# Machina Aesthetica: Impressions on Art in and out of the Machine Age*

PAUL CHAN



*Play*

In 2016, I wrote a play about a questionable New York artist who abandons art because he is disillusioned about making it and tries to find himself again by becoming a wildly unsuccessful book publisher.[1] Authors fight. Money goes missing. It reads like an office comedy of manners.

Writing it gave me a stage to dramatize ideas on my mind, like how technology affects forms of expression—art and writing, for example. A book is a technology, one that has evolved to extend our capacities in differing ways. So the play, entitled *Badlands Unlimited*, is also a story about what technology can and cannot do to extend the life of art.

In Act Three, the main character, named Paul, pursues an idea for publishing a new kind of book. A book, he reasons, is an author's expression within a particular span of space and time. Different books by the same author reflect the varying interests and needs of different spans. But the style and the point of view that furnish meaning and direction to the words remain largely consistent. That, in Paul's experience as a publisher, is the writer's "voice."

Paul imagines publishing an author's voice rather than an author's book. What if, instead of a person reading a book, the author reads the book to a person, and is capable of responding to anything the reader asks? What if the real-time, spontaneous dialogue between the author and the reader is the book itself?

When Act Three begins, Eric, a noise-punk musician who is enrolled in a Ph.D. program in computational linguistics, is visiting the office at Paul's invitation. Paul thinks the advances in machine learning at the time are promising enough that his vision is achievable. But he needs help.

After Eric patiently listens to Paul's impassioned pitch, he lets out a long and heavy sigh, as if he'd been holding his breath the whole time. He looks at Paul

* Written on the occasion of the 2023 University of Washington in Seattle Fall Public Lecture Series at the Seattle Town Hall, November 8, 2023. I want to thank Franklin Gilliam, Philip Ording, and Claudia La Rocco for their comments and insights.

1. Only the first act has been published. See Badlands Unlimited, *Badlands Unlimited (Act 1)* (Rome: Nero Publishing, 2018). Plans to mount the play in 2021 were disrupted by Covid.

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with steady, dead eyes and explains that when he first began his Ph.D., he was excited to unlock the secrets of how language works. But it turns out there are no secrets: only computations. There is no art or philosophy to language, as far as AI is concerned. He spent his days doing brute-force number crunching and statistical work.

And for what? Eric asks flatly. Not so language could be understood in novel ways, but to better predict which energy drink someone might likely buy based on what they post on social media.

Paul protests and says his idea is different because he wants to use computation to make a new kind of art. Eric replies, "How new can it be if it uses the same techniques that already reduce our lives to bits of data?"

*Fonts*

The idea of an artist's aesthetic drawing from statistical analysis sounds as inspiring as an author writing like a double-entry bookkeeper.[2] And yet this was where my mind ended up at the beginning of the 2000s.

In those early days on the Web, artists, programmers, and writers made a bewildering array of works online that tended to be interactive and could be mistaken for websites. Except they weren't selling or promoting anything. They weren't even that user-friendly. They functioned like nothing else on the Web, which is why they seemed to me so free.

These works were eventually known as "Net art" or "new-media art." I wanted to try making work in this new genre but didn't know HTML or any programming languages. For months I tried to learn. But it went nowhere. Computer languages are most meaningful when written clearly and concisely. But I didn't, and still don't, have a taste for words that make sense. I'm most at home with the hallucinatory, nonsensical, even contradictory: Taoist aphorisms, the writings of Henri Michaux, Rae Armantrout's poetry.

One day, out of the blue, I noticed the feel of my fingertips tapping on the hard plastic keys as I typed on my computer. I pressed the *j* key with my forefinger and watched the letter *j* in Times New Roman appear on the screen. A strange ela-

