Edited by Kris Cohen and Scott C. Richmond

IN FOCUS

New Histories of Computational Personhood

Kris Cohen and Scott C. Richmond

New Histories of Computational Personhood: An Introduction

In the 1960s, a chatbot simulates paranoia. Some twenty years later, a group of women computer scientists document the misogyny that saturates their professional lives, using bureaucracy's own tools to try to force institutional change. In the 1950s, a programmer teaches a computer to write little queer love letters. In Silicon Valley—long before it earned that name—a wealthy eccentric who earned her fortune selling rifles holds séances while inventing the speculative, neo-colonial real estate tactics that would eventually become the Valley's distinctive milieu. And, in the middle of one of the most famous demos in the history of computers, an engineer and his screen are both ready for their close-up.

The histories we have convened in this dossier all find ways of narrating the history of computing that displace the familiar story of computing as one of white male audacity. The litany of "pioneers" is familiar: Charles Babbage, Alan Turing, Vannevar Bush, J. C. R. Licklider, Douglas Engelbart, Alan Kay, Steve Jobs—and, of course, the familiar billionaire trio now committed to leaving the Earth behind: Elon Musk (space!), Jeff Bezos (space!!), and Mark Zuckerberg (the metaverse?!). In part, this story is familiar because it is ongoing; those people have and do wield world-shaping power. Also ongoing are attempts to temper that power through the work of counterexample about how, for instance, black and brown and queer and trans people have long been involved in computing.[1] All of these important counternarratives teach

1 Two of the authors in this dossier have written important historiographies in this

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(and re-teach) us that computing has never just been an arena for white men to act authoritatively. But in ways that are worrying and themselves familiar, these two ongoing histories need each other: white male audacity turns out to need its counterexamples in order to game the politics of diversity and inclusion. The representational politics of the counterexample needs white male audacity until the moment that audacity has been definitively displaced or destroyed. And none of us are holding our breath.

In order to move outside the gravity created when example and counterexample, narrative and counternarrative orbit each other, the essays in this dossier experiment with historiographical method. Refusing to presume what computing is, might be, or might have been, each essay lets its historical objects both loosen and proliferate in order to tell different stories of how we got to where we are. All are in search of new kinds of relevance, beyond biography, devices invented, and units sold.

One way to hold these experiments together is to say that they all address not media or computers, but *computational personhood*. If personhood itself has a history, what role have computers and computation played in this history? In what ways has computation itself tried to mimic prior historical modes of personhood, and to what extent has it sought to intervene in those histories? We've invited the authors in this dossier to help us develop and elaborate our sense of what computational personhood is and what questions it can generate for media studies and the history of computing.

Computational personhood gives a provisional name to the ways in which computation—not only our computational technologies but also the economic, ordinary, practical, and aesthetic impacts of computing—elaborates forms of life, modes of experience, and structures of subjectivity. It also names how, in a tweak to the temporality of representational politics, all persons are made, eventually, to be intimately compatible with computing. Computational personhood is not, therefore, a fixed structure so much as a labile infrastructure, a crucible of experimentation. Far from an elite club, it is an open invitation. This is why Christine Goding-Doty refers to race and racialization as an event more than an identity.[2] Structures of domination, of course, endure, and often they wield the power of exclusion and inclusion. But to the extent that lives are now lived in relation to always-on networked computation, computational personhood has developed a complex repertoire of power and subjectivization around the dynamic of inclusion. In the face of an industry that has invented unthinkably ambitious forms of dom-

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mode. See Jacob Gaboury, "A Queer History of Computing," *Rhizome*, February 19, 2013, https://rhizome.org/editorial/2013/feb/19/queer-computing-1/; and Joy Lisi Rankin, *A People's History of Computing in the United States* (Cambridge, MA: Harvard University Press, 2018). See also (among many others) Jennifer S. Light, "When Computers Were Women," *Technology and Culture* 40, no. 3 (July 1999): 455–483; Nathan L. Ensmenger, *The Computer Boys Take Over: Computers, Programmers, and the Politics of Technical Expertise* (Cambridge, MA: MIT Press, 2010); Mar Hicks, *Programmed Inequality: How Britain Discarded Women Technologists and Lost Its Edge in Computing* (Cambridge, MA: MIT Press, 2017); and Charlton McIlwain, *Black Software: The Internet and Racial Justice, from the AfroNet to Black Lives Matter* (Oxford: Oxford University Press, 2019).

2 Tung-Hui Hu and Christine Goding-Doty, "Race after Representation: Christine Goding-Doty and Tung-Hui Hu in Conversation," *Los Angeles Review of Books*, July 21, 2021.

ination, many of which feel like nothing more threatening than an open invitation to be whomever or whatever one wants, the essays gathered here seek out histories and historiographies committed to the negation of such domination as well as to the less glamorous business of improvising forms of survival, endurance, and thriving inside computational personhood.

The question that adheres to computational personhood, in particular, is not—or not just—*Do we have the right objects and participants in our histories of computing?* It is rather, *Where and when have particular people, events, and technologies in that history exceeded familiar historical frames for objecthood and personhood?* The authors gathered here rarely pose this question in a utopian mood. Kris Cohen, Homay King, Avery Slater, and Joy Lisi Rankin, for instance, give readers new genealogies of the enemy: the graphic user interface as an environment for the extension of whiteness as a post-racial site of self-invention; Sarah Winchester's neo-colonial architectures in a very young Silicon Valley; the psychologized personhood of early chatbots; and a report from the 1980s about misogyny as a trans-personal structuring force of and in early tech cultures. But Jacob Gaboury and Rankin also present readers with new, immanent theorists of the cultures of computing and computation: respectively, Christopher Strachey and Turing exchanging their queer computational love letters and the authors of the *Barriers to Equality in Academia* report, who address misogyny as the very structure of computing's work environments (if not computing itself).

A few interlinked commitments motivate our desire to assemble these new histories of computation. First, we refuse to take as given that the present state of computational machines and digital media should occupy the center of our histories of computing. We thus take Tom Gunning's formulation of "cinema's forgotten futures" in film history as an explicit model for this dossier.[3] For Gunning, as for many historians of early cinema, the reason to study the first two decades of cinema is to explore the paths not taken: What did filmmakers do with cinema before the norm of feature-length narrative film was sedimented *as* a norm? As King's essay in this dossier shows, when we expand the histories of computing and begin to loosen our sense of computing history's fixity, we will have to tell new kinds of histories, often with oblique relevance to the computational present we think we know or share. For Gunning, part of the force of this project is the way it emphasizes an underground resonance between early film and avant-garde aesthetic practices. Perhaps more to the point, we, collectively, refuse to allow the corporate interests of monopoly capitalists—Silicon Valley as a synecdoche for the tech industry or, in the film analogy, Hollywood—to circumscribe our imagination of what computing is, how it matters, and what it does. We require broader, weirder, less predictable histories of the present of computing.

Second, inquiry into computational personhood should investigate not only minoritized subjects but also the ways in which whiteness and mascu-

3 Tom Gunning, "'Animated Pictures,' Tales of Cinema's Forgotten Future," *Michigan Quarterly Review* 34, no. 4 (Fall 1995): 465–485.

linity have continually reshaped themselves to maintain their dominance as the paradigm case. What we call computational personhood is the structure of subjectivity that had to be invented alongside computing technology, encompassing forms of life made compatible through living intimately with the machinery of computing: at first in the living room, via personal computers; then enmeshed in placeless networks via smartphones; and, ultimately, surrounded by computing as the massive, impersonal, and utterly ordinary backdrop of our lives. The concept of computational personhood acknowledges that lives are at once destabilized and made possible by computing.[4] To the extent that we are computational persons, we must tell histories of how that came to be, how it might have been otherwise, and how people excluded from intelligible forms of being computer subjects have improvised lives and made worlds out of (but not always inside of) the strictures of computation. In their contributions to this dossier, Gaboury and Rankin both follow how some historical actors have lived lives in proximity to computing, lives that can not only teach us to expand who counts as a "computer person," but also offer lessons in how to get on as a subject of computation in scenes of structural violence.

Third, computing is the contemporary technology for making up people, as Ian Hacking has said in a different context.[5] Paraphrasing Friedrich Kittler, computational media, like all media, determine our situation.[6] But computing's address must also be broad enough to encompass shifting horizons of experience. One of the most important lessons of film and media theory is that such determination is rarely straightforward, and it is often surprising in its impacts, causalities, and modes of exemplification. Media theory has taught us how to pay close and sustained attention to the ways various media impinge upon experience. Cohen's and Slater's contributions are different versions of this sort of history; they each offer histories of the ways technology patterns computational personhood.

Fourth, and in a way summing up the previous, we approach archives with an attunement to their abundance. Anjali Arondekar has described such historical "abundance" as a paralogic of the archive that does not seek out facts and counter-facts but rather releases possibility from the places where the dominant logics of an archive (e.g., lost and found, marginalized and centered, erased or recorded) have trapped it.[7] If one of the trade secrets of early-twenty-first-century tech industries has been a power over temporality itself—what Brian Massumi calls *ontopower*, or the power to pre-shape reality and the future—then what the authors in this dossier are after is what Lau-

4 Computing is, like all technē, a pharmakon. Bernard Stiegler, "Relational Ecology and the Digital *Pharmakon*," *Culture Machine* 13 (2012), https://culturemachine.net/wp-content/uploads/2019/01/464-1026-1-PB.pdf.

5 Ian Hacking, "Making up People," in *Reconstructing Individualism: Autonomy, Individuality, and the Self in Western Thought*, ed. Thomas C. Heller, Morton Sosna, and David E. Wellbery (Stanford, CA: Stanford University Press, 1986).

6 Friedrich A. Kittler, *Gramophone, Film, Typewriter*, trans. Geoffrey Winthrop-Young and Michael Wutz (Stanford, CA: Stanford University Press, 1999), xxxix.

7 Anjali Arondekar, "In the Absence of Reliable Ghosts: Sexuality, Historiography, South Asia," *differences* 25, no. 3 (2014): 98–122.

ren Berlant, extending Freud, called *supervalence*.[8] As Eli Rose Thorkelson describes it, "A supervalent thought is too multiplicitous, too heavily charged, too overflowing and too resonant to pin itself down in any single dialectical drama."[9] Rather than embellish the histories of computing we have—expanding them, diversifying them—the authors assembled here seek out the proliferative force in their objects.

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8 Brian Massumi, *Ontopower: War, Powers, and the State of Perception* (Durham, NC: Duke University Press, 2015); and Lauren Berlant, "Supervalent Thought," *Supervalent Thought* (blog), December 23, 2007, https://supervalentthought.com/2007/12/23/hello-world/.

9 Eli Thorkelson, "Lauren Berlant and the Nonbinary," *decasia* (blog), August 31, 2021, https://decasia.org/academic_culture/2021/08/31/lauren-berlant-and-the-nonbinary/.

