on mechanical principles of clockwork and is usually limited to one special skill."[19] In other

words, the automaton performs one set task, while the robot uses information gathered by feedback to become adaptable. But the uncanny experience produced by machines designed for a specific function cannot be so easily distinguished from the digital uncanny, which is derived from networks that provide a conduit through which we communicate and understand ourselves. Even though, as McKenzie Wark points out, "the digital rules a line between analog and digital, making a slippery difference into a clear distinction," the digital can only be perceived by humans through the senses, that is, from the perspective of the analog.[20] As Brian Massumi puts it, "There is always an excess of the analog over the digital."[21] Feedback is, therefore, inherently noisy, distorted, and uncanny. For example, while Hoffmann's Olympia only responds to Nathanael's entreaties with an ambiguous and mechanical "Oooo" (which he reads as exaltation), Ava reads Caleb's micro-expressions to detect if he is lying, ethical, or attracted to her, so it can manipulate his responses. Rather than testing her humanness, it is his humanity that is put to test. However, both Olympia and Ava become a strange sort of mirror: Olympia offers Nathanael self-affirmation, while Ava forces Caleb to confront his own personal (human) inadequacies. Yet, it is only as a mirror to their male counterparts that Olympia and Ava are brought "to life." Here the uncanny bleeds into sexual relations, challenges the most basic assumptions about why sexual reproduction takes place, and questions if sexual reproduction (as life itself) can be controlled, engineered, or gamed.

The figure of the "Mechanical Turk" that Hoffmann describes in his short story "Automata" (1819) already has a "mysterious and unexplained human influence which seemed to endow the figure with life, or the wonderful insight into the individuality of the questioner, or the remarkable talent of the answers . . . [It] can scarcely be said to counterfeit humanity so much as to travesty it."[22] This mechanical figure is simultaneously a "mere image of living death or inanimate life" and also "endowed with [a] life" that is "a hostile foreign influence at work upon [the] whole [of] existence." Yet, the original Mechanical Turk, designed by Wolfgang von Kempelen in 1770, was created for the sole purpose of playing chess, indicating that its uncanny effect on those who engaged with it came not from its role as a chess player but from its relation to its opponents. However, both the chess-playing Mechanical Turk and Ava (who plays a game of chess with her creator Nathan using Caleb as their human pawn) are operated by humans: humans inside machines—as in the case of Kempelen's Mechanical Turk, where a chess master hid inside and operated the machine; and humans as machines—as in the case of Ava, who is played by the real-life actress Alicia Vikander. Or lastly, Amazon's reincarnation of the Mechanical Turk as a software program that uses an algorithm to