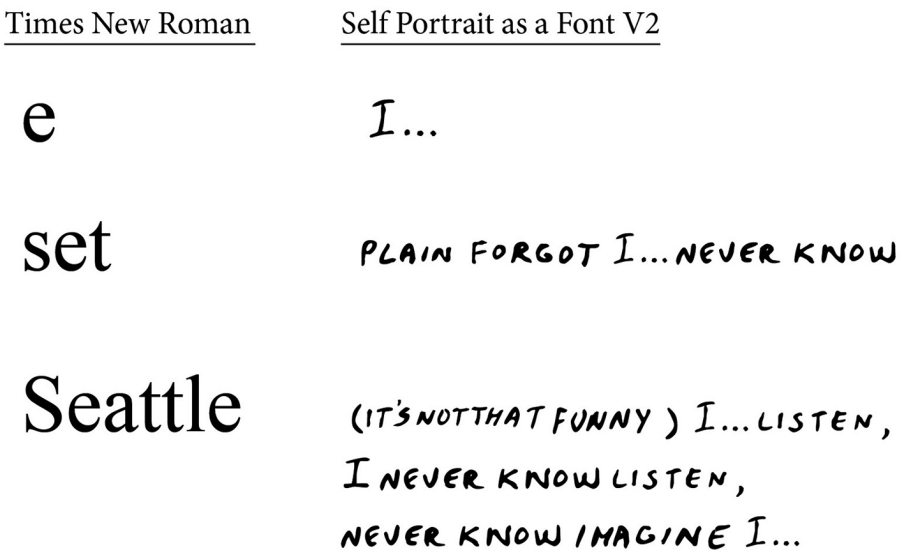
2. And yet, Goethe considered double-entry bookkeeping one of the greatest inventions of the human mind. Its influence on literature and writing in general is wide-ranging. The aesthetic imperative to craft stories that are "on balance," by keeping accounts of the credits and debits of characters' acts so they "even out" in the end, is an example. See Bruce G. Carruthers and Wendy Nelson Espeland, "Accounting for Rationality: Double-Entry Bookkeeping and the Rhetoric of Economic Rationality," *American Journal of Sociology* 97, no. 1 (1991), pp. 31–69. There is also the fascinating case of Kafka, who worked as a lawyer and executive at an insurance company. Evidence suggests his innovative writing style is at least in part derived from his professional writings, from memos on salary disputes to legal contracts. See Franz Kafka, *Franz Kafka: The Office Writings,* ed. Stanley Corngold, Jack Greenberg, and Benno Wagner, trans. Eric Patton and Ruth Hein (Princeton: Princeton University Press, 2015).

tion washed over me. I kept pushing keys, one by one, as if I belonged to some distant-cousin species of *Homo sapiens* using a computer for the first time.

I craved more of this sense of estrangement that so utterly transformed this ordinary act. What if, I wondered, the letter *j* didn't appear on the screen when I press the *j* key but something else did? But what if this "something else" still functioned as part of a sequence of elements that together could still be read somehow?

This was how I began to make fonts that I call Alternumerics.[3] I couldn't really participate in new-media art because I didn't know how to program. So instead I began to create TrueType fonts that replaced letters and numbers with text fragments that transformed the alphabet in radically different ways. Typing became my interactive medium.

3. Paul Chan, *Alternumerics*, 1999–2001, eleven TrueType fonts, variable file sizes. A second series of fonts was created as part of the project *Sade for Sade's Sake* (2008). See Paul Chan, *Sade for Fonts Sake, 2008,* twenty-one TrueType fonts, variable file sizes.




*Paul Chan.* Illustration of Self-Portrait as a Font V.2. *2001.*

What appears is not sensical per se. But it's not entirely nonsensical either. This effect is achieved by taking advantage of statistical patterns in the English language.[4] The letter *e*, for example, shows up more than any other in common usage, approximately 12.4 times for every one hundred letters. The most common pairing of letters is *t* with *h*. I used statistical insights about how English works to figure out which text fragment should replace which letter so that when I typed out a correctly spelled word or a grammatically sound sentence, the text fragments would chain together to look or read in ways that would be more pleasing to me.

This work is similar to that riotous children's game Mad Libs. Except I wasn't just inserting a random noun here or verb there. I was replacing the entire alphabet. Before making Alternumerics, I never thought about statistics, or even numbers. They were baffling to me; as desirable to think about as getting food poisoning.

*Video*

I downloaded my first pirated copy of Macromedia Flash, an animation software, in the late '90s. With it, I could easily draw and animate pictures on the computer. The process was less cumbersome and more freeing than the video-making I was already doing, which depended on a camera capturing what can be seen in the world. Animation allowed me to create a new reality rather than just portray an existing one.

I threw myself into it, spending fourteen to sixteen hours a day staring at a computer screen. In 2003, I finished my first animated piece.[5] It was only fourteen minutes long. I went on to use similar digital drawing techniques to make other works: large-scale video projections where the images are displayed on walls and floors.

My work evolved during the mid-2000s alongside that of other artists pushing the bounds of what moving-image art might look and feel like. And we were, I want to suggest, all buoyed by advances in media technology. Screens became larger and flatter, rivaling the size of European history paintings. Video projectors became powerful enough to light up the sides of buildings.