Kris Cohen

Superimposed, Still

A man in a white shirt and dark tie, microphone pressed to his upper lip, addresses a viewer, us, with his voice. But his eyes are focused on another task (Figure 1). Superimposed on his face is the text that, somehow, we know to be the focus of his work: "STATEMENT ONE: WORD WORD WORD . . . ," with "WORD" repeated another ten times followed by an ellipsis. The image I'm describing is a still, an extract. This particular still superimposes two video feeds that are themselves intricately mediated: the first image results from pointing a video camera, at very close range, at a small circular calligraphic monitor that hosts the text ("WORD WORD WORD . . ."); the second results from angling another camera, also at very close range, up at the face of the computer user as he himself stares into a terminal networked to a time-sharing computer. On that terminal, the user, the man in a tie, sees the same text that we see superimposed on his face. The effect is strange, estranging. It is also an invitation.

Such a still doesn't freeze or extract; it agitates the proceedings. What it agitates in these two particular video feeds is their aspiration to establish a space for living, dwelling, working that was to be a training in a style of personhood. *Computational personhood* is one kind of shorthand for the style I want to describe. But whiteness is another, a racial whiteness constituted less as an identity and more as a possibility, an aptitude, an attitude made possible in and as the graphical screen that Douglas Engelbart here demonstrates. Superimposition names the video technique that made the demonstration both illustrative and a marvel. But it will also turn out to be a better name for the infrastructure provided to whiteness by the graphical screen being demonstrated, one that no longer relies on a politics of *re*presentation so much as a graphics of *super*imposition.

Kris Cohen, "Superimposed, Still," *JCMS* 61, no. 4 (Summer 2022): 163–168.

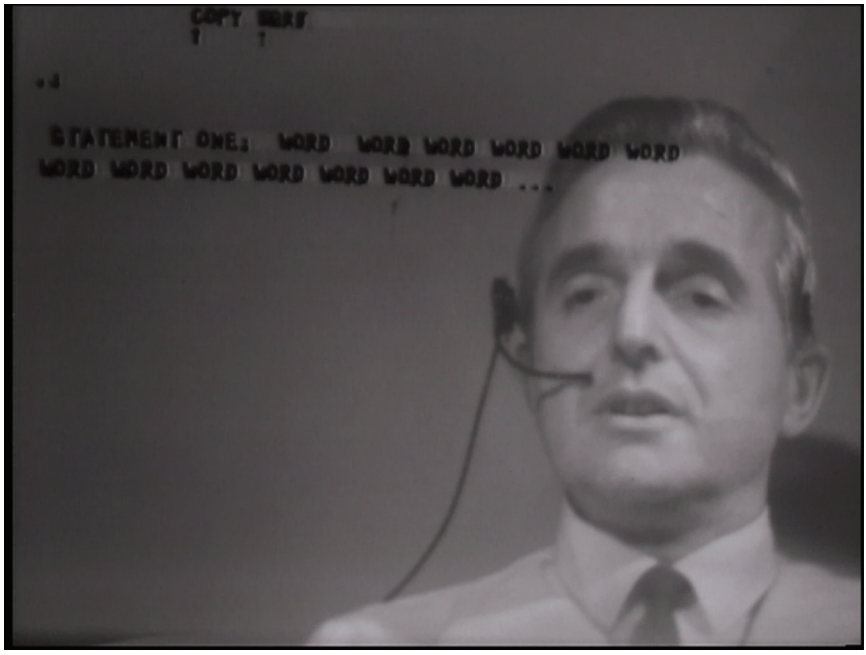

Figure 1. Still image, from Douglas Engelbart's demonstration of the oN-Line System (NLS) at the 1968 Fall Joint Computer Conference, San Francisco, CA, December 9–11, 1968.

That some readers will already know too much about the event that I'm describing while some will have no idea what I'm referring to is itself telling of the particular kind of oblivion into which Engelbart's demonstration of an early graphic computer interface has fallen: both too historicized and not enough. The effect of the superimposition is therefore a strange amalgam. The temptation will be to see it as an allegory, the user superimposed into the new graphicalized field of a computer terminal—an allegory of capture, say, or conscription. But the effect is actually more literal than allegorical. The story I want to sketch briefly, with the still as historical agitator, has to do with how this graphical space generates the racial constitution of the personal computer user.

The still is from the demonstration that Engelbart and his team performed for an audience in 1968.[1] As described on the website of the

1 That demonstration can be watched in full at https://www.dougengelbart.org/content/view/209/448/. In focusing on this event, there is a danger of overdetermining the history of the personal computer with too much focus on Douglas Engelbart. As computer historians rightly note, Engelbart was not the only person working on the problem of how a human was to interface with a computer built to the scale of the personal. Engelbart's work at the Stanford Research Institute in the 1960s and 1970s is not synonymous with the personal computer or with the graphical user interface (GUI), nor is it their origin. Indeed, Apple Computer, Inc.'s eventual mass marketing of the GUI and Xerox PARC's first technical implementation of the GUI diverged from Engelbart's designs as much as they borrowed from them. See Laine Nooney, "How the Computer Became Personal with Laine Nooney,"

Defense Advanced Research Projects Agency (DARPA), a funder of Engelbart's work, "Engelbart's terminal was linked to a large-format video projection system loaned by the NASA Ames Research Center and via telephone lines to a [Scientific Data Systems] 940 computer (designed specifically for time-sharing among multiple users) 30 miles away in Menlo Park, California, at the Augmentation Research Center, which Engelbart founded at SRI [the Stanford Research Institute]. On a 22-foot-high screen with video insets, the audience could see Engelbart manipulate the mouse and watch as members of his team in Menlo Park joined in the presentation."[2] White button-up shirt, dark tie, the insinuation that a sports jacket has recently been removed—this human figure is superimposed on or into the field of the computer screen (whether *on* or *into*, it is in the nature of the graphical screen to render all prepositions inadequate). That field is in some ways most remarkable for its blankness, the fact that there is almost nothing in it, including, crucially, no evidently gridded field regimenting input. Beneath the user's superimposed face, which floats in a green-gray field, the text—really a placeholder for text, itself empty—reads: "STATEMENT ONE: WORD WORD WORD . . ." As the superimposition insinuates, marks could be laid down anywhere in this nothingness. The visualization of Engelbart's wife's grocery list, which makes an appearance later in the demonstration, reinforces the effect of this blankness, in which lines can connect point to point in a seemingly-open vector field—information creating its own playground. This free play of information grants Engelbart, a proxy for the user to come, some distance from the feminized labor of grocery shopping even while appearing to help with that labor.

The user stares forward with eyes focused but not on us; the address of this face is not to an audience. Or rather, it's an address to the audience by way of an address to the self that is both performative and practical: Engelbart wants his audience to see him focused on the screen, inhabiting that environment. He must have rehearsed this disposition toward the screen, since it would not have been easy to manipulate the screen in a way that demonstrated its ease of use while talking to an assembled audience that he could not see. So the eyes stare into their task, which is this statement standing in for all of the other statements that could come to exist in its place, superimposed on the user's forehead but from which the user is mostly offset, leaving the majority of the screen's expanse, its openness, available for the implied and ongoing elaboration of that statement.

This human, we realize, is not that statement's source but its manipulator. Neither human nor statement exceeds or precedes the other; they co-exist, as though equals. That fact is important. Manipulation *is* authorship in an information space like Engelbart's graphical screen; that environment makes manipulation feel like authorship in full by catching the sensorium up

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May 15, 2019, in *The Next Billion Seconds*, produced by Mark Pesce, podcast, https://nextbillionseconds.com/2019/05/15/episode-3-07-how-the-computer-became-personal-with-laine-nooney/; and Thierry Bardini, *Bootstrapping: Douglas Engelbart, Coevolution, and the Origins of Personal Computing*, Writing Science (Stanford, CA: Stanford University Press, 2000).

2 Defense Advanced Research Projects Agency, "Mother of All Demos," accessed January 3, 2022, https://www.darpa.mil/about-us/timeline/the-mother-of-all-demos.

to the technical regime it now inhabits. The interface being demonstrated is a command and control fantasy with the self as its command center *and* the target of its operations. One might expect this from a proto-graphical interface that resembled (and re-assembled) the Semi-Automatic Ground Environment (SAGE) air defense system of the early 1950s as much as it predicted the later graphic interfaces of the Apple operating system.[3]

If the visual field seems to surround the human in this image, the field's work is nevertheless to impart the feeling that the human surrounds the computer, crowding it out into invisibility or marshaling it into a metaphor of servitude. In contrast, the user of the command line interface (the human-computer interface that is being consciously superseded by the system modeled in this demonstration) issued commands, orders. That was a relation of mastery, a relation manifested most emphatically in the moments when the computer, by way of a bug or glitch, short-circuited that mastery, mocked it. But the human superimposed onto the computer inside the graphical screen doesn't issue commands; they collaborate, they manipulate, they enter and remain, they dwell as though in an environment, and they tinker, now a part of the computer's hard- and software.[4] The user is in command, but it's a soft power, a power over what feels like form and formalism rather than people, over what Engelbart analogizes in the demo to a "completely blank piece of paper."[5] Meaning, the graphical screen grants a capacity to have capacities as well as a kind of autonomy that will become the basis for connecting with other people through a network of information (just as Engelbart here is connected to his team around California).

This is what matters to the racializing work of the graphical screen—not that this user is white, or that he wears a white button-down shirt and a dark tie or styles his hair with a wetted comb. What matters is that this user embodies a promise. A promise of superimposition, of the formalism of that relationship. Whatever I am, whatever I become, I will be superimposed upon whatever environment I come to occupy: graphical screen, web browser, social media feed. And reciprocally, also by way of superimposition, I will generate myself through that same interface, the augmented self, the self both literalized and idealized. In this sense, it matters less that the interface was made *for* white people or that it was made *by* white people (though both of these things are true). What matters is that it was made in the image of whiteness as a structure of superimposition. Racial superimposition doesn't require race consciousness; in fact, it rewards thinking beyond race toward a raceless future that can feel reparative, although only to the never-raced. In this precise sense, the graphic interface takes what had always been operative in public space and makes it into the operating logic of the personal computer. This promise is what is being demonstrated in the demo, which

3 Peter Galison, "The Ontology of the Enemy: Norbert Wiener and the Cybernetic Vision," *Critical Inquiry* 21, no. 1 (Autumn 1994): 228–266, https://doi.org/10.1086/448747.

4 For more on the entanglement of the human and software, see Wendy Hui Kyong Chun, *Programmed Visions: Software and Memory* (Cambridge, MA: MIT Press, 2011).

5 Douglas Engelbart, "A Research Center for Augmenting Human Intellect" (paper, 1968 Fall Joint Computer Conference, San Francisco, CA, December 9–11, 1968), https://dougengelbart.org/content/view/140/.

realizes that promise while advertising it. In this, as in so much of computational culture, realization and representation collapse into each other; the graphical screen helps effect that collapse.[6]

The filmic technique of superimposition gets at that collapse through juxtaposition, insists that collapse be seen *as* juxtaposition, a productive relationship rather than an erasure or obfuscation. The graphical screen doesn't subsume the computer to the user, or the user to the computer; it lets them co-create each other, inside a relationship that aggrandizes the self as autonomous, creative, and well supported by technology. This is what Engelbart, the user, explicitly demonstrates—offers to his viewers. The promise is that this screen, which *is* a computer by way of the collapse rendered here as juxtaposition, will create the conditions for a type of work that feels unconstrained. *Unconstrained* here means a set of constraints so light that they give way before the vivacity of the self, but a self made better by the augmentative relation offered precisely by way of the computer's withdrawal in favor of what feels mostly like an open field, a graphical screen. *Unconstrained* also refers to the graphical surface, which is so blank, so unassuming, that it can be inhabited as little more than a space for the realization of the self's creative impulses.[7] And that self's capacities are meant both to appear and to feel as unburdened as the user who dreams them up. Just the self and an infinite possibility for making statements. Just the self and some graphed lines. Just the self and a graphical field in which that self was realized in the psycho-motor etching of hand into screen by way of cursor contrail. Everything in this interface was meant to feel as though it were the trace of the user's self, even though that self was being newly lived, re-imagined to live inside information.

