Performativity without theatricality: experiments at the limit of staging AI

Douglas Eacho

Published online: 27 Jul 2023.

Submit your article to this journal ☑

View related articles ☑

View Crossmark data ☑

Performativity without theatricality: experiments at the limit of staging AI

Douglas Eacho

University of Toronto Centre for Drama Theatre & Performance Studies, Toronto, Canada

ABSTRACT

Referencing participant observation in a research-creation lab devoted to performance and artificial intelligence (AI), this article summarizes and intervenes within two discourses surrounding the performativity of computation. I first summarize the media-theoretical debate over whether or not electronic computation counts as what J. L. Austin and Jacques Derrida defined as 'performative'. This turns out to be a divide over the politics of theoretical analysis, and as such these positions can be synthesized together. Relying on Samuel Weber's concept of 'theatricality', I set out a novel proposal for understanding computation as representing a limit of performativity without theatricality. Secondly, I review the experiments conducted with staging recent machine-learning models within the University of Toronto's BMO Lab. A scholarly tradition distinct from the above has turned to a 'metaphysical performativity', describing all reality as performatively animate rather than representational and inert; some have pointed to recent AI developments as a demonstration of the truth of this view. I dissent, with evidence from the aesthetic experience of watching AI performance. Finally, I critique the ideology implicit in theories that take the appearance of AI animacy as a model for social reality.

The curtain at London's Queen Elizabeth Hall stays drawn. Before it stands a DEC PDP-8, a rack-mounted minicomputer possessing the roughly humanoid dimensions of a refrigerator, and an office desk and chair at which stands the PDP's keyboard interface. From stage right and left enter electronic music pioneers Delia Derbyshire and Peter Zinovieff, who start up the machine. Up in a booth, a bearded announcer looks to camera and declaims,

> The next item, *Partita for Unattended Computer* by Peter Zinovieff, is a true live performance, in the sense that no magnetic tape is being used at all. Furthermore, the computer has a choice at various stages in the procedure, and the piece therefore comes out different every time it's played. The performance you are about to hear is therefore unique and unrepeatable. First of all, checks are made to make sure the composition is correctly loaded into the computer. The computer is started and will carry out the performance unattended. (BBC 1979)

CONTACT Douglas Eacho ✉ douglas.eacho@utoronto.ca 🌐 University of Toronto Centre for Drama Theatre & Performance Studies, CANADA

It is January 1968, and the question of whether or not a computer *performs* – what it means to be live, what it means to be a performance, and what verb captures a computer's action – seems already an anxious one. Let us begin with care. The event appears to have been the first in which a computer sat on a stage and executed operations for the aesthetic interest of a live audience. The computer commands a few synthesizers, which play music for several minutes after Derbyshire and Zinovieff have left the stage; it is in this sense 'unattended', though the audience attends closely to it. And, further, it is a 'true live performance', as we are not listening to tape playback. Zinovieff's program also included some indeterminacy, which is ambiguously phrased ('Furthermore,') as somehow augmenting and underlining its 'true live performance' status, while not being strictly necessary for it. Then there are Derbyshire and Zinovieff, who appear to be attending to the unattended machine – but not to worry, they are not *doing* but simply monitoring, managing: 'checks are made'. As they exit, left behind are a desk and an operator's chair, reminding you of the woman who punched some keys in it just moments ago (who was she if not the composer, not the player?). Then there is that curtain, closed, the performance ahead of it, not quite a 'full' spectacle but nevertheless on the stage. And then finally, the announcer himself, assuring the spectators that this is no 'mechanical Turk', landing on that tortured phrase: the computer 'will carry out the performance'.[1] And so it does. More than 50 years later we are much more accustomed to computers commanding musical synthesis on the stage – rare would be the performance without it. We live with computers purring and buzzing and blinking at all hours, not to mention writing, generating, and drawing. Yet the question hangs: Does the computer perform?

Though few in a 1968 London audience would have ever laid hands on a computer, they were likely familiar with 20 years of arguments over what computers could or could not do. Can computers think, like brains (Berkeley 1949; Grey Walter 1953)? Can computers work, automating away the realm of employment (Wiener 1950; Blauner 1964)? Can computers make art (Rockman and Mezei 1964; see Higgins and Kahn 2012; Taylor 2014)? Often, these debates advanced explicit philosophical programs to redescribe ontology in terms of computable information, so that the apparently straightforward question 'What can a computer do' became 'What is' (see Pickering 1995a, 31). Elsewhere these debates seemed proxies for political contests about the future of work in the capitalist core, about its gendered and racialized distributions, about the status of those excluded from formal employment, about the class positions of workers who sat at desks, and about whether universities would supply job training for newly computerizing firms (Hicks 2017). The intellectual and material stakes behind this discourse were outsized and overdetermined.

Over the past decade this discourse has undergone a major revival. In the early 2010s, a confluence of factors that gave rise to an intensely public boom in machine-learning research – the academic rehabilitation of computer scientists Geoffrey Hinton and Andrew Ng's advocacy for neural networks, the generation of vast data corpuses within the increasingly monopolized Web, the profusion of advanced graphics processing units (GPU's) developed for the video game industry, and, not least, low post-2008 interest rates – all allowed vast social and economic resources to flood into exploring what computers *really* could do. Consequent publications on the potential cognitive capacities of computation, the prospects for artificial intelligence (AI)-led automation, and the

aesthetic status of digital generation, could fill libraries with their revivals of each midcentury battle. The popularity of these discussions, overflowing the academy into trade books (and science fiction), inevitably suffuses any more restricted analysis of whether or not computation *can [x]*. While the wise path would likely be to abstain from all such antimonies, this article will instead elaborate its synthesized position with an explicit acknowledgement of its wider political echoes. The levels of terrain are inextricably layered with others; a bifocal perspective is necessary.

In this article I recapitulate and advance a novel position within what I call the 'computer performativity debate'. The term 'performativity' has a far more technical cast than the verb 'to perform', whose expansive (and specifically English) domain has long resisted attempts at definition (Thomas 2021). In contrast, the question of whether or not computation can be called *performative* has a definition, or at least a bibliography, that debating opponents broadly accept. A clear conversation can thus be traced. Yet the machine-learning renaissance has perhaps upended this older conversation, posing anew the obvious structures of performativity, and pressing the appearance of *performance*, on any observer. Performance then bringing with it its centuries-long connotations of subjectivity, expression, and agency, our pat analytic debate spins out into politicized terrain. In an attempt to address the challenges posed by machine learning, and working from a belief in aesthetic experience as itself evidential, I will bolster my theoretical argument with my own observations from experimentally integrating machine learning programs with live performance in a research-practice lab. While I present my theoretical argument as coherent on its own terms, I hope this experiential report can both provide tangible illustrations of the 'unattended computers' of our day and support my conclusions.