My life was already surrounded by screens. I stared at a computer all day, working. I went to exhibitions where there were seven or eight projectors in one room. Back at the studio, I was trying to manipulate those same projectors into evoking the lively play of light and shadows you might see on the floor from the afternoon light streaming through your kitchen window.[6]

4. Letter, digram, and trigram frequencies are vital to natural-language processing, the domain of machine learning that focuses on texts. They also form the basis for much of early cryptography, especially during World War I. See Fletcher Pratt, *Secret and Urgent* (New York: Blue Ribbon Books, 1939).

5. Paul Chan, *Happiness (Finally) After 35,000 Years of Civilization (After Henry Darger and Charles Fourier)*, 2003, digital-video projection on a specially built screen, dimensions variable.

6. Paul Chan, *The 7 ~~Lights~~*, 2005–2007, digital-video projections, dimensions variable.

The iPhone was introduced in 2007. Smartphones with bright-colored screens were already available, but it was only then that I began noticing more people with these remarkable devices in subways and on the streets. It seemed to me only a matter of time before we watched videos on phones at resolutions that would rival or exceed the monitors and projectors I was using.

A chilling thought occurred to me then: No space or time would be free from the ubiquity of screens. I was debilitated with dread from a vision in which I was being entombed by all the screens around me.

I couldn't bear the thought of making more videos and digital animations. I was having physical reactions to looking at screen displays and projections. I developed an allergy to pixelated light.

The last major piece I made using video projectors or screens was done in late 2008.[7] I have not looked back.

## *Designs*

Technology appears today largely in the form of services and devices that excel at solving people's problems in ways that dispossess them of the feeling that they're people at all. Even though I find this to be the case, it's a little hard for me to accept.

Perhaps it's because I've used a wide array of electronic and computational tools and frameworks for as long as I've been known as an artist. And the artists I admire tend to make work that embodies how artistic and political thinking are enriched by the use and abuse of new and emerging technologies.

I'm thinking of Agnès Varda, Chris Marker, and others in the Left Bank Group in 1960s Paris using newly portable film cameras and audio recorders to create a new kind of cinema that fused documentary and literary concerns.[8] Or Samuel Beckett experimenting with radio and television from the late 1950s onward. The introduction of video equipment like the portapak, which gave rise to new generations of moving-image makers covering the social movements of the 1970s. The bio-cybernetic work of free-jazz musician, programmer, and artist Milford Graves in the '80s. The pioneering sound work of Maryanne Amacher. They are all members of my chosen family.

7. Paul Chan, *Sade for Sade's Sake*, 2008, digital-video projection, drawings, and TrueType fonts, dimensions variable.

8. Chris Marker was especially adventurous with new technologies. He was one of the first filmmakers to use ultra-portable consumer-grade video cameras as a serious instrument for making moving-image works. In the mid-1980s he developed Dialector, a conversational chatbot he programmed using the computer language Applesoft Basic. In the 1990s, he made the interactive CD-ROM *Immemory*. He arguably pioneered the use of *Second Life*, the first online 3D virtual-world platform, as a serious medium of expression, building a museum that floats above an island.

The first time I became aware of a generational convergence with new technology was during the 1999 WTO protests in Seattle. I was in New York, watching it unfold on my computer. This is an old story by now. Have we not since witnessed the Occupy Wall Street protests in 2009 and the uprisings in the wake of the murder of George Floyd during that terrible Covid summer? Did we not watch them live on our screens?

But back in 1999, it was a genuinely new experience seeing a social movement blossom into view online, in real time. I had never been party to a political action like that before. It was even more remarkable when you consider that social media didn't exist then. Myspace and Friendster launched in 2003; Facebook in 2004; Twitter in 2006.

Seattle organizers couldn't count on commercial news networks to cover the protests in any meaningful way. So an online platform was created that encouraged participants on the streets to share messages, stories, and photos online. Self-described anarchist programmers around the globe did the heavy lifting, building out the tech stack that would eventually become a website called Indymedia.[9]

Indymedia connected protesters to people like me, who were doing media-support work for the action, and anyone else who simply wanted to know what all the noise coming out of Seattle was about. This was how real news was shared by people, for people. After Seattle, Indymedia websites multiplied online, each basing its operation in a different city throughout the world.

I was among the journalists, programmers, and activists who founded New York Indymedia. We worked out of an office space donated by 2600, the oldest hacker collective in the US. Indymedia was what social media meant to me before the term even existed.

My aesthetic education reflects a history centered in part on the idea that human flourishing depends on accessing and using, sometimes misusing, new and emerging technologies. Machines were meant to be instruments of aesthetic and political liberation.

Or so I thought. The belief that technology belonged on *this* side of progress seems to me no longer tenable, if it ever was. That technology continues to extend our capacities is self-evident. But just as obvious today is how its real utility lies in its making *us* into tools for *its* designs.