This has long been a power of whiteness: to come into an augmentative relationship with the stuff with which it populates the world. The pressure of the computer screen's layered conflation could have been immense, could have been alienating, could have placed the self in service of the computer as an alienating force. The feat of Engelbart's screen was to make the computer's augmentations feel light in order to convert the self into a performance that felt most possible, even most autonomous, when it was "augmented" by its devices.

Like every aspect of the history of whiteness, and computing, that ease comes at someone else's expense. Laine Nooney argues that the history of

6 I take this to be one of the key points made by recent media theories of temporality. See Brian Massumi, *Ontopower: War, Powers, and the State of Perception* (Durham, NC: Duke University Press, 2015); Anaïs Nony, "Anxiety in the Society of Preemption: On Simondon and the Noopolitics of the Milieu," *La Deleuziana* 6 (2017); and Shane Denson, *Discorrelated Images* (Durham, NC: Duke University Press, 2020).

7 Information theory provides the formal vocabulary for this realization (e.g., "WORD WORD WORD WORD WORD WORD WORD WORD WORD WORD WORD WORD WORD"). In information theory, the promised value of information resides precisely in the schematism of the word chain: not the semantic content of a message, but a statement's capacity to stand in for the flux (or noise) of actual communication. In this, any statement can model the possibilities of any communication whatsoever. Alan Liu, *The Laws of Cool: Knowledge Work and the Culture of Information* (Chicago: University of Chicago Press, 2004); and Norbert Wiener, *The Human Use of Human Beings: Cybernetics and Society* (Boston: Houghton Mifflin, 1950).

the personal computer—and Engelbart is demonstrating one key starting point for that history—is a history of pain, a history of the ways in which the individualized computer terminal disciplined the sensoria of its users. The computer becoming personal shifted not just work but the responsibility for sustaining and structuring work onto the user, entailing the unequal distribution of pain.[8] Eye strain, neck pain, toxic boredom, and disaffection with one's work . . . these all resulted, as Nooney documents, from the ways that the computer automated work. *Automated work* is how Engelbart might have put it, implying a generality if not a universality, something that could apply to any human if only that human was willing, had the right attitude—but in practice, women and women of color both bore these impacts while shielding their bosses from them.[9] Today, $1,000 ergonomic chairs play that prophylactic role so everyone's conscience can be clean. But the pain would come for all.

In the still that I've been describing, the graphical screen that appears as an agitated space of inhabitation screens the white conscience from this longer racializing history of the labor of computation. It does so through its openness, its featurelessness, its adaptability to the self, its co-situating of human, computer, and computing environment as though they existed on equal terms without bio-markers or distinctions. In other words, the graphical interface routes racialization around its representational moorings, establishing it anew in the post-representational space of the graphical screen.[10] The user whom Engelbart proxies doesn't precede the work they do in the graphical screen, as biographical creator with racial or gendered features; they get generated anew in the process of inhabiting the screen. They are born alongside the machine that is now less a technology than an augmentation, a relationship, an environment for the rebirth of the human as clean again. Here, the version of whiteness that begins, historically, in a masculine gendering so it can also end there de-natures itself into a kind of post-identity format through the promise of the graphical interface.

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8 Nooney, "How the Computer Became Personal"; and Laine Nooney, "How the Personal Computer Broke the Human Body," *Vice*, May 12, 2021, https://www.vice.com/en/article/y3dda7/how-the-personal-computer-broke-the-hum.

9 Here, I've tried to build on Grace Kyungwon Hong's and Jodi Melamed's work on race in a postwar liberal milieu, where race shifts from an epidermal *condition* to an *attitude* toward structural conditions. Grace Kyungwon Hong, *Death beyond Disavowal: The Impossible Politics of Difference*, Difference Incorporated (Minneapolis: University of Minnesota Press, 2015); and Jodi Melamed, *Represent and Destroy: Rationalizing Violence in the New Racial Capitalism* (Minneapolis: University of Minnesota Press, 2011).

10 On computer graphics as non-representational, see Jacob Gaboury, *Image Objects: An Archaeology of Computer Graphics* (Cambridge, MA: MIT Press, 2021).

Jacob Gaboury

Queer Affects at the Origins of Computation

Much has been written on Alan Turing and the origins of artificial intelligence (AI) some seventy years ago. Turing's "imitation game" set the foundation for research into what has become the future promise of nearly all AI-driven industries today.[1] At the heart of Turing's work is the notion of intelligence as performative, that is, as an effect that need not demonstrate any internal awareness of intelligence as an abstract or conceptual goal. Turing famously likened this performative quality of intelligence to gender, which he imagined as equally transmutable and inessential—a comparison that opens up the possibility of a queer reading of AI through the discourses of performance, language, and affect. Nonetheless, in our hagiographic treatment of Turing as the so-called father of modern computing, we often miss those queer objects and relations that constitute the broader milieu of experimental mathematics during this period. Working alongside Turing at the University of Manchester Computing Center in the early 1950s was a gay man named Christopher Strachey. A prolific early programming language designer, Strachey is best known for developing what are arguably the first examples of computer music and computer games, along with a love letter–generating algorithm that is widely considered the earliest work of computational art. That Strachey developed so many groundbreaking programs at the precise moment Turing was theorizing the foundations of artificial intelligence speaks at once to his skill as a researcher and to his mutual interest and investment in experimental or non-normative uses for computational

1 Alan Turing, "Computing Machinery and Intelligence," *Mind* 59, no. 236 (1950): 433–460.

Jacob Gaboury, "Queer Affects at the Origins of Computation," *JCMS* 61, no. 4 (Summer 2022): 169–174.

technology. While their colleagues worked on applications in optics and aerodynamics, Turing and Strachey approached the computer with a distinctly different set of affects and investments, asking the machine to perform not only intelligence but also play, sincerity, camp, and even love. Examining the history of early computing through these two queer figures allows us to mark out a set of affective relations toward computational machines that presage the contemporary moment while critiquing our own investment in the normative intelligence of artificial systems.

In looking for a queer origin to the history of computation, nearly all scholars are drawn to the figure of Turing, considered by many to be the originator of modern computer science and arguably its most visible queer subject. As I have discussed elsewhere, Turing is a unique and captivating figure due in part to the visibility of his difference and the tragedy of his death.[2] While not a secret, Turing's sexuality was not widely acknowledged within computer science and mathematics for many years. Following the publication of Andrew Hodges's definitive biography of Turing nearly thirty years after his death, Turing became a figure of fascination both for his work in defining the function and limits of computational systems and for the ways he indexed a culture of early-twentieth-century sexuality and homophobia.[3] This commingling of the personal, political, and technical in Turing's work begins with Hodges, but it has subsequently gained traction among researchers invested in queer history and Turing's influence on the political claims of modern computer science.

Turing's most noted work in this regard is his widely influential "Computing Machinery and Intelligence," first published in 1950 while he was a researcher at the University of Manchester developing some of the earliest modern digital computers.[4] It is here that Turing first proposed the evocative question "Can machines think?" and argued in favor of machine intelligence through a reframing of thought as the successful performance of intelligent behavior. To make his case Turing proposed an imitation game that has come to be known as the Turing Test, whereby an examiner seeks to ascertain whether either of two unseen respondents is a machine based on their answers to a series of simple questions. Here Turing locates thought within a performative theory of intelligence, suggesting that if a machine can successfully emulate thinking by answering questions in a way that is indistinguishable from a human participant, then it has demonstrated a functional intelligence. Rather than weigh down this claim with ontological concerns over what thinking or intelligence are, Turing instrumentalizes thought as a presentation of passing, a successful rendering of the social and intellectual

2 Jacob Gaboury, "A Queer History of Computing: Part 1," *Rhizome*, February 19, 2013, https://rhizome.org/editorial/2013/feb/19/queer-computing-1/.

3 Andrew Hodges, *Alan Turing: The Enigma* (London: Simon and Schuster, 1983). For a discussion of Hodges's work on Turing and the rediscovery of Turing's sexuality, see Jacob Gaboury, "A Queer History of Computing, Part Five: Messages from the Unseen World," *Rhizome*, June 18, 2013, https://rhizome.org/editorial/2013/jun/18/queer-history-computing-part-five/.

4 There are many competing claims for the first modern computer, but several prominent features are that the machine be digital, electronic, and stored program. The early Manchester computers satisfy each of these criteria. Turing, "Computing Machinery and Intelligence."

cues expected of a human subject.[5] Already this work is surprising, less for its dramatic claim that machines could one day satisfy this imitation game than for the ways it refuses an essentialist notion of subjectivity, identity, and internality in favor of an outwardly presentational subject.

This claim is even more surprising when taken in its full context. While most contemporary Turing Tests are designed to assess the performativity of a generalized humanity, Turing's original test is an explicitly gendered one, in which the control for performativity is that of gender performance. That is, interrogators are asked to determine the gender of the game's unseen participants, not their humanity. This gendered language continues throughout, inflecting Turing's treatment of the computer and the gendered context of computation in this early period when most "human computers" were women performing high-level calculation by hand.[6] As Patricia Fancher notes in her work on Turing's embodied rhetorics, there is a queer valence to this thinking such that if we are to read Turing literally, "machine intelligence is like a man pretending to be a woman."[7] Moreover, Turing places bodily experience as central to machine intelligence, imagining a host of activities that he qualifies as intelligent, which a machine could not do and would struggle to perform: "fall in love, enjoy strawberries and cream, make someone fall in love with it, learn from experience, use words properly, be the subject of its own thought, have as much diversity of behavior as a man, do something really new."[8] Once again Turing seems to refuse a normative understanding of intelligence in favor of a deeply embodied and often gendered understanding of human behavior as performative, relational, and contextual. Turing's list is at once beautiful in the way it evokes a particular notion of human experience and intelligence and significant in that he does not discount the possibility that a machine indeed might do each of these things, particularly if we expand our notions of what computation is capable of and what both human and artificial intelligence might be.

Examining Turing's provocation, it is striking how directly it maps onto the work that he was undertaking at precisely this moment alongside Christopher Strachey. Known as "the man who wrote perfect programs" at a time when programming was an exceedingly difficult and error-prone process, Strachey's had a far from conventional road to computation. As nephew to the critic and biographer Lytton Strachey, Christopher was raised at 51 Gordon Square in proximity to Virginia Woolf, Clive Bell, and the other members of the Bloomsbury Group of writers, intellectuals, and philosophers. Despite this privileged background, Strachey did not meet with academic

5 For a discussion of the Turing Test and the theory of passing, see Jeremy Douglass, "Machine Writing and the Turing Test" (presentation, Alan Liu's Hyperliterature seminar, University of California, Santa Barbara, 1999), https://web.archive.org/web/20010525032059/http://www.english.ucsb.edu/grad/student-pages/jdouglass/coursework/hyperliterature/turing/#_Toc510202769/.