Discussions of the 'performative' and its relation to computation can be organized into two discourses. Each has rarely taken notice of the other, and the two parts of this article will address them in turn. The first has organized itself around the work of Jacques Derrida. Though formulated with antagonistic vigor, the positions articulated by media theorists N. Katherine Hayles, Wendy Hui Kyong Chun, and Alexander Galloway share a common sense of terms and stakes. I propose that they can be synthesized through the structure of the asymptotic *limit*. Working from hints left by Derrida and his interpreter Samuel Weber, I clarify this limit through the term *theatricality*. Computation, with the privileged example of machine-learning art events, can be said to approach a *limit of performativity without theatricality*. This synthetic model is this article's central contribution.

In part two, I discuss my appointment at the University of Toronto's BMO Lab in Creative Research in the Arts, Performance, Emerging Technologies, and AI. Our experiments drawing recent machine-learning models into conversation with live performers have surfaced fundamentally disjunctive dynamics between them. In this light I then turn to the other discourse of the 'performative': the *metaphysical performativity* found in the networks of Bruno Latour, and most thoroughly explored by science and technology studies (STS) theorist Andrew Pickering. An ontology of expansive and immanent animacy, the metaphysical performative appears to correspond aptly to the live generations of machine-learning models. So hold several leading performance theorists. Yet this paradigm grasps neither the aesthetic nor the social function of how these tools actually fit within theatrical performances. The more dialectical account offered by part one's model, emphasizing contradictions and mediations, better fits the dynamics of aesthetic

production with digital tools. In conclusion, I will propose that like its midcentury predecessor, this debate is less a theoretical one than a political contest over the fruits and spoils of what we call 'automation'.

The computer performativity debate, or, what did Jacques Derrida think of terminal commands?

In a series of books published in the 2000s, N. Katherine Hayles, Wendy Hui Kyong Chun, and Alexander Galloway map a disagreement over whether or not computation is 'performative'. This was also, plainly, a debate over whether to read Jacques Derrida as a theorist of emancipatory play (Chun) or as a cautionary prophet of the authoritarian use of 'communication' (Galloway). A careful study of their positions excised from those broader implications, however, can suggest their possible synthesis. As is common across this literature, I will begin where Derrida found the term, with British analytic philosopher J. L. Austin.

In his *How to do things with words* (1962), Austin proposes a distinction between the 'performative' and 'constative' deployments of language. Constatives profess to be true about the world, such as the sentence 'my wife is named Rebecca'. They represent. Performatives, by contrast, aim to do something in the world, such as (to adapt Austin's famous example) when I said 'I do' in my marriage ceremony. As established by the law of the state of Maryland, I at that point entered a contract, gained new social status, changed my tax forms, and enacted a ritual. Performatives act on the world: 'the issuing of the utterance is the performing of an action' (6).

Austin develops two points. First, he delineates the many ways performatives can fail – after all, this very exposure to failure or *infelicity* (rather than 'falsehood') perhaps best contrasts them with the constative statement. One can issue a performative in bad faith ('abuses'), make a mistake that vacates the act ('misexecutions'), or issue a performative in improper context ('misfires'). In the wedding example, one can marry while being unfaithful (abuse), misspeak while stating one's oath or err on one's paperwork (misexecution), or hold a ceremony unrecognized by any institutional authority (misfire). Finally, Austin drops the floor out from his entire enterprise and observes that the constative/performative distinction cannot hold. Even when making a true/false statement, one is also trying to do something: all utterances appear to be performative *and* constative. All speech functions, at least in part, as forceful act, just as all performatives cannot escape some status as representational statement.

In his classic 'Signature, event, context', Derrida observes that Austin appears to slide into a Nietzschean position here, sublating all apparent representation to the rule of force (1988, 13). Derrida strongly opposes this reading, and argues that Austin's own text shows that the 'performative' hollows it out from the start. Centrally for our purposes, Derrida expands on Austin's passing admission that all performatives have the potential to *fail* (recall that all speech acts are performative). 'What is a success when the possibility of infelicity [*échec*] continues to constitute its structure?' (15). Iterability defines all communication, and iterability is itself defined by the success/failure antimony. 'A successful performative is necessarily an 'impure performative […] would a performative utterance be possible if a citational doubling [*doublure*] did not come to split and dissociate from itself the pure singularity of the event?' (17). His example, naturally, is the theatrical

stage, that classic art of the loss at the heart of repetition. All performatives (all communication) presuppose the possibility of the stage, of a certain hollowness, of a gap that will never be effaced. Nietzsche's, and perhaps Austin's, dream of speech as fully present efficacious action is a fantasy: really, even 'actions' have the 'impurities' of speech.

Code, at any approximation, presents a problem for this argument. Writing in my terminal to make my computer write back 'Hello World' would seem as perfect an Austinian performative as possible: the utterance creates an effect. As everyday people frustrated by language it feels easy enough to entertain Derrida's idea that words are always haunted by their possible failure. But do we want to say that *computation* presupposes its own failure? Hayles provides the clearest articulation of the dilemma:

> Code that runs on a machine is performative in a much stronger sense than that attributed to language. When language is said to be performative, the kinds of actions it 'performs' happen in the minds of humans, as when someone says 'I declare this legislative session open' or 'I pronounce you husband and wife'. Granted, these changes in minds can and do result in behavioral effects, but the performative force of language is nonetheless tied to the external changes through complex chains of mediation. By contrast, code running in a digital computer causes changes in machine behavior and, through networked ports and other interfaces, may initiate other changes, all implemented through transmission and execution of code. Although code originates with human writers and readers, once entered into the machine it has as its primary reader the machine itself. (2005, 50)

Hayles holds that code is different. The complex chains of social mediation that haunt any appearance of performativity with the specter of the stage simply cannot be compared with the reliability of electronic transmission. What, then, to call this – a radically Austinian but not-Derridean performative? Even though Derrida's celebrated argument was precisely that Austin's discussion already required Derrida's reading of it? Hayles's student Galloway would therefore hold that a new term is needed. 'Performativity' should be reserved for (Derridean) intersubjective exchanges holding the psychic possibility of suffering, while '*execution*' can serve for code's unhauntable (Austinian) efficacy (Galloway, 2012, 70–71).

Though differing on how to describe it, Hayles and Galloway agree that code seems to historically transform the situation of writing, granting for the first time a writing that really does do things with its 'words'. Wendy Chun attacked this premise as making a 'fetish' of code's causal authority. For Chun, code is performative, and thus shares the iterability that supports and undermines all performatives: 'in truth the power lies […] in social and machinic relations. If code is performative, its effectiveness relies on human and machinic rituals' (2013, 51). Does code have the risk of 'misfire'? If that risk exists, but is very uncommon, does that make code qualitatively different from speech acts? Chun's position marks out a now-familiar narrative we could call *glitch optimism*: the hope that the often comic failures of code to live up to the grand claims of tech marketing, or at least aesthetic demonstrations of them, will lead the public to view computers more skeptically; as performance theorist Ioana Jucan would conclude, 'the big wide world is *always* tinged with unpredictability' (2015, 155; see also Joque 2018, emphasis original). As the operations of computers increasingly align with the entrenchment of power, perhaps radical theory entails noticing how thin and fragile such operations truly are (Fisher 2020). Alternatively, to those who think like Hayles and Galloway, radical theory demands a clear-eyed appraisal of the new powers held by one's

opponents. After all, in a regime of algorithmic power, 'a[n Austinian] misfire cannot "jeopardize" the system, it is immediately reingested to further refine behavioural models or profiles' (Rouvroy and Berns 2013, xi, see also Hansen 2015; Denson 2020).

The computer performativity debate has swiftly outpaced any restricted contest over the material substrate of digital computing, over how 'reliable' it is to write in assembly, or over how typographic interfaces correspond to voltage differentials. It has instead become a debate over the politics of theory: whether to tell a story where art shows us how close the left could be to victory, or, explains why the left keeps losing. Yet what is most fascinating about the peculiar position of computation within contemporary society is precisely the ambivalence traced by this debate. Computers adjudicate, measure, coordinate, hire, fire, circulate, schedule, track, archive; at the same time, none of these actions 'count' without accompanying actions out in the meatspace world, usually involving human workers. Automated judicial sentencing in the US court system, for example, *both* administers carceral violence without any room for protest or appeal, *and* serves as a flimsy cover for a quite human and deliberate system that merely hopes to dodge accountability for any one sentence (O'Neil 2016; Eubanks 2018; Benjamin 2019). Galloway's 'execution' emphasizes the former, and Chun's performativity the latter, but our task would seem to be to dialectically grasp their unity. Indeed, were we to follow Chun's evocation of the 'fetish' to its theoretical source, we would find a ready paradigm for this duality in *the commodity*: a 'real abstraction', a human creation that both stands in for and transforms social relations (Sohn-Rethel 1978, 68–70; Heinrich 2012, 71–79). Marx held neither that the commodity was a mere false appearance nor that it was a substantial independent entity. The event of computation must likewise escape the too-simple antinomy of performative efficacy vs. imaginary hype. Perhaps the structure of the *limit* allows such a synthesis, in which we accept Chun's argument for the strict impossibility of infallible execution while also accepting Galloway et al.'s case that this impossibility does not stop the powerful from approaching that impossible horizon. To support this, a more conceptually precise vocabulary will be needed.

Fortunately, performativity finds its ready double – *theatricality* – waiting in the wings. Though Hayles and Galloway do not cite them, there are several late Derrida passages that directly encapsulate this debate. Speaking on the 'promise', a paradigmatic performative, he stressed the importance of its potential for failure:

> [i]t must have the capability of not being a promise, of being broken, for it to be possible, for it to have the chance of being possible. This threat is not a bad thing, it's its chance. Without the threat, there would be no promise. If the promise was automatically kept, it would be a machine, a computer, a computation. (2007 [2003], 459)[2]

Here Derrida seems to adopt Galloway's position, associating at least the idea of computation with the specter of the automatic fulfillment (and therefore negation) of intention. He evokes this antinomy again in the performative in a text from the same period:

> One may say of a machine that it is productive, active, efficient, or, as one says in French, *performante*. But a machine as such, however *performante* it may be, could never, according to the strict Austinian orthodoxy of speech acts, produce an event of the *performative* type. Performativity will never be reduced to technical performance […] To think *both* the machine

and the performative event together remains a monstrosity to come, an *impossible* event. (2002, 74, emphasis original)

In the knotty essay that follows, Derrida observes that while his subversive model of the performative – stressing its repetition, contingency, and exteriority – borrows mechanical imagery to trouble any romantic image of the self-performing subject, it also seems to still exclude any concept of a strictly mechanical/computational performative, since machines (much like the romantic Ego) in theory function without the seams and cuts that define the event. He has upended a binary only to find it re-established in his own account. He admits that this seems problematic, but cannot resolve the bind (2002, 136, 158–159). With felicity, his disciple Samuel Weber would then suggest a way out through the *theatrical*: Derrida's confusion derives from his programmatic commitment to hold the performative and theatrical together. If we distinguish them, however, we can use both to better analyze the specific challenge of the *computational event*.

Weber defines 'theatricality' as a 'medium that redefines activity as reactivity, and that makes its peace, if ever provisionally, with separation' (2004, 28–29). Where the performative takes a repeated structure (the wedding ritual, for example, or a line of code) and produces it efficaciously into the contingent present, the theatrical works in the other direction. On the stage, everyday actions present as rehearsed repetitions, and paradoxically seem at increased risk of failure. Referring to Walter Benjamin's essays on Bertolt Brecht's use of electronic media in his theatre, Weber underlines the '*interruption*' that constitutes the theatrical:

> Gesture interrupts action, which, as a movement of meaning, constituted for Aristotle the primary object of tragic representation. By interrupting this movement of fulfillment – and action almost always connotes fulfillment – gesture allows the representing to emerge as a process of setting-before [*Vorstellung*]. (2004, 113)

Classic performatives are also theatrical. The wedding sets itself before, invites interruptions, halts and fractures the sanctity it professes. The judicial sentence appears shallow, socially constructed on obviously objectionable ground, even as it effects violence. The promise evokes the social role of its promiser as well as its precarity. This conjoined structure was always Derrida's point: performatives exist in the social world, they are built of representations and abstractions, they are neither 'automatic' nor spontaneous expressions of free will. To say that the execution of computer code, at least as an ideal type, is *performative but not theatrical* is to say that it transforms a repeated structure into an action-effect *without the possibility of interruption*. As Bernard Stiegler argued, the problem is one of time: code performativity happens so quickly that it lacks Derrida's theatrical 'différance' [difference/deferral], the gap in which some contingency could enter, resulting in a '*structural elimination of any quasi-causality, that is of every event*' (2017, 115, emphasis original). In this absence of interruptability, this lack of cuts or gaps or 'setting-before', the performative execution of code can be understood as uniquely anti-representational, anti-spectacular (pure banality, radically predictable), an event that is not an event.