6 See Mar Hicks, *Programmed Inequality: How Britain Discarded Women Technologists and Lost Its Edge in Computing* (Cambridge, MA: MIT Press, 2017); and Jennifer S. Light, "When Computers Were Women," *Technology and Culture* 40, no. 3 (1999): 455–483.

7 Patricia Fancher, "Embodying Turing's Machine: Queer, Embodied Rhetorics in the History of Digital Computation," *Rhetoric Review* 37, no. 1 (2018): 98.

8 Turing, "Computing Machinery and Intelligence," 453.

success as a young child, and he suffered a breakdown in his second year at university while coming to terms with his homosexuality. While Strachey had hoped for a career in academia, he had neither the grades nor the disposition for a prominent fellowship, and so following graduation he spent over a decade as a teacher and later schoolmaster of young children at a number of lower-ranking institutions. Beginning in the late 1940s, Strachey learned of several computing machines being developed by Turing and others at the University of Manchester. Strachey had met Turing socially several years prior at King's College when Turing was a junior research fellow there and so reached out to Turing directly and was granted access to the Manchester Mark 1—one of the first stored-program digital computers. While the majority of research applications using the Mark 1 were purely mathematical, Strachey developed a number of surprising creative applications that remain the most noteworthy uses of the computer's comparatively limited capabilities. These include some of the earliest computer music, one of the earliest computer games, and arguably the first work of computational art: a love letter–generating algorithm developed alongside Turing.

Strachey is a fascinating figure in the history of computing, not only for his field-defining work within computer science but also for how he exemplifies the complexity of this early moment in computational research, when much of what would become the field of computer science was still unfixed. As an outsider, Strachey did not necessarily share the investments of other researchers working alongside him at the time; for instance, he believed in a clear distinction between the role of computational design and the engineering of computational systems.[9] Indeed many of the applications Strachey developed in the 1950s frustrated normative assumptions about how to balance computational speed and capacity with the elegance of a program's design or the efficiency with which it could be coded. This is especially apparent in the creative applications he developed when awaiting further assignment at Manchester in 1951. Strachey's computer games and music are playful applications that suggest not only that computational machines are vehicles for creative expression but also that such applications might be among their principal uses. The significance of this work is less in their supposed primacy—indeed there are several competing examples for the earliest music and games programmed for a computer—than in their function as the first and principal applications Strachey developed when given access to one of the earliest programmable digital machines. Much as with Turing's thinking on the performativity of human and machine intelligence (published one year prior to Strachey's appointment to Manchester in 1951), Strachey seemed to be testing for the very outliers in what we might consider the hallmarks of our humanity.

The love letter generator is most exemplary in this regard. Taking advantage of the random number generator built into the Mark 1, the program runs through a database of terms to generate formulaic yet evocative purple

9 Martin Campbell-Kelly, "Strachey: The Bloomsbury Years" (presentation, Strachey at 100: An Oxford Computing Pioneer, Oxford University, June 26, 2017), https://podcasts.ox.ac.uk/strachey-bloomsbury-years.

prose. In an article published the same year as Turing's death (1954), Strachey describes the love letter generator's function and gives one of the few surviving examples of the machine's original output:

> Darling Sweetheart,
>
> You are my avid fellow feeling. My affection curiously clings to your passionate wish. My liking yearns for your heart. You are my wistful sympathy: my tender liking.
>
> Yours beautifully
> M. U. C.[10]

Titled "The 'Thinking' Machine," the article explicitly addresses the ways these early experiments served as provocations for Turing's own work on artificial intelligence. Strachey notes that "[o]ne of the most interesting facts brought out by the attempts to make computers imitate human methods of thought is that a great deal of what is usually known as thinking can in fact be reduced to a relatively simple set of rules of the type which can be incorporated into a program."[11] Indeed the queerness of these letters is their disclosure that what seems rich and specific—the sincerity of romantic love—is perhaps entirely generic. This queerness exposes the thinness of normative romantic expression, pointing out the impersonality of affect, attachment, and relation itself. Rather than hold out romantic love as something inherently human and outside of simulation, Strachey's program follows Turing's own provocation in pointing out the largely impersonal nature of what it means to fall in love, suggesting that the Turing Test itself may be viewed as an exercise in the impersonality of humanness, flattening the distinction between man and machine as inhabiting genres of interaction and depersonalization.

From nearly all the writing on the love letter program, it seems clear that neither Strachey nor Turing saw this work as innovative or important. Instead, it seems their disposition toward these experiments was a playful appreciation for the performativity of love and the possibility that a machine might be made to approximate the emotional register of normative affection. Put simply, this exposure of the false veneer lying at the heart of that most deeply human emotion is pure camp: an exultant love of the artificial. In tasking a computer with the camp performance of romantic attachment, Turing and Strachey ultimately lay bare its inability to attain the true expres-

10 Christopher Strachey, "The 'Thinking' Machine," *Encounter* 3, no. 4 (1954): 26. "M. U. C." stands for Manchester University Computer. While this is one of only a few surviving examples of the original love letter generator, several artists and researchers have since reconstructed the program from Strachey's original archival notes. See David Link, "There Must Be an Angel: On the Beginnings of the Arithmetics of Rays," in *Variantology 2: On Deep Time Relations of Arts, Sciences and Technologies*, ed. Siegfried Zielinski and David Link (Cologne: König, 2006), 15–42; and Noah Wardrip-Fruin, "Digital Media Archaeology: Interpreting Computational Processes," in *Media Archaeology: Approaches, Applications, and Implications*, ed. Erkki Huhtamo and Jussi Parikka (Berkeley: University of California Press, 2011).

11 Strachey, "'Thinking' Machine," 26.

sion of romantic feeling. Indeed, the comedic quality of the program is found precisely in this gap between what the program promises to do and its output. Thinking with the history of computing, we might approach this gap as a failure or lack to be repaired through the progressive development of artificial intelligence over the subsequent seventy years. As with the historical claim for nearly all computational systems, we might presume that given enough time and computing power we might one day close this gap such that a machine will convincingly perform the register of romantic love. And yet, read through the affects of Turing and Strachey, the love letter program suggests just the opposite: that the lack implicit in the future-oriented teleology of computation need never be repaired if we learn to love the lack, inhabiting that space in a way that does not feel shattering, dwelling in the gap between love and the letter.

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Joy Lisi Rankin

Misogyny and the Making of the Tech Fratriarchy

In 1983, the women in the Massachusetts Institute of Technology (MIT)'s computer science and artificial intelligence labs published a scathing critique of their hostile work environment. The report, *Barriers to Equality in Academia: Women in Computer Science at MIT*, was the product of collective knowledge and experience. Nineteen women who were graduate students or research staff prepared the report. *Barriers to Equality in Academia* was, by its authors' reckoning, seven years in the making and outlined "the difficulties encountered by women at MIT and the prevailing attitudes that make it hard for women to succeed."[1] They noted, "Efforts to address the special problems of women in EECS [the Department of Electrical Engineering and Computer Science] can be traced back to at least 1976."[2]

The women who wrote *Barriers to Equality in Academia* documented, analyzed, and theorized the misogyny they experienced at MIT during the 1970s and early 1980s. They observed threads of misogyny interwoven through computing programs and networks and through their computing workplaces. Their analysis enables us to reenvision personal computing and social networking through the lens of misogyny, even before personal computers such as the Apple Macintosh appeared on the American digital scene.

1 Female graduate students and research staff in the Laboratory for Computer Science and the Artificial Intelligence Laboratory at MIT, *Barriers to Equality in Academia: Women in Computer Science at MIT* (Cambridge, MA: Massachusetts Institute of Technology, 1983), 33, http://nms.csail.mit.edu/~dcurtis/Barriers%20Report%20EECS.pdf.

2 *Barriers to Equality*, 31.

Joy Lisi Rankin, "Misogyny and the Making of the Tech Fratriarchy," *JCMS* 61, no. 4 (Summer 2022): 175–180.

Other scholars have traced how computing became masculine, but no one has yet analyzed how computing became misogynist, yet this is crucially important to understanding how computer science and the tech industry became hostile and harmful to women, including trans women and nonbinary femmes.[3] Historians of computing have written either about men and masculinity in computing or about women in computing. I am interested in the relationships, interactions, dynamics, and power structures among them. Reading the *Barriers to Equality in Academia* report through the lens of misogyny demonstrates how computer science—still a young discipline in the 1970s—became not just masculine but also hostile to women. I suggest that misogyny is a key component of what I identify as the tech fratriarchy.[4]

The *Barriers to Equality in Academia* authors draw from their personal experiences to analyze the harms of misogynistic behavior within academic computing; the section headings comprise a list of misogynist principles and offenses: "first a woman, then a professional; invisibility; patronizing behavior; misplaced expectations; unwanted attention; obscenity; the fishbowl syndrome."[5] The authors observe that "the day-to-day experiences of many women in Computer Science are characterized by a greater emphasis on their gender than on their identity as serious professionals," such as being described as only at MIT to get a husband or being told they were flirting to get ahead.[6] Such behavior accords with what the feminist philosopher Kate Manne identifies as an under-recognized aspect of misogyny.[7] Women are consistently pushed into the roles of humans *caring* or humans *giving*, roles in which their primary social identity is not individuated but understood only in relationship to and especially as caring for others. The authors also identify the harms of invisibility and exclusion; they report, for example, "Only one person could use the machine at a time. Often, while I was working on a task, a male graduate student would physically push me away from the machine and interrupt my work so that he could get at the machine. This didn't happen to the men in the group."[8]

In recounting their and their women colleagues' experiences, the *Barriers to Equality in Academia* authors are not witnessing masculinity in action, nor even toxic masculinity. Toxic masculinity is typically understood through individuals, and these authors are addressing the practice, policing, and enforcing of gender norms within a patriarchal, racist, classist, heteronorma-

3 See Mar Hicks, *Programmed Inequality: How Britain Discarded Women Technologists and Lost Its Edge in Computing* (Cambridge, MA: MIT Press, 2017); Janet Abbate, *Recoding Gender: Women's Changing Participation in Computing* (Cambridge, MA: MIT Press, 2012); and Nathan L. Ensmenger, *The Computer Boys Take Over: Computers, Programmers, and the Politics of Technical Expertise* (Cambridge, MA: MIT Press, 2010).

4 For more on tech fratriarchy, see Joy Lisi Rankin, "The Motherboard: On the Erasure of Computing's Diverse Past," *Spike Magazine*, no. 68 (Summer 2021): 138–141.

5 *Barriers to Equality*, i.

6 *Barriers to Equality*, 6–7.

7 Kate Manne, *Down Girl: The Logic of Misogyny* (New York: Oxford University Press, 2018). Manne's definition of misogyny encompasses misogynoir (misogyny directed toward Black women), and her work is attentive to the intersecting oppressions of gender, race, class, ability, and so on.

8 *Barriers to Equality*, 8.

tive system. Rereading the myriad examples of harms documented in *Barriers to Equality in Academia* through this lens demonstrates that MIT's computing center was not just a masculine space but a misogynist one. The examples delineate the duality of misogyny in its norms of what "she is *obligated* to give" and what she is "*prohibiting* from having or taking . . . *away* from dominant men."[9] According to their men colleagues, the women in computer science at MIT are obligated to provide dates, their telephone numbers, and lap cuddles; they are further obligated to wear two-piece bathing suits for summer technical meetings; yield their computing time; endure extensive unwanted attention; and tolerate tickling, unsolicited neck and shoulder rubs, and breast fondling. The women are likewise repeatedly unrecognized in their expertise, excluded from technical discussions, pushed away from their machines, robbed of solving their own research problems, labeled as unqualified, refused supervision by faculty members, and deprived of financial support. In other words, they are prohibited from masculine-coded goods including money, professional status, and public recognition.

I want to focus on one thread of misogyny that weaves throughout postwar American computing history and media history, what the *Barriers to Equality in Academia* authors term "obscenity." They reported as one example "a picture of a nude woman on our system which is printed out and displayed. It is also used occasionally to demonstrate the graphics capabilities of the system."[10] Considering this picture through the lens of misogyny sharpens our focus: computer representations of women serve to enforce the norm that women give their bodies and reproductive labor to men, whereas men take the power, prestige, and wealth associated with computing.

By 1983, when *Barriers to Equality in Academia* was published, the first computer porn was nearly a quarter-century old. During the 1950s, IBM, MIT, and the US military collaborated to build the Semi-Automatic Ground Environment (SAGE), a Cold War computer-based air defense system. The state-of-the-art, multimillion dollar system featured graphical displays, typically used for monitoring radar. By the late 1950s, the screen also could display a rendering of a nearly naked woman posed in a provocative position, a computer-based replication of a December 1956 *Esquire* calendar pin-up.[11] Some of the men who worked on SAGE also recalled a system program displaying a topless woman hula dancer in a grass skirt, who by various accounts swayed her hips or dropped her skirt upon computer command.[12]

Programming women as objects continued throughout the 1960s and into the 1970s, even becoming standard fare in learning programming languages or graphics. When Lawrence Roberts, who later received recognition as a "father of the internet," completed his master's thesis on "picture cod-

9 Manne, *Down Girl*, 130.

10 *Barriers to Equality*, 17.

11 Benj Edwards, "The Never-Before-Told Story of the World's First Computer Art (It's a Sexy Dame)," *The Atlantic*, January 24, 2013, https://www.theatlantic.com/technology/archive/2013/01/the-never-before-told-story-of-the-worlds-first-computer-art-its-a-sexy-dame/267439/.

12 Edwards.

ing" at MIT in 1960, his sample image was a so-called *Playboy* Playmate.[13] As computers and computing became more widespread, so did the misogynist images. In 1973, researchers at the University of Southern California (USC) decided to use the image of another *Playboy* centerfold for their conference paper.[14] The woman and her image, collectively known as Lena or Lenna, became one of the most used images in computing. What is striking to me about the origin story is that someone in the USC lab just happened to be walking around with a *Playboy*; it was casually available.

A year after Lena's digital debut, the sociologist Ted Nelson self-published his now-iconic double-titled work *Computer Lib: You Can and Must Understand Computers Now / Dream Machines: New Freedoms through Computer Screens—a Minority Report* (1974), in which he aimed to popularize and personalize computing.[15] The journalist Steven Levy described Nelson's book as "the epic of the computer revolution, the bible of the hacker dream."[16] This "bible of the hacker dream" replicated the nude image of a woman—composed of characters including dollar signs and parentheses—on page 49. Nelson notes, "When word got around that this nude was in a public file on the time-sharing system, my office-mates scrambled to get printouts of her. The cleverest, though, had a *deck punched*. . . . Now he can put her *back* in the computer any time, but they can't."[17]

The visual misogynist reminders that women were expected to appear attractive to men and give their sexual labor pervaded computing culture from the "hacker bible" and graphics research to programming manuals for school-aged children. As I've argued elsewhere, the American academic time-sharing networks of the 1960s and 1970s created a golden age of computing—mostly for affluent white boys and men—and the programming language BASIC was essential to that golden age.[18] In 1973, the Digital Equipment Corporation published a book titled *101 BASIC Computer Games*.[19] It was so popular that it was reprinted multiple times. Its author, Dave Ahl, claimed it was the first computer book to sell a million copies, and *Time* magazine later described it as "the single most influential book of the BASIC era."[20] In the 1975 edition, page 62 displays the program BUNNY, which prints the

13 Lawrence G. Roberts, "Picture Coding Using Pseudo-Random Noise" (master's thesis, Massachusetts Institute of Technology, 1960), https://web.archive.org/web/20060926134827/http://www.packet.cc/files/pic-code-noise.html.

14 Jamie Hutchinson, "Culture, Communication, and an Information Age Madonna," *IEEE Professional Communication Society Newsletter* 45, no. 3 (May/June 2001): 1, 5–7.

15 Ted Nelson, *Computer Lib: You Can and Must Understand Computers Now / Dream Machines: New Freedoms through Computer Screens—a Minority Report* (Chicago: Theodor H. Nelson, 1974).

16 Steven Levy, *Hackers: Heroes of the Computer Revolution*, 25th anniv. ed. (Sebastopol, CA: O'Reilly, 2010), 171.

17 Nelson, *Computer Lib / Dream Machines*, 49.

18 Joy Lisi Rankin, *A People's History of Computing in the United States* (Cambridge, MA: Harvard University Press, 2018).

19 David A. Ahl, *101 BASIC Computer Games* (Maynard, MA: Digital Equipment Corporation, 1973).

20 John J. Anderson, "Dave Tells Ahl—the History of Creative Computing," *Creative Computing* 10, no. 11 (November 1984): 66; and Harry McCracken, "Fifty Years of BASIC, the Programming Language That Made Computers Personal," *Time*, April 29, 2014, https://time.com/69316/basic/.

image of the *Playboy* rabbit head logo, a reminder of the magazine famous for its pictures of naked women.

Also featured in *101 BASIC Computer Games* was UGLY, described in the book as a program that "draws an ugly woman."[21] When I first saw this description in the table of contents, I was both horrified and curious. What makes the woman ugly? It might be challenging to decipher from just the program listing alone, but the illustration in the book makes it clear: the woman is fat and looks alarmed as her entire body is visibly vibrated by a belt exerciser machine.[22] Analyzing the program reveals its sexual nature. The numbers that a programmer would input to make the woman "ugly" (or not) represented the measurements of her breasts, waist, and hips. In the program they are labeled as "A, B, and C"; however, looking at the sample program runs makes clear what they really signify.

In a book intended to teach kids about computers and programming, UGLY sends the message that girls and women are valued for their physical appearance and reproductive labor (emphatically not their intelligence or personality). BUNNY and UGLY uphold the norm that girls and women should be slim and attractive for the heteronormative male gaze; anything less is subject to cruel mockery. It's worth noting that among the ninety-nine other programs in the book, there are no direct references to men or women. The others are categorized, for example, as sports or war games, which makes these two stand out even more.[23]

This brings me back to the women writers of *Barriers to Equality in Academia*. Initially I was going to write that some of their more vivid examples perhaps seem less likely to occur today, but reports of sex parties, sexual harassment, and quotidian misogyny in Silicon Valley continue.[24] Misogyny morphs and adapts, just as the sites of computing's tech fratriarchy have expanded from university computer centers to bedrooms, dorm rooms, and tech companies' so-called campuses.[25] Manne points out that as it has become socially more acceptable for women to achieve professionally, there is often more misogynist pushback. She explains that "when women's capabilities become more salient and hence demoralizing or threatening . . . this may result in more or less subtle forms of lashing out, moralism, wishful thinking, and willful denial."[26] The rise of Silicon Valley has coincided with American women's increasing educational and professional successes following the Civil Rights and 1960s feminist movements, and tech misogynist pushback has burgeoned in tandem.

Reading computing history through the framework of misogyny enables us to see the making of the tech fratriarchy. The term *fratriarchy* resonates

21 Ahl, *101 BASIC Computer Games*, 228–229.

22 For more on these machines, see "Belt Vibrator," Kansas Historical Society, updated July 2017, https://www.kshs.org/kansapedia/belt-vibrator/15638.

23 Ahl, *101 BASIC Computer Games*, appendix A.

24 See, for example, Emily Chang, *Brotopia: Breaking Up the Boys' Club of Silicon Valley* (New York: Portfolio/Penguin, 2018); and Anna Wiener, *Uncanny Valley: A Memoir* (New York: MCD/Farrar, Straus and Giroux, 2020).

25 Mar Hicks, "De-brogramming the History of Computing," *IEEE Annals of the History of Computing* 35, no. 1 (2013): 86–88.

26 Manne, *Down Girl*, 101.

with tech culture because it describes a "social structure in which power is formed through a brotherhood."[27] The concept of tech fratriarchy invokes the ways in which those with power in the 1950s and 1960s made computing masculine *and* white. Fratriarchy also invokes fraternities and universities, thereby drawing out university computer centers—and, later, college dorms and tech campuses—as key sites in the making of sexist tech.[28] Significantly, however, my definition of tech fratriarchy includes not just masculinity but also misogyny.

The authors of *Barriers to Equality in Academia* documented extensive misogyny in the social environments and practices of their computing work. They also recognized how misogyny became part of computing programs and how the policing of patriarchal norms was reinforced by misogyny in all of those spaces and places. Their analysis of misogyny, like Manne's, crucially centers women; it "should be understood from the perspective of its potential targets and victims—girls and women. Misogyny *is* then what misogyny *does* to some such, often so as to preempt or control the behavior of others."[29]

Seeking out sources in computing history created by those upon whom misogyny, racism, transphobia, and other interlocking forms of oppression have operated and attending to their exposition and criticism of patriarchal norms (which may also be racist, heteronormative, transphobic, or ableist) is a crucial starting point in understanding the tech industry's continued hostility to women; queer, trans, and nonbinary people; Black, Indigenous, and people of color; and people with disabilities. Tech now dominates our economic, political, and social landscapes, and it shapes our individual lives in ways we often fail to be aware of. Understanding that it's not just a male-dominated or masculinist industry but also a misogynist one is a necessary step in working toward justice and equity.

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27 Amanda Montell, *Wordslut: A Feminist Guide to Taking Back the English Language* (New York: HarperCollins, 2019), 107.

28 Ensmenger argues that university computer centers were key to the formation of computing masculinity. Nathan Ensmenger, "'Beards, Sandals, and Other Signs of Rugged Individualism': Masculine Culture within the Computing Professions," *Osiris* 30, no. 1 (2015): 38–65.

29 Manne, *Down Girl*, 20.

Avery Slater

Chatbots: Cybernetic Psychology and the Future of Conversation

Looking back on the history of chatbot development, one Microsoft development team observed in 2018 that "with vastly more people being digitally connected, *it is not surprising* that social chatbots have been developed as an alternative means for engagement."[1] What sort of "alternative" is presented when humans engage with chatbots? If the Fourth Industrial Revolution depends not only on the flow of goods and services but also on the flow of signals of assent (purchases, likes, shares), then the economy of conversation between users must be made seamless at any cost.[2] Is the chatbot an alternative to the otherness of human beings? Are chatbots a patch for alterity? Alongside the psychologically meaningful dimensions attending the problem of our incommensurability with one another—our personhood—the disconcerting, unmanageable, merciful, and threatening separation between human beings presents a newly focalized economic problem in the digital age.