Countless encounters with computing present the performative-but-not-theatrical structure to us. 'Hello there' always appearing back to you in your terminal, calculations in Microsoft Excel following your formulas to a fault, Mario jumping when you press A. Hence Hayles and Galloway's position that these events escape the usual

performative-representational structure: they lack the theatrical *gap*, risk, separation. And hence Chun's position that these performatives are nevertheless always embedded within larger social contexts: Mario jumping might be a rather un-theatrical code-performance, but someone making Mario jump (and risking failing to do so at the right instant) *does* become a theatrical performance: i.e. Twitch. As Gilbert Simondon insisted, 'the robot does not exist' (2017 [1958], 16). The non-theatrical performativity of computation can then be said to resemble automation generally. No production process can be said to be *fully* automated; someone will always have to sweep the floors, repair the pipes, load in the coolant delivery, manage the janitors and repairers and loaders (Braverman 1974; Munn 2022). Yet to say that therefore automation is a fully false concept would be to deliberately close one's eyes to technicity as such, losing sight of the economic transformations that have transformed, though not eliminated, employment for most humans over the past 50 years (Smith 2020; Benanev 2020). The performativity of computation, like automation generally, is a strictly speaking 'impossible' structure which nevertheless pervades and motivates our historical period. It marks a *limit* which, for historically particular reasons, much of our collective effort asymptotically approaches without ever challenging its impossibility. Performativity without theatricality: impossible, monstrous, paradoxical, abstract, and, for us, very real.

The metaphysical performativity debate, or notes from staging the non-theatrical

Since 2020, I have worked with the University of Toronto's BMO Lab in Creative Research in the Arts, Performance, Emerging Technologies, and AI. Under the direction of media artist David Rokeby, the Lab has taken advantage of our campus's wealth of machine learning expertise and directed technically advanced research toward the unusual use case of aesthetic live performance. How might machine learning models motion-capture data from dancers? Could an image-generation model be run at a speed such that a performer could speak words, prompt the model's live-projected output through speech-to-text, and allow an audience to associate the words with fluidly moving imagery? Can machine learning be used more infrastructurally, to parse a performer's movements into discrete gestures and use them as personalized control inputs? Alongside all of this exploratory work, we have maintained regular sessions examining the most obvious AI-and-theatre intersection: feeding professional Toronto actors live-generated text from customized versions of OpenAI's Generative Pre-Trained Transformer (GPT) models.

An important lesson from these projects has been their difficulty. Even with capable researchers and formidable racks of NVIDIA GPUs, machine learning models are not designed to run natively at the high speeds necessary for live performance. Conversing with the popular cloud tool ChatGPT is remarkably fluid, and often faster than a text-chat conversation, but it does not approach the rapidity (and overlapping anticipations) of improvised spoken conversation.[3] Controlled largely by Pacific-US tech monopolies (Google, Microsoft, Facebook), contemporary machine learning has been driven with the assumption of access to server rooms full of data freely provided by Web users but often privately held. One may be able to download and run an image-generation model, for example, but without any access to its initial training data and limited

ability to re-train it. When imagining today's AI as a *live performer*, then, one first confronts not a metaphysical problem but a commercial one: these models are constructed by firms who intend for users to stay tethered to their own servers and computers. As open-source models begin to circulate, most prominently the image-generator Stable Diffusion, this may begin to change – yet to assume the indefinite continuation of business models like Stability AI's, with expenses of $50 million a month for free products, may instead prove be an intemperate holdover from the speculative frenzy of 2010s Silicon Valley (Wiggers 2022).

The most customizable model our Lab has worked with remains OpenAI's GPT-2, a generator of more or less coherent English text. Trained on text scraped from the Web, including all of Wikipedia, Genius, and Reddit, GPT-2 can produce writing that reads coherently at impressive length, referring back to its own text over a span of several paragraphs. Unlike its more powerful successors, GPT-2 can be fine-tuned on specific corpuses of text with ease. The texts of Shakespeare, extensive and conveniently available in plain-text format online, are ideally suited to the task, but we have also trained models emulating the plays of Anton Chekov, Euripedes, and the biographical solo-shows of one of our collaborating actors. Text generated by these fine-tuned models follows the formatting of source texts precisely, even marking exits and entrances with proper punctuation (though its ability to track who is or is not on stage is inconsistent.) Further, such text can be manipulated in real time through various parameters, the most intriguing of them 'temperature' – the level of randomness employed to push the model through its various predictions. With a temperature too low, the Shakespeare model may begin with 'Two households, both alike … ' and proceed to write the entirety of *Romeo and Juliet*. An accurate imitation of the source, yes, but not a very worthwhile use of that expensive NVIDIA card. Too high, however, and the model begins to spin past English words and mash incoherent syllables together.[4] Fluctuating temperature within certain bounds generates a
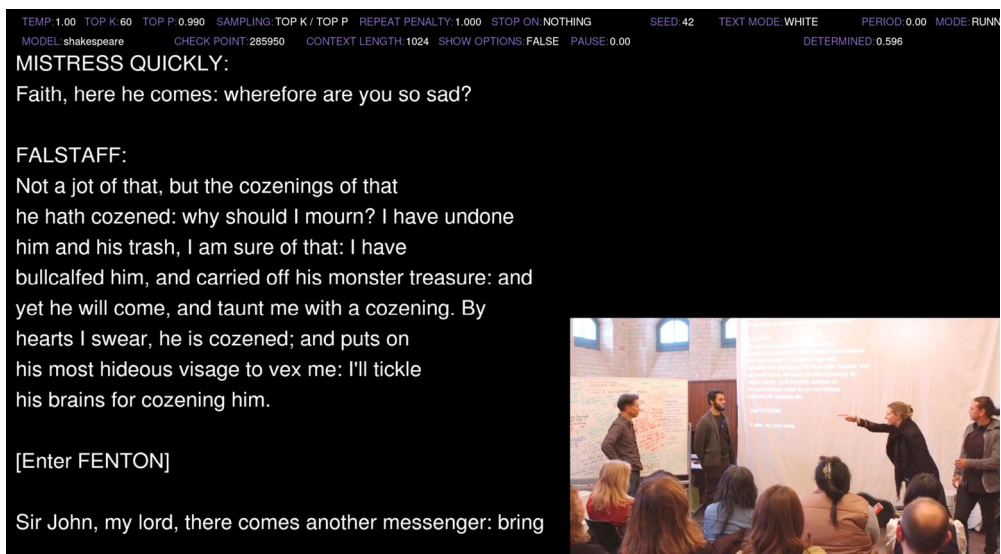