1 Heung-yeung Shum, Xiaodong He, and Di Li, "From Eliza to XiaoIce: Challenges and Opportunities with Social Chatbots," *Frontiers of Information Technology & Electronic Engineering* 19, no. 1 (2018): 13 (emphasis added).

2 While the Third Industrial Revolution describes the period during which information processing via the computer became predominant, the Fourth Industrial Revolution (4IR) refers to a period defined by widespread social and industrial connectivity through the internet (cloud computing, social media, etc.), artificial intelligence, quantum computing, nano- and biotechnology, and the incorporation of smart devices into many aspects of economic and interpersonal life through the Internet of Things (IoT). This periodization was proposed by economist Klaus Schwab, founder of the World Economic Forum. See, for example, Klaus Schwab, *The Fourth Industrial Revolution* (Geneva: World Economic Forum, 2016).

Avery Slater, "Chatbots: Cybernetic Psychology and the Future of Conversation," *JCMS* 61, no. 4 (Summer 2022): 181–187.

In the echo chambers of social media, algorithms carefully curate online interactions to create amplifying effects, with streams of content filtered toward users who are predicted to "like" and "share" this content. Social bots, whether conversation generating or message amplifying in their intent, have enmeshed themselves ineradicably into the flow of digital communication.[3] As Douglas Guilbeault argues, social media platforms "are a new kind of habitat that imposes habits of self-construction that both humans and bots equally exploit."[4] Simultaneously, the echo chamber resounds with sock puppet accounts and with bots hailing and harassing users at every swipe or scroll, transmitting multimodal packets of information designed to catch human attention from every crevice in the online infrastructure.[5]

In an English-language context, the memory of Microsoft's 2016 social chatbot experiment remains infamous—an incident in which "Tay" (an artificial conversational agent designed with the alleged personality of a nineteen-year-old woman) transformed into a neo-Nazi within hours of social interaction and was removed unceremoniously from the web in disgrace.[6] Certainly this says something about the users (of 4chan, etc.) who indoctrinated Tay; it says something as well about the future of conversation, the future of our vulnerability to one another in and through language—a faculty now wielded by nonhuman agents. To understand not only the relational ethics of life amid bots but also the economic valence of this conversational enmeshment, the origin of the chatbot should be reconsidered. This essay suggests some directions for thinking concerning postwar computer science's uptake of cybernetic psychology and the influence of this genealogy on certain problems of digital communication today.

Training early chatbots in conversational fluency represents an important chapter in the history of natural language processing (NLP) technologies. The persuasive abilities of Amazon's Alexa and the query-driven perspicacity of Apple's Siri derive from advances that begin with postwar chatbots designed to simulate psychoanalysis. Massachusetts Institute of Technology (MIT) computer scientist Joseph Weizenbaum designed perhaps the most famous early chatbot.[7] Named ELIZA, after Eliza Doolittle in George Bernard Shaw's *Pygmalion* (1913), this conversational agent communicated fluently with humans by cleverly combining generative questions and evasive generalities. ELIZA was designed to imitate the psychoanalytic method,

3 Emilio Ferrara et al., "The Rise of Social Bots," *Communications of the ACM* 59, no. 7 (July 2016): 96–104.

4 Douglas Guilbeault, "Growing Bot Security: An Ecological View of Bot Agency," *International Journal of Communication* 10 (2016): 5004.

5 Sock puppet accounts are accounts that misrepresent the agents that operate them, whether human or nonhuman (e.g., bots). On influential uses of such technology in politics, see, for example, Marco T. Bastos and Dan Mercea, "The Brexit Botnet and User-Generated Hyperpartisan News," *Social Science Computer Review* 37, no. 1 (February 2019): 38–54. See also Philip N. Howard, *Lie Machines: How to Save Democracy from Troll Armies, Deceitful Robots, Junk News Operations, and Political Operatives* (New Haven, CT: Yale University Press, 2020).

6 See Gina Neff and Peter Nagy, "Talking to Bots: Symbiotic Agency and the Case of Tay," *International Journal of Communication* 10 (2016): 4915–4931.

7 Joseph Weizenbaum, "ELIZA—a Computer Program for the Study of Natural Language Communication between Man and Machine," *Communications of the ACM* 9, no. 1 (January 1966): 36–45.

specifically the methods of Carl Rogers. What is often overlooked in writings about Weizenbaum's famous creation is ELIZA's debt to the preexisting work of Kenneth Mark Colby, a psychoanalyst-turned-computer scientist whose work preceded Weizenbaum's in print by several years.[8]

Colby's simulation of human psychopathologies paralleled a contemporaneous paradigm in cybernetics, which viewed computational models as analogs for the human brain.[9] Such models were espoused by psychologists contributing to the postwar Macy Conferences in cybernetics (e.g., Lawrence Kubie and Alex Bavelas).[10] The chatbot's origins lie with these postwar proponents of cybernetics who brought the insights of information theory to bear on biological models of intelligence, a project described by historian Steve Heims as proposing "formal models of the brain based on possible machines which can organize by using information, stored programs, communications, feedback loops, and instructions."[11] The merger of cybernetics and psychology in this period drove researchers "to understand the processes of perception, memory, and language in terms of formalizable transformations of information."[12] Yet while Colby's work led to important innovations in chatbot design, his aim in building artificial conversational agents had nothing to do with driving website traffic, automating service sector jobs, or even beating the Turing Test (all subsequent goals for which chatbots would later be employed).

In 1973, looking back on his efforts to bring the insights of psychology into postwar computer science's quest to develop artificial conversational agents, Colby describes his work as an attempt "to simulate human belief processes on a computer."[13] Before taking up computer science, Colby had been a practicing psychoanalyst, and his attempt to simulate "belief processes" combined therapeutic intervention with an investigation into the nonrational makeup of the human mind.[14] By what methods does the human mind develop, fix, and operate from its learned beliefs? Colby's methodology

8 Kenneth Mark Colby, "Computer Simulation of a Neurotic Process," in *Computer Simulation of Personality: Frontier of Psychological Theory*, ed. Silvan Solomon Tomkins and Samuel Messick (New York: Wiley, 1963). Although Colby published on these problems first, Weizenbaum's ELIZA program using an MIT computer may have been the first actually to have been run, a fact alluded to in Kenneth Mark Colby, James B. Watt, and John P. Gilbert, "A Computer Method of Psychotherapy: Preliminary Communication," *Journal of Nervous and Mental Disease* 142, no. 2 (1966): 148–152.

9 One classic example is W. Ross Ashby, *Design for a Brain: The Origin of Adaptive Behavior* (New York: Wiley, 1952).

10 See Claus Pias and Heinz von Foerster, eds., *Cybernetics: The Macy Conferences 1946–1953* (Zurich: Diaphanes, 2016).

11 Steve Heims, "Encounter of Behavioral Sciences with New Machine-Organism Analogies in the 1940's," *Journal of the History of the Behavioral Sciences* 11, no. 4 (October 1975): 372.

12 Paul N. Edwards, *The Closed World: Computers and the Politics of Discourse in Cold War America* (Cambridge, MA: MIT Press, 1996), 179–180.

13 Kenneth M. Colby, "Simulations of Belief Systems," in *Computer Models of Thought and Language*, ed. Roger C. Schank and Kenneth Mark Colby (San Francisco: W. H. Freeman, 1973).

14 For this phase of his career, see Kenneth Mark Colby, *A Primer for Psychotherapists* (New York: Ronald Press, 1951). Colby's growing doubts concerning psychoanalysis's efficacy turned him toward computational experiments. See Kenneth M. Colby, *A Skeptical Psychoanalyst* (New York: Ronald Press, 1958).

ran counter to two major trends in the hard sciences: he subscribed neither to behaviorism in his psychological model nor to the logical, rule-based paradigm of Cold War computer science. Colby's numerous attempts to automate psychiatric intake interviews (between a psychiatrist and an artificial patient) and psychoanalytic sessions (with artificial analysands) were therapeutically inconclusive. Although the artificial conversation technologies that Colby helped pioneer would lead to the origin of the chatbot, Colby's final single-author book was not on artificial conversational agents but on chess.[15]

In the proceedings from a 1962 conference on the Computer Simulation of Personality at Princeton University, Colby discusses his work within the emerging possibilities of computational belief networks: in his model, "[b]eliefs are the molecular units of information processing" and "beliefs are organized into complexes. A complex is a list of beliefs which are related to one another according to criteria of relevance."[16] As Colby explains elsewhere, "A belief is considered to be both an emotion and an idea," and "[a]t the level of social psychology, we are interested in belief systems and how they operate in generating thought."[17] Colby's insight was that to successfully imitate human conversation it would be necessary to explore how human *irrationality*, not human rationality, guides people's interpersonal and social interactions. Colby's resulting program PARRY thus sought to simulate paranoid chains of inference as drawn by human psychiatric patients.[18]

Such a technological watershed moment should not be divorced from the larger techno-theoretical and political aims that work such as Colby's served: a Cold War computational turn toward measuring, calculating, and *gaming* irrationality, affect, and the intuition of human groups formed on this era's horizon. Writing a new computational history for the chatbot demands reconsidering how irrationality was technologically captured (if not rationalized) as a metric for human sociality. The pervasively successful myriad of chatbots of today serve as opportunities to consider how linguistic inter-relationality—that human artifact called "conversation"—shares a genealogy with Cold War concerns.[19]

What is the technopolitical status of conversation in the twenty-first century? In 2009, political theorist Jodi Dean outlined the shift to "communicative capitalism" as perpetuated by "changes in information and communication networks associated with digitalization, speed (of computer processors as well as connectivity), and memory/storage capacity [that] impact capitalism and democracy," fusing capitalism with information technology and preexisting networks of human conversation.[20]

15 Kenneth Mark Colby, *Secrets of a Grandpatzer: How to Beat Most People and Computers at Chess* (Malibu, CA: Malibu Chess Press, 1979), 256. Colby co-authored two subsequent books on psychiatry and psychoanalysis, respectively.

16 Colby, "Simulations," 167. Figure from Colby, "Computer Simulation," 171.

17 Kenneth Mark Colby and John P. Gilbert, "Programming a Computer Model of Neurosis," *Journal of Mathematical Psychology* 1, no. 2 (July 1964): 406, 416.

18 Kenneth Mark Colby, Sylvia Weber, and Franklin Dennis Hilf, "Artificial Paranoia," *Artificial Intelligence* 2, no. 1 (1971): 1–25.

19 I discuss this topic at greater length in my book manuscript, "Apparatus Poetics."

20 Jodi Dean, *Democracy and Other Neoliberal Fantasies: Communicative Capitalism and Left Politics* (Durham, NC: Duke University Press, 2009), 23.

Under communicative capitalism, the use-value of messages is eclipsed by their exchange-value.[21] In this, Dean presages the arrest or rewiring of the ethos of political speech in general—a change in what we expect our speech to *do*, what we expect will come of our gestures at participation. As digital infrastructures algorithmically incentivize and guide conversation in increasingly corporate social forums, the appearance of free and open dialogue remains vital to the economic model this mode of conversation affords. Even as this "registration effect" of users' speech acts promotes a "fantasy of participation," the technologies themselves become "exquisite media for capturing and reformatting political energies . . . reinforcing the hold of neoliberalism's technological infrastructure."[22]

Yet despite the tendency to *capture* and *reformat*, there is something fundamentally novel within this infrastructure. Chatbots reveal not the limit-case of conversation in this late capitalist epoch but, rather, one of its most central paradigms. Chatbots and their related language-processing technologies are a machinic infrastructure thriving within a matrix of earlier information technologies designed merely to transmit communication, to convey messages from one node to another. Artificial conversational agents, or bots, do not simply substitute themselves for humans. Whether bots participate in known or unknown ways, in every case they *impersonate* the community they transmit. This machinery speaks *as if* on our behalf; it conveys us back to ourselves, irrationalities and all. With each passing year, it becomes more and more difficult to converse without it.