Figure 1. Rick Miler, Sebastien Heins, Maev Beatty, and Ryan Cunningham perform GPT-2 'Shakespeare' at the BMO Lab.

live-spooling text that reads alternately like dull Elizabethan verse or like forgetful Eliza-
bethan rogues on hallucinogens. The latter, of course, became our preference (Figure 1).

Our experiments, as research activities rather than developmental rehearsals, have
held actors to the task of dramatizing this text projected live scrolling on a wall at dur-
ations of up to an hour. Trained professional actors, already expert with the language
styles the models succeed at extending, have little trouble assembling text into emotional
if inescapably ironized scenarios. 'Oh heaven! do not you see a cherubim fall'n hence! / O
my boy, I will chastise thy unhallow'd heart, / And cleave to my foot the roots that roots
you;' reads a typical Shakespeare pass – failing at meter and sense, but supplying
language with direction and urgency for an actor to work with.[5] Watching such material
at long length gives an impression of postmodern channel-surfing, as professions of devo-
tion, hatred, warning, and affection cycle through one another at dizzying speed. Under-
graduate students, by contrast, flounder with such text. Even working with more prosaic
models (Chekov, musical theatre lyrics), most stand petrified by the bare task of trying to
recite language that never quite resolves itself. Actors bring their lifetime experience to
the task of transforming a line of text into a dramatic image in seconds – at length,
one feels that one is *not* watching AI text but is instead watching actors as athletes, exer-
cising their faculties. To some degree, this result resembles the late wave of 'uncreative
writing' popularized by New York companies like the Nature Theatre of Oklahoma
(NTOK) and Elevator Repair Service. Yet it remains exhausting and boring in a way that
NTOK's ten-hour phone call transcripts do not.[6] The plain demonstration of the statistical
substrate of language, of its mechanicity and objectivity, reveals itself to the spectator
negatively: one watches live performance trying to frantically compensate for some
lack, to overflow affective boundaries normally contained by the sense of purposeful
language. Often funny and shocking, this process becomes banal through its consistency.
Actors performing this text are *always* engaged in this single task, looping endlessly
through text that likewise cannot manage any sort of arc.

Another ongoing Lab effort has focused on machine learning image generation. Our
work-study assistants have taken Stable Diffusion, which generates images from text
prompts, and increased its rate of generation while attaching a speech-to-text program
to its input. One can as a consequence speak into a microphone while the model gener-
ates a fast succession of illustrative images from your words. Such a system affords a dia-
logic, improvisational performance, and we have just begun exploring how such
performances could be structured, as well as what a performance text written for such
a situation should be like. Exploring how best to prompt these models toward surprising
imagery fascinates us, much as it has fascinated the followers of myriad social media
posters with inventive talent for the task (e.g. Janelle Shane, @weirddalle). But our ulti-
mate focus lies not with the spectacle of AI, but with the spectacle of watching
someone prompt AI. Indeed, an early experiment with a *non*-dialogic exchange with a
non-custom-written text, showed, to our judgement, surprising success. Ryan Cunning-
ham, a Toronto-based actor and director of Cree descent, gave an unrehearsed reading
for an invited audience of a monologue he has developed recollecting his experience
working in Alberta's gas fields as part of a hydraulic fracking team (Canada employs
many Indigenous workers to extract from their own lands.) Behind him, out of his
sight, Stable Diffusion produced a succession of images prompted by his monologue,
which describes this labor and geological process in detail. People stood in forests

beside trucks and pipes; those rectangular trucks and pipes found themselves turning into flow charts and diagrams. The vocabulary of natural gas extraction brought together these two orders of visual representation, photographic (workmate selfies) and diagrammatic (corporate slide decks), uneasily clustered into one space by the logic of text-to-image modeling. The performance thus employed Stable Diffusion toward a meditation on how visual culture *in its totality* can and cannot represent colonial extraction, while staging an analogous dichotomy/overlap between rehearsed personal reminiscence and the collective image-archive that is today's Web.

Straightforward as my response may be, it contradicts a recent tendency of digital performance theory: to turn to a different theoretical lineage than that traced above, and rely on what I call a *metaphysical performativity*.[7] Andrew Pickering's *Cybernetic brain: sketches for another future* traces this model back to postwar cybernetics, noting affinity with the collaborative projects of Gilles Deleuze and Félix Guattari, and particular resonance with the work of Bruno Latour and Donna Haraway (to this roster we can add, though he does not, Karen Barad). Much like Latour and other 'new materialists', Pickering contrasts a metaphysics of 'representation' and 'knowledge' with one of 'performativity': 'a vision not of a world characterized by graspable causes, but rather of one in which reality is "in the making", to borrow a phrase from William James' (18–19). Instead of a world in which forces define each other through conflict, separation, and recognition – a dialectical model – these writers introduce a flat plane of decentralized local interactions that center practical explorations over any claims to mimesis. This world makes itself, a boundless stage of ever-active human and nonhuman agents freeing themselves from analytic demarcations. Pickering calls this 'performative image of the world' a 'Black Box ontology':

> A Black Box is something that *does something*, that one does something to, and that does something back – a partner in, as I would say, a dance of agency. Knowledge of its workings, on the other hand, is *not* intrinsic to the conception of a Black Box – it is something that may (or may not) grow out of our performative experience of the box. […] We are indeed enveloped by lively systems that act and react to our doings, ranging from our fellow humans through plants and animals to machines and inanimate matter …. (2010, 20, emphasis original)