The computational invention of the chatbot gives an alternative view of how that smallest political unit in the postwar Euro-American consensus was engineered: the monadic, bounded, and auto-managerial consumer subject of neoliberalized societies. Beginning from these experiments in the "computer simulation of human personality," the chatbot, as a computational being grafted into a feedback loop of conversation with humans, moves from the *therapeutic* to the *transactional*.[23] The linkage between these two versions of the chatbot remains perceptible in the many devices that make up the Internet of Things and quietly attend to our consumer habits by surveilling, nudging, recommending, and driving our desires toward certain products. Having transitioned from automated therapist to seamlessly integrated commodity-consultant, the story of the chatbot relates one way in which, in a digital age, habits become networked to markets.

The chatbot serves the economic agenda that neoliberal economist Gary Becker envisioned when he insisted that the consumer does not simply consume but rather *produces* desire. Market demand is not an ontologically available substance; like anything else, it must be generated. How to control, or steer, this facet of the economic process? As Michel Foucault observes:

21 Dean, 26.

22 Dean, 30, 31–32.

23 Therapeutic uses of the chatbot, of course, continue and have seen a resurgence of research in recent years. For a review of contemporary implementations, see Eliane M. Boucher et al., "Artificially Intelligent Chatbots in Digital Mental Health Interventions," *Expert Review of Medical Devices* 18, no. S1 (2021): 37–48.

> [I]t means generalizing the "enterprise" form within the social body or social fabric; it means taking this social fabric and arranging things so that it can be broken down, subdivided, and reduced, not according to the grain of individuals, but according to the grain of enterprises. The individual's life must be lodged, not within a framework of a big enterprise like the firm . . . but within the framework of a multiplicity of diverse enterprises connected up to and entangled with each other, enterprises which are in some way ready to hand for the individual. . . . And finally, the individual's life itself . . . must make him into a sort of permanent and multiple enterprise.[24]

Although this quotation is taken from Foucault's writings on the rise of neoliberalism, it is striking how easily it could serve as copy for a tech brochure for a chatbot application programming interface.

Addressing the feedback loop between the consumer and the information economy, Paolo Virno notes that "*language itself has been put to work*."[25] Virno's writings on the economic value of language's automation mark a threshold between the Third and Fourth Industrial Revolutions. In the Third Industrial Revolution, the information economy transformed language-use into "wage labor."[26] In the Fourth Industrial Revolution, Web 2.0 treats language in the digital world as a plastic, cultural infrastructure, a socio-technical ligature traversing the distance from node to node, agent to agent—the stuff of networks. This twenty-first-century socioeconomic configuration of language as connecting routes between users is emblematized by the chatbot, a technology that embeds the dynamics of interpersonal conversation into a host of profit-driven spaces.

The market-based yet seemingly intimate dynamics that emerge between humans and artificial conversation agents—from chatbots to Alexa—suggest a different set of problems than those that otherwise dominate the conversation around artificial intelligence technologies replacing human workers by rendering their skills obsolete. Chatbots do not outmode the humans with whom they communicate; quite the opposite. Indeed, chatbots are designed to insinuate themselves into preexisting dynamics of human behavior (whether conversational or domestic). For this technology to be profitable, the humans must be kept in the loop since the humans are the consumers. Rather than replacing human skills, chatbots slowly alter the relational status of conversation as such for their human interlocuters.[27] Certainly the chatbot relation connects human and nonhuman, but, in its most pervasive and ubiq-

24 Michel Foucault, *The Birth of Biopolitics: Lectures at the Collège de France, 1978-1979*, trans. Graham Burchell, ed. Michel Senellart (London: Palgrave Macmillan, 2008), 241.

25 Paolo Virno, "Notes on the General Intellect (1990)," in *Marxism beyond Marxism*, ed. Saree Makdisi, Cesare Casarino, and Rebecca E. Karl (New York: Routledge, 1996), 271.

26 Virno, 271.

27 See Lucy A. Suchman, *Human-Machine Reconfigurations: Plans and Situated Actions*, 2nd ed. (Cambridge: Cambridge University Press, 2006); see also Sherry Turkle, *Reclaiming Conversation: The Power of Talk in a Digital Age* (New York: Penguin, 2015).

uitous cases, the chatbot more saliently represents and facilitates the relation between human and marketplace.

As automated personal assistants now saturate the interstices of daily life, their answers to our queries simultaneously profile us as consumers. Their disingenuously guided tours into commodity fetishism emerge at every opportunity during online interactions yet are not driven by any centrally planned calculations. The recommendations, instead, result from scrupulously attentive *listening*: uncannily tailoring themselves to conversations that human users were just having on the phone with a friend or within the walls of their living spaces. What began as the attempt at automating therapeutic conversation in the 1960s culminates in the present with a vastly different form of dialogue. This is not simply what we might call *retail therapy* but rather the commodification and monetization of the conversation as such, for it reroutes the linguistic call-and-response so definitive of human relationality in ancestral ways. As *dialogue* becomes *chat*, human conversation succumbs to metrics such as those used by chatbot design teams who "define conversation-turns per session (CPS) as the success metric for social chatbots."[28]

The chatbot redirects primordial human desire for *social* recognition into "alternative means of engagement" with this desire. The bot is a more reliable producer of this fundamental social desire than any human community of users—a central paradox of the chatbot. The chatbot, as a steerable producer of social affirmation and the recognition of personhood, is also (tellingly) unadmitted to the very human community it affirms. Simulating the force of social recognition as a commodifiable service, chatbots offer conversations more *consumed* than *participated in*. Even without the explicit use of chatbots, every computerized device we use hosts parallel, implicit conversations, every word, gesture, click-through being tracked, calibrated thoughtfully to build ever better models of what kind of "user" or consumer we are. By altering the relational premises of conversation, chatbots encourage or amplify a certain structure of desire: conversation without any Other. The future of conversation presents alternatives to alterity. What should be our response?

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28 Shum, He, and Li, "From Eliza to XiaoIce," 16.

Homay King

Sarah Winchester: Silicon Valley Developer

In San Jose, California, sits a sprawling mansion known as the Winchester Mystery House. The property is about fifty miles south of San Francisco, near the Junípero Serra Freeway, on the street now called Winchester Boulevard and was owned and expanded by Sarah Lockwood Winchester. By reframing both the Winchester Mystery House and the woman who developed it, this essay demonstrates that present-day computational personhood is informed by histories far more varied and nuanced than previously appreciated.

Sarah Winchester was heiress to the fortune of the Winchester Repeating Arms Company, which was once one of the world's largest manufacturers of guns. Winchester rifles were known in particular for their pioneering designs in automatic and semi-automatic weapons, the predecessors of today's magazine guns.[1] After enduring the deaths of her infant daughter Annie to a congenital defect and her husband William to tuberculosis, Sarah Winchester left the rifle company and her life in New Haven, Connecticut, and decamped to California, settling in the region that would later become Silicon Valley. In 1884, she bought a Victorian farmhouse and named it Llanada Villa, a misspelling of the Spanish for "home on the plains." She continued to renovate and expand this house for almost forty years, until her death in 1922. Her home was under near constant construction, with carpenters sometimes working twenty-four hours a day.

As was not unusual at the time, Winchester reportedly consulted a psy-

1 The Volcanic repeating firearm, in which Oliver Winchester invested, has been called "the parent of all-American magazine guns." Pamela Haag, *The Gunning of America: Business and the Making of American Gun Culture* (New York: Basic Books, 2016), 56.

Homay King, "Sarah Winchester: Silicon Valley Developer," *JCMS* 61, no. 4 (Summer 2022): 188–194.

chic following the losses of her husband and daughter.[2] According to legend, the medium warned Winchester that the spirits of those killed by Winchester rifles had cursed her family. While sold all over the world, including to foreign armies, the rifles enjoyed their greatest success as domestic weapons marketed to civilian settlers: the Winchester '73, immortalized in the 1950 film of that name starring James Stewart, was famously dubbed "the gun that won the West" and was responsible for the slaughter of untold numbers of both Native Americans and settlers during the Manifest Destiny era of westward expansion. The Blackfoot warriors of Montana called the Winchester Repeating Rifle "the spirit gun" for its capacity to reload itself automatically.[3] The psychic predicted that the spirits of those slain would continue to haunt Winchester unless she moved to California and built a gigantic dwelling for them. This structure, Winchester was advised, should be colossal in size but also rigged with trapdoors, winding staircases, doors to nowhere, and other maze-like features so that the spirits would be tricked and unable to harm her: it was to be a ghost trap. The result was, in one critic's words, "a four-story jumble of mansards, turrets, gables, gingerbread tracery, and board and batten siding."[4] At the time of her death, Winchester's house boasted 161 rooms, forty-seven fireplaces, over 10,000 panes of glass, and three elevators.

The Winchester House—California State Historical Landmark no. 868—is currently privately owned and operated as a tourist attraction. Its promotional materials play to the property's Gothic, haunted house associations. They paint Winchester as a lonely eccentric who held séances in a private octagonal room constructed for this purpose, where she supposedly received messages from the dead with architectural blueprints for the home. According to this literature, Winchester's superstitious nature prompted her to configure ornaments, coat hooks, and other decorative details in groups of thirteen as a kind of numeric talisman. Accounts from tourist materials also note that she rarely if ever appeared in public.[5]

But some, including Winchester's biographer, Mary Jo Ignoffo, claim that the story of her obsessional attempts to exorcise her ghosts is at least partly a myth. While most accounts agree that Winchester did indeed visit a Boston spiritualist after the deaths of her child and husband, that

2 "In *Prominent American Ghosts* (1967), Susy Smith names a Boston medium that Sarah Winchester supposedly consulted, Adam Coons. The story and the medium's name have been repeated since then in a variety of articles and brochures. An examination of Boston city directories from that time reveals a list of spiritualists, but none by the name Smith gives." Mary Jo Ignoffo, *Captive of the Labyrinth: Sarah L. Winchester, Heiress to the Rifle Fortune* (Columbia: University of Missouri Press, 2010), 80. I am grateful to Ignoffo and rely heavily on her biography of Sarah Winchester for factual information throughout this essay.

3 Laura Trevelyan, *The Winchester: The Gun That Built an American Dynasty* (New Haven, CT: Yale University Press, 2016), 39–40.

4 Cited in Mitchell Schwarzer, "How the West Was Won," in *Jeremy Blake: Winchester*, by Mitchell Schwarzer and Benjamin Weil (San Francisco: San Francisco Museum of Modern Art, 2005), 65.