What begins as an epistemological prohibition not to inquire about 'inner workings' becomes a metaphysical claim about our world as one of everywhere-external action. Performativity, now understood as the world's agential self-production, has been generalized from human social activity to all of physical matter.[8] Note Barad's proposal to replace Judith Butler's Derridean performativity-as-'iterative citationality' with performativity-as-'iterative activity': a dynamics without hermeneutics, without the signifying splits of subjectivity, indeed without an internal sense of historicity (2007, 184; see Schneider 2015 for a critique).[9] These writers, as variably echoed within theatre and performance studies by Paul Rae, Chris Salter, and Jennifer Parker-Starbuck, place particular stress on their lack of distinction between organic and inorganic actions. Refusing the subject's traditional privileges of memory, sense, or suffering, this generalized performativity allows 'the possibility of imagining a world without cuts between living phenomena and matter' (Salter 2010, xxxi). They therefore claim a formal liberalism for their project, recognizing an ever-broader set of claims to equality. Whether one accepts this metaphysics or not, the historical strangeness of describing a 'world without cuts' through the image of

performance – for nearly the entire arc of Western philosophy the definitive paradigm of mediation, split subjectivity, spectatorial alienation, citational irony, and representation as such – should strike with force.

Since *theatricality* highlights just this aspect of cultural performance (the interruption, gap, cut), this model corresponds to that of *performativity without theatricality* I proposed above for describing computation. Like the execution of code, all of reality is described as the coming-into-being of latent patterns which become thickly unpredictable and unattributable when seen within a vastly plural set of mutually entangled interactions. Pickering's discovery of the origin of this view in cybernetics provides more insight than he realizes. Whatever else cybernetics was, it began as an attempt *to describe computers*, even as it immediately began to redescribe the world in the terms of computation. The computer has become so identified with our own thoughts and actions that the once-heterodox task of using computation as a general metaphor for all of reality has become commonplace, with the ironic result of purportedly ecological criticism crafting its philosophy from the ecologically devastating object of the electronic computer. Performances centering technical effects, such as those with artificial intelligence, on this account demonstrate that humans have no exceptional claim to the importance implicitly bestowed by works of art. They 'expose a becoming-animate, a condition of sensory attunement – palpable and vibrant – that reveals the interrelationships and traces left between animal, human, and machine', according to Parker-Starbuck (2006, 650; see also Salter 2015, 4–10). If indications of animacy secure techno-performances' ecological credibility, then surely performances of artificial intelligence reveal this nonhuman metaphysical performativity to the furthest radical edge (Audry 2021, 45–56).

On my account, there is a certain truth to this. Watching the output of contemporary machine-learning models does suggest an unsettling performativity-without-theatricality, a kind of aesthetic production without representation or spectatorship which we can declare fantastical yet tendentially approached by this technology. But I insist on two qualifications which upend the metaphysical-performative view. First, while recognizing its importance as a tendential limit, we also must insist on the fundamental impossibility of pure, infallible computation – of events which are not events. Second, I hold, watching actual performances with these systems encourage us to *restrict* this tendency, not generalize it. Looking at a human actor interacting with machine-generated text or images becomes, in our Lab's experience, a depiction of difference. Text and images alike become with duration infrastructure on which actors and spectators construct a theatrical situation. One is struck not with the animacy of automatic productivity but by the skilled labor of the actor. My lengthy excursus locating the *gap* of theatricality within performativity, and its near-lack within the event of computation, offers a way to understand this without recourse to the 'humans watch humans' banality: subjects are engaged *by the theatrical gap*, the heightened encounter with the citational-mimetic structures we find ourselves both within and without.

After all, do not contemporary AI models conceal the most proximate 'interrelationship' and 'trace' behind their animacy – the vast social labor which constructed them? Here I am thinking not just of the engineers coding these models, but of the legions of people who have captioned photos, scanned books, published their music on Spotify, or contributed in any way to the vast repository of the Web which has made these models possible (and, further, of the Taiwanese factory workers assembling those

NVIDIA GPUs.) As many critics have documented, this labor encompasses not just the 'data exhaust' of leisurely Web usage, but the full-time effort of workers from Colombia to Kenya tagging images and chatbot texts for pennies (Suri and Gray 2019; Jones 2021; Crawford 2021). This point is fundamental to recognizing how this technology operates: machine learning embeds associations first assembled by humans, so that later humans can notice coherence between those associations once statistically reproduced. To reify some autonomous agency to the event of that reproduction, to call it a performance actively making itself without citations or representations (of how it was made, perhaps?), seems in this respect obfuscatory. Further, one could wonder what sort of racial and gendered logic makes this double-ascription possible, in which computation takes on certain human aspects (art-making, language-producing, *performing*) while denying the human work that built the computer. For Neda Atanososki and Kalinda Vora, this 'sorcerer's apprentice' schema situates the user as an 'autonomous subject whose freedom is in actuality only possible because of the invisible support labor of servants, slaves, wives' (2015, 14). For Ranjodh Dhaliwal, the very 'idea of a cybernetic machinic intelligence is merely [a] dislocation of the intellectual labor done by some *Othered* labor force', providing bourgeois ideology a justification for dislocating more and more activity to the oppressed (2022, 379). By finding energetic and productive 'performativity' everywhere, imagining all reality as computational execution performing forth without theatrical gaps, scholars risk endorsing a world in which more and more objects in a bourgeois life are built from the atomized degraded 'performances' of the most exploited among us, all while those same scholars counsel against the conceptual categories (gender, race, capital, history, suffering) needed for that world's critique.

The debate over the performativity of computation can in this respect be historicized not just to the emergence of the digital computer, but also to the neo-colonial re-entrenchment of the global distribution of labor. Chun has argued that computation is a performative that risks its own interruption like any other, while Hayles and Galloway have argued that computers are exceptional to the degree that they follow their scripts without gaps. Chun describes computation as a human-and-nonhuman world-system with far more fragility to political action than we might suspect, while Hayles and Galloway describe computation as it appears from the bourgeois position – a self-contained smooth surface completely concealing its history of production – in order to appreciate its material force. Joined together with the structure of the *limit*, I contend that these positions can launch a proper critical understanding of our malapportioned present. The new-materialist position of *metaphysical performativity*, however, adopts the bourgeois position only to generalize and naturalize it. To Pickering and his cohort, reality consists of an ineffably complex plane on which stuff happens for every kind of reason: all sorts of projects automatically find success. The world is a 'Black Box' out of which events pour forth without interruption. This is the computer in which all songs and movies and games play themselves, the doorstep on which all imaginable things appear in cardboard boxes, the newsfeed on which all voices announce themselves. How, faced with that unfathomably complicated mangle of practices which escape causes and signs, could one possibly discern why some have to label images for fifty hours a week and others of us get to sit around an academic AI-art center funded by the Bank of Montreal? Would it not be more fascinating, Pickering asks, to simply marvel at the spectacle of circulating commodities? As Jennifer Cotter wrote of new-materialist scion Jane Bennett, in

such thought 'the logic of exchange – the ideology of exchange – is write large as a new metaphysics and ontological basis of being and reality as such' (2016, 176). Appreciating the performative essence of this reality would be tantamount to enjoying one's luck to afford a seat, except that these writers conveniently deny any gap between the spectator and (laboring) performer in the first place. Fortunately for theatre artists, the form of theatre itself demonstrates the philosophical and political inadequacy of this anti-theatrical metaphysic.

Conclusion

To create theatrical performances with machine learning wrests these new technical systems into a medium already philosophically hostile to them. Despite its articulation through debate, a broadly Derridean tradition of writing on performativity and theatricality helps us understand that computation may be *performative*, but upon entering *performance* it must contend with the gaps, interruptions, and inequities of *theatre*. Hence the great virtue of such artwork. On the stage, the theatrical gap that computation seeks to eliminate widens again; the labor that AI models depend on and generate is shown; the questions of who has paid for what and why are laid out in the program for all to consider. On the stage, machine text-generation may demand audiences consider the supposedly solitary labor of playwriting alongside the social labor of worldwide textual production. On the stage, machine image-generation may present visual representation as an inadequate dilemma rather than the accomplished resolution of coherent (human) design. The BMO Lab's mission is to provide technical and theoretical support for theatre artists hoping to work in such directions.

A 'performing computer' need not conjure the staged machine of Zinovieff's *Partita*, beeping and booping to our attentive surprise. Unlike Londoners of 1967, we see computation woven into society at large, complete with all of its divisions and gaps. As critical awareness of machine-learning models' roots in exploitation grows, fascination with the event of computation could slip into irrelevance. In its place, as anticipated by artists like Anna Ridler, Trevor Paglen, and Kate Sicchio, may come performances of data *production*, showing us not the performative outputs of machine learning but the numbingly rote performances such systems thrust on laborers. After so much debate over what qualifies as performative, is it not time to ask what performances we humans actually want to bring about?

Notes

1. The 'Mechanical Turk' automaton, first presented by inventor Wolfgang von Kempelen at the court of Empress Maria Theresa in 1770, professed to be a machine in the form of a life-sized doll 'Oriental' that could beat a human contestant at chess. In fact the device depended on a human chess-master concealed within a trick table; though early audiences (notably Napoleon) were reportedly convinced of the automaton's inanimacy, subsequent tours in American led many (notably Edgar Allen Poe) to deduce and publish its secret. Since 2005 Amazon's low-paying online microwork platform, cheekily and cruelly, has been called Mechanical Turk. At once a neat distillation of claims to false automation, a profound reminder of the centrality of racialization to imaginations of computing, and a clear link between European imperialism

and contemporary global labor distribution, the 'Mechanical Turk' has prompted recent theoretical reflection (Geoghegan 2020; Dhaliwal 2022).
2. On performatives and promises, see Felman (2003, 1–47).
3. This is not to say that machine learning does not *anticipate* – one could argue that this is precisely what machine learning models do. They interpellate and project, and from predictive typing to television frame-insertion, actively interject with their anticipations; much recent media theory has emphasized the radical consequences of such 'protention' (Hansen 2015; Denson 2020). However, these protentions shape and extend the subjectivities of users: to the extent that they 'work', they do not present themselves as dialogic. To construct a call-and-response interaction demands far more computing power. Though this article focuses on the un-theatricality of contemporary AI, this disjuncture suggests a further *non-dramatic* aspect to computation worth further thought.
4. For reasons not entirely clear, a moderately high temperature can turn into an angry stream of modern profanity, frequently with offensive language: an outcome sure to spur lengthy discussion if demonstrated in the classroom.
5. BMO Lab internal video, 3 May 2021, timestamp 7:31. I have resisted the impulse to include more quotations from our models: to cherry-pick excerpts misrepresents the whole.
6. The particular boredom of AI spectatorship was attested to by audience members of Annie Dorsen's algorithmically parsed *Hamlet*, *A Piece of Work*, as discussed in Jucan (158–159).
7. Though I here lean on his newer book, which adopts a more radical position, the term 'metaphysics' was used by Pickering to frame his 'performative idiom' in his early work (1995b, 5–9).
8. Latour uses a theatrical metaphor to make the point: 'To use the word 'actor' [in actor-network theory] means that it's never clear who and what is acting when we act since an actor on stage is never alone in acting. Play-acting puts us immediately into a thick imbroglio where the question of who is carrying out the action has become unfathomable' (2005, 46). In truth, it is only after the various Latourian dicta – one should not look for representation, nor citation, nor compulsion, nor desire, and certainly not for coherent social groups or classes – that any theatregoer could begin to find it so mysterious that actors work together.
9. Derrida might note, as he did with J. L. Austin, that this ontology of non-representational force resembles that of Nietzsche.

Disclosure statement

No potential conflict of interest was reported by the author.

References

Atanasoski, Neda, and Kalindi Vora. 2015. "Surrogate Humanity: Posthuman Networks and the (Racialized) Obsolescence of Labor." *Catalyst: Feminism, Theory, Technoscience* 1 (1): 1–40. doi:10.28968/cftt.v1i1.28809
Audry, Sofian. 2021. *Art in the Age of Machine Learning*. Cambridge, MA: MIT Press.
Austin, J. L. 1962. *How to Do Things with Words*. Cambridge, MA: Harvard University Press.
Barad, Karen. 2007. *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning*. Durham: Duke University Press.
BBC. 1979. The New Sound of Music. YouTube. https://www.youtube.com/watch?v=dUTdun0tFE8.
Benanev, Aaron. 2020. *Automation and the Future of Work*. London: Verso.
Benjamin, Ruha. 2019. *Race After Technology*. New York: Polity.
Berkeley, Edmund C. 1949. *Giant Brains, Or Machines That Think*. New York: Wiley.
Blauner, Robert. 1964. *Alienation and Freedom: The Factory Worker and His Industry*. Chicago: University of Chicago Press.
Braverman, Harry. 1974. *Labor and Monopoly Capital: The Degredation of Work in the Twentieth Century*. New York: Monthly Review Press.
Chun, Wendy Hui Kyong. 2013. *Programmed Visions: Software and Memory*. Cambridge, MA: MIT Press.