5 Tour of the Winchester Mystery House by the author, August 25, 2016. For additional primary sources, see Keith R. Kittle, *The Winchester Mystery House* (San Jose, CA: Winchester Mystery House, 1997); and Ralph Rambo, *Lady of Mystery (Sarah Winchester)* (San Jose, CA: Rosicrucian Press, 1967). As a secondary source, see Christine R. Junker, "Unruly Women and Their Crazy Houses," *Home Cultures: The Journal of Architecture, Design and Domestic Space* 12, no. 3 (2015): 329–346.

she did an inordinate amount of construction on her San Jose home, and that she was indeed a recluse, there are more mundane explanations for these aspects of her biography. Winchester was only four feet ten, intensely arthritic, and had difficulty walking. Her decision to settle in the more clement environment of California was at least partly motivated by health concerns.[6] She personally ordered the stairs in her home to be built at a height of an inch or two per step; in order to fit the space, they had to zigzag rather than ascend in straight lines. They were constructed in this manner to accommodate her disability, not to fool malevolent spirits.[7] The blind windows and doorways are at least partly remnants of the destruction wrought by the 1906 earthquake; rather than repair the damaged parts of the house, Winchester simply had them boarded up and built new rooms on the other side of the property. The seemingly interminable carpentry, too, was at least partly attributable to earthquake damage. The appearances of the number 13 were in some instances arbitrary and in others probably added after her death as set dressing for the tourists. Finally, her reclusiveness can be attributed to her chronic health issues and can also be explained by her status as a wealthy widow from New England who might understandably be deemed peculiar by the local population, which at that time consisted largely of migrant agricultural workers.

Casting yet more doubt on the Sarah Winchester myth is the fact that she owned over a dozen properties throughout the San Francisco Bay Area in addition to the mysterious San Jose house. One of these was a large tract of orchard and ranch land that would later become the city of Los Altos and the Rancho San Antonio Open Space Preserve. Winchester faced a long court battle when she refused a request for an easement to build a railroad line through this parcel. She lost the case, the rail line was built, and she was compensated $30,000 for her trouble. This route would later become Foothill Expressway, a major north–south thoroughfare that connects the city of San Jose to Stanford University. She also preemptively purchased a parcel adjacent to hers when it was rumored that an investor was planning to open a saloon there.[8]

Winchester owned two houses in the city of Atherton, which was already on its way to becoming an enclave for the very wealthy. Her first Atherton home bore no resemblance to the rambling Victorian. It was a Mission Revival, ranch-style structure with a stucco exterior and Arts and Crafts movement interiors, typical of the region.[9] Winchester also owned a tract of shoreland on the San Francisco Bay, which housed a Tudor-style cottage. She kept a houseboat there, known as Sarah's Ark, a name that suggests survivalist religious notions. Houseboating, with its cooler temperatures and proximity to the water, was a chic way to spend the summer at the time. Her valuable plot of bayside land now encompasses the entire city of Burlingame, including the San Francisco International Airport. Some of Winchester's properties, including houses in

6 Ignoffo, *Captive of the Labyrinth*, 84–85.
7 Trevalyan, *Winchester*, 136.
8 Rambo, *Lady of Mystery*, 14.
9 Ignoffo, *Captive of the Labyrinth*, 181.

Palo Alto and San Jose, were rentals. With the help of a lawyer who had been an affiliate of her husband, Winchester managed all of these assets with great business acumen, acquiring hundreds of acres. It is not an exaggeration to say that she owned a large percentage of what is now the San Francisco Peninsula and Silicon Valley, today's equivalent of hundreds of billions of dollars. She owned approximately 2,800 shares of Winchester stock, a majority share, the dividends of which would have given her an annual income of approximately $150,000 in 1880s dollars, or $3.9 million in 2022.[10]

Winchester, in other words, was perhaps less a mystical madwoman than a savvy business tycoon, driven as much by capitalist ambition as by the melancholia of her personal losses, or guilt over the slaughter of Indigenous Americans. Her real estate acquisitions were economically strategic—not convincingly explicable as pure acts of symbolic atonement or reparation. In some ways, they appear to be nearly the opposite: a continuation, not an undoing, of settler colonialism. Rebecca Solnit mentions Sarah Winchester briefly in *River of Shadows: Eadweard Muybridge and the Technological Wild West*, and while Solnit accepts the mythical version of the tale, she does note that "the house came to seem like the emigrant West itself in its insatiable desire for expansion."[11] While Winchester retained several homes for her own residence, her real estate purchases were primarily investments; they generated income from rentals, ranching, and fruit-growing. She blocked others from acquiring land adjacent to hers. As her mechanic Fred Larsen observed, "She wasn't crazy . . . she was a plenty smart woman."[12]

The few charitable projects Winchester undertook did not benefit First Nations peoples or veterans or survivors of gun violence. They included a hospital for the tubercular in New Haven that was a memorial to her late husband and a donation to a fund to preserve the California Redwoods. Sarah Winchester came from a progressive New England family whose members advocated for abolitionism, suffrage, and animal rights; they included the founder of the American Society for the Prevention of Cruelty to Animals.[13] Spiritualism, in turn, has been described as a socially progressive feminist movement that rejected racial inequality, killing, and colonialism and that criticized "groveling materialism."[14] Winchester, though, did not take a public stance on any of these causes or make any known contributions to them.[15]

Sarah Winchester was not so much possessed as possessing. Still, she was more complex than the average Gilded Age tycoon. Her home boasted many high-tech amenities that were uncommon at the time, such as push-button gas lighting, modern plumbing, insulation made of wool, and a hydraulic elevator. These minor engineering innovations speak to an ingenuity that would come to be associated with Silicon Valley many decades later. Winchester personally designed many of the architectural features in her home, includ-

10 Rambo, *Lady of Mystery*, 14.
11 Rebecca Solnit, *River of Shadows: Eadweard Muybridge and the Technological Wild West* (New York: Viking Penguin, 2003), 117.
12 Quoted in Trevelyan, *Winchester*, 125.
13 Haag, *Gunning of America*, 85.
14 Haag, xxiv.
15 Ignoffo, *Captive of the Labyrinth*, 17.

ing the staircases that accommodated her arthritis. Other features of the Mystery House, too, testify to a fusion of luxury and technical ingenuity. She designed an indoor plant conservatory with a canted floor and wood panels that could be removed to allow water run-off to drain into the garden below, thereby conserving water and minimizing labor while still preserving the greenhouse's Victorian aesthetic in the drought-prone region. She created a prototype for a laundry sink with a molded-in scrubbing rack and designed a custom shower made of pipes with pinholes installed at the height exactly below her neck, so that she could bathe without wetting her hair. Her window catches, which she also personally designed, used a spring closure adapted from the loading mechanism of the Winchester automatic rifle, anticipating the way that technologies developed by the military-industrial complex are adapted into consumer products today.

The tourist literature also makes much of Winchester's generous treatment of her employees, most of whom were immigrants from China, Japan, Ireland, and Italy. She was on close terms with many of them; five were bequeathed small sums in her will. But Sarah was also suspicious enough that she had interior skylights installed in strategic locations so that she could monitor her staff from above. These windows allowed in light and warmth and were thus energy efficient, but they also allowed for optical control and surveillance of her employees. The Mystery House also had a primitive intercom system known as the Annunciator, essentially a network of pipes through which Sarah could speak to her staff from other rooms. These panopticon-like features positioned Winchester as the disembodied eye and voice of the house.

In the decades after her death, the lots adjacent to Winchester's property were rapidly developed by private corporations. Across Winchester Boulevard, a Town & Country drive-in shopping center designed by Jeré Strizek arrived in 1960, notable for its single-level structures with Spanish-tile roofs and abundant parking.[16] The Town & Country franchise had been launched in the 1940s when the notion of a drive-in shopping experience was still novel: today, one would simply call this a strip mall. In the mid-1960s, iconic domed movie theaters were built in the lot directly adjacent to the Mystery House, designed by Vincent Raney. The first of these, Century 21, was built in 1964 with a giant curved screen for the three-strip Cinerama format. Its neighbor, Century 22, arrived in 1966 and showed films in Super Panavision 70 and accommodated nearly two thousand spectators. In the 1970s and 1980s, the Century 22 would regularly sell out screenings of blockbuster films. The third dome to be built, Century 23, was a two-screen theater completed in 1967. As of September 2019, there was an active campaign to preserve the original dome as historically significant architecture, but its fate is not entirely certain.[17]

Diagonally across from these theaters sits a large indoor mall that opened in 1986. Currently known as Westfield Valley Fair, it was owned by the Hahn

16 For more on the history of Town & Country drive-in shopping malls, see Julie Albert, "Town & Country Shopping Center Was First of Its Kind," *Columbus Dispatch*, February 24, 2013.

17 Save the Domes Facebook group, accessed January 15, 2022, https://www.facebook.com/savedome/.

Group, a major corporate developer responsible for forty-five similar indoor malls from coast to coast. A newer development now sits on the site of the Town & Country strip mall, which was demolished in 2003. Named Santana Row, it was built by the Executive Home Builders firm, known for its properties in Las Vegas. Santana Row is a mixed-use complex featuring residential and office rental units, commercial storefronts, and outdoor pedestrian areas designed to simulate a European town. The mall features piped-in music, which is audible while strolling through the outdoor areas; illuminated fountains; and pastel-painted façades with decorative metalwork. It is a highly controlled and meticulously curated environment similar to the Grove in Los Angeles and the Americana in nearby Glendale. One of its current tenants, visible from the Mystery House, is the data-mining company Splunk.

All of this suburban development suggests that, in a curious way, the spirit of Sarah Winchester's enterprise continued after her death. She was prescient, and she was indeed a visionary and an eccentric—but in different ways than the legend tells. She was a venture capitalist in Victorian crinolines, a titan of real estate masquerading as a diminutive widow. Her story bears retelling, and my version of it is meant to complicate existing understandings of the origins of Silicon Valley and contemporary tech culture. The fusion of acquisitiveness and mysticism that she so perfectly crystallizes is related to what Fred Turner calls the Californian Ideology: a blend of "libertarian politics, countercultural aesthetics, and techno-utopian visions."[18] Her worldview combined greed and invention with an imagination given to woo-woo spiritual thinking and grandiose fantasies of reparation. Her séances, superstitions, and divination practices were not merely an idiosyncratic obsession or pastime; they were intimately entwined with her real estate speculations and business ventures. The territory she acquired throughout the Bay Area would later become the tech industry center of the world. A prefiguration of the iconic figures of the tech CEO with quirky New Age affectations, Winchester portended Silicon Valley's paradoxical future. Her home is thus both a symptom of nineteenth-century historical trauma and a harbinger of its irresolute persistence into the twenty-first century.

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18 Fred Turner, *From Counterculture to Cyberculture: Stewart Brand, the Whole Earth Network, and the Rise of Digital Utopianism* (Chicago: University of Chicago Press, 2006), 208. Turner takes this term from Richard Barbrook and Andy Cameron, who described *Wired* magazine as a purveyor of "the Californian Ideology." Richard Barbrook and Andy Cameron, "The Californian Ideology," accessed January 15, 2022, http://www.imaginaryfutures.net/2007/04/17/the-californian-ideology-2/. Turner traces this ideology to the Whole Earth Network. In the book project from which this essay is drawn, I trace it to California's colonial eras. For further reading on the history of Silicon Valley, see Margaret O'Mara, *The Code: Silicon Valley and the Remaking of America* (New York: Penguin, 2019).