Cotter, Jennifer. 2016. "New Materialism and the Labor Theory of Value." *Minnesota Review* 87: 171–181. doi:10.1215/00265667-3630928

Crawford, Kate. 2021. *Atlas of AI*. New Haven: Yale University Press.

Denson, Shane. 2020. *Discorrelated Images*. Durham: Duke University Press.

Derrida, Jacques. 1988. *Limited Inc*, Translated by Samuel Weber. Evanston: Northwestern University Press.

Derrida, Jacques. 2002. *Limited ink (2). Without Alibi*, Translated by Peggy Kamuf. Stanford: Stanford University Press.

Derrida, Jacques. 2007. "A Certain Impossible Possibility of Saying the Event." In *Critical Inquiry*, Translated by Gila Walker, 441–461. Chicago: University of Chicago Press.

Dhaliwal, Ranjodh Singh. 2022. "The Cyber-Homunculus: On Race and Labor in Plans for Computation." *Configurations* 30 (4): 377–409. doi:10.1353/con.2022.0028

Eubanks, Virginia. 2018. *Automating Inequality: How High-Tech Tools Profile, Police, and Punish the Poor*. New York: St. Martin's Press.

Felman, Shoshana. 2003. *The Scandal of the Speaking Body: Don Juan with J. L. Austin, or Seduction in Two Languages*, Translated by Catherine Porter. Stanford: Stanford University Press.

Fisher, Anna Watkins. 2020. *The Play in the System: The Art of Parasitical Resistance*. Durham: Duke University Press.

Galloway, Alexander R. 2012. *The Interface Effect*. New York: Wiley.

Geoghegan, Bernard Dionysius. 2020. "Orientalism and Informatics: Alterity from the Chess-Playing Turk to Amazon's Mechanical Turk." *Ex-position* 43: 45–90. doi:10.6153/EXP.202006_(43).0004

Grey Walter, William. 1953. *The Living Brain*. New York: Norton.

Hansen, Mark B.N. 2015. *Feed-forward: On the Future of Twenty-First Century Media*. Chicago: University of Chicago Press.

Hayles, N. Katherine. 2005. *My Mother Was a Computer: Digital Subjects and Literary Texts*. Chicago: University of Chicago Press.

Heinrich, Michael. 2012. *An Introduction to the Three Volumes of Marx's Capital*, Translated by Alexander Locascio. New York: Monthly Review Press.

Hicks, Mar. 2017. *Programmed Inequality: How Britain Discarded Women Technologists and Lost its Edge in Computing*. Cambridge, MA: MIT Press.

Higgins, Hannah, and Douglas Kahn. 2012. *Mainframe Experimentalism: Early Computing and the Foundations of the Digital Arts*. Berkeley: University of California Press.

Jones, Phil. 2021. *Work Without the Worker*. London: Verso.

Joque, Justin. 2018. *Deconstruction Machines: Writing in the Age of Cyberwar*. Minneapolis: University of Minnesota Press.

Jucan, Ioana B. 2015. "sys.Begin to sys.Exit: Software Performs *A Piece of Work*." *TDR: The Drama Review* 59 (4): 149–168. doi:10.1162/DRAM_a_00502

Latour, Bruno. 2005. *Reassembling the Social: An Introduction to Actor-Network-Theory*. Oxford: Oxford University Press.

Munn, Luke. 2022. *Automation is a Myth*. Stanford: Stanford University Press.

O'Neil, Cathy. 2016. *Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy*. New York: Crown.

Parker-Starbuck, Jennifer. 2006. "Becoming-Animate: On the Performed Limits of 'Human'.." *Theatre Journal* 58 (4): 649–668. doi:10.1353/tj.2007.0033

Pickering, Andrew. 1995a. "Cyborg History and the WWIII Regime." *Perspectives in Science* 3: 1–45. doi:10.1162/posc_a_00472

Pickering, Andrew. 1995b. *The Mangle of Practice*. Chicago: University of Chicago Press.

Pickering, Andrew. 2010. *The Cybernetic Brain: Sketches of Another Future*. Chicago: University of Chicago Press.

Rockman, Arnold, and Leslie Mezei. 1964. "The Electronic Computer as an Artist." *Canadian Art* 11: 365–367.

Rouvroy, Antoinette, and Thomas Berns. 2013. "Algorithmic Governmentality and Prospects of Emancipation." In *Réseaux*, Translated by Elizabeth Libbrecht 177(1), 163–196.

Salter, Chris. 2010. *Entangled: Technology and the Transformation of Performance*. Cambridge, MA: MIT Press.

Salter, Chris. 2015. *Alien Agencies: Experimental Encounters with Art in the Making*. Cambridge, MA: MIT Press.

Schneider, Rebecca. 2015. "New Materialisms and Performance Studies." *TDR: The Drama Review* 59 (4): 7–17. doi:10.1162/DRAM_a_00493

Simondon, Gilbert. 2017. *On the Mode of Existence of Technical Objects*, Translated by Cécile Malaspina, and John Rogove. Minneapolis: Univocal.

Smith, Jason E. 2020. *Smart Machines and Service Work: Automation in an Age of Stagnation*. Chicago: Reaktion.

Sohn-Rethel, Alfred. 1978. *Intellectual and Manual Labour: A Critique of Epistemology. Trans. Martin Sohn-Rethel*. New Jersey: Humanities Press.

Stiegler, Bernard. 2017. *The Automatic Society, Vol. 1: The Future of Work. Trans. Daniel Ross*. New York: Wiley.

Suri, Siddharth, and Mary Gray. 2019. *Ghost Work*. New York: Houghton Mifflin Harcourt.

Taylor, Grant D. 2014. *When the Machine Made Art: The Troubled History of Computer Art*. London: Bloomsbury.

Thomas, Aaron C. 2021. "Infelicities." *Journal of Dramatic Theory and Criticism* 35 (2): 13–25. doi:10.1353/dtc.2021.0002

Weber, Samuel. 2004. *Theatricality as Medium*. New York: Fordham University Press.

Wiener, Norbert. 1950. *The Human Use of Human Beings*. New York: Houghton Mifflin.

Wiggers, Kyle. 2022. Stability AI, the Startup Behind Stable Diffusion, Raises $101M. *TechCrunch* Oct 17.