## *Books*

The writer Claudia La Rocco is the one who likes to remind me that a book is a technology. This is especially timely given how printed books seem to some today to be as much of a threat to society as the rise of AI. The truth is, the fear of books was just as real in the fifteenth century, when the Gutenberg press was first introduced in the West.

9. See "The Rewriting of the Disaster: On Independent Media, New Media, and the Work of Mourning," in *Paul Chan: Selected Writings 2000–2014* (New York and Basel: Badlands Unlimited and Schaulager, 2014), pp. 31–37.

Johannes Gutenberg's first printed book, the Bible, premiered at the Frankfurt Book Fair in either 1454 or 1455. And it was met with a combustible mix of derision and loathing. Books existed before the printing press.[10] Indeed, the Frankfurt Book Fair, which began in the eleventh century, is a testament to that. But books before Gutenberg were produced by copyists, typically monks, who wrote out each and every book by hand.

One of the loudest complaints about printed books was that they could never be as good as handwritten ones. It was inconceivable that setting metal type to print would ever compare to the exacting standards of monastic artisans copying books by candlelight. Printed books would be riddled with mistakes like misspellings, or even missing sections, it was argued.[11]

Another pervasive fear was that printed books would get into the wrong hands. Because handwritten books were rare, they circulated only among those who could afford them, or who belonged to the religious communities that sponsored and promoted their production. Printing books meant more people potentially reading and owning them. This was not what those who already belonged to book culture wanted. Literacy was supposed to be a privilege that served only the very few.[12]

Despite the animus, or maybe because of it, news of Gutenberg's invention spread. Independent publishers who copied and refined his printing processes appeared first in Northern Europe. Immanuel Kant suggested that the ideas underwriting the Enlightenment took hold because people could read them in books. The spread of literacy, for Kant, was what distinguished the old world from a new one.

Gutenberg struggled to make a living in the new world that his invention ushered in. He died penniless in 1468.[13]

### *Publishing*

There's a long and storied tradition of artists who make publications and printed ephemera. In New York during the 2000s, artist publications flourished. Painters started presses, video makers published historical translations, art collectives put out fashion magazines. If seemed sometimes as if the best of art was found on pages.[14]

10. Andrew Pettegree, *The Book in the Renaissance* (New Haven: Yale University Press, 2010), p. 82.

11. Ibid., p. 44.

12. Ibid., p. 43.

13. Ibid., p. 21.

14. My personal favorites from this era include Primary Information, a nonprofit publisher started by James Hoff and Miriam Katzeff; the printed works and ephemera of Fort Thunder, the arts collective from Providence, Rhode Island; Temporary Services, an arts group based in Chicago, Illinois; *Made in U.S.A.*, the fashion and art magazine published by Bernadette Corporation; painter Josh Smith's short-lived 38th Street press; and artist Cory Arcangel's enterprise Arcangel Surfware.

I launched my press, Badlands Unlimited, in April 2010. I ran it out of my studio in Brooklyn. The first books I published were based on my old work. But the real ambition was to publish artists and writers I admired. So I consider the first Badlands book to be *Poems*, the only collection of poetry by the legendary choreographer and filmmaker Yvonne Rainer.[15]

Badlands was the first art-book publisher to seriously explore the expressive capacities of e-books, which were gaining popularity at the time. I liked how I could incorporate video and interactive elements into a publication. Although not as robust, they were reminiscent of interactive CD-ROMs from the 1990s. In *Poems*, for instance, the e-book version played video clips of some of Yvonne's most iconic dances to accompany her writing.

In 2011, Badlands participated for the first time in the New York Art Book Fair, a raucous and sprawling event that brings together publishers, zine makers, galleries, and artists who make books.[16] We set up a table with the few books we had done, alongside some e-book readers loaded with digital versions of our publications.

On the fair's opening night, two attendees with more than a few drinks between them approached our table. They crudely toyed with the e-book devices as they whispered to each other. One of them then blurted out loud, "I know what you're doing!"

Confused, a young artist working at the Badlands table asked, "What do you mean?" The attendee yelled, "You're destroying books, you're burning books by making them!" She pointed at the e-book readers like she was identifying a perp in a lineup. She then threw her empty plastic wine cup at our table and drunkenly walked away with her friend.

*Attention*

There are experiences that deprive us of access to our senses as a means of capturing our attention. It's as if what we are beholding diminishes us and makes us feel less present—if we feel anything at all.

Our capacities to see, hear, smell, taste, and touch are typically what we have in mind when we refer to "our senses." Collectively these capacities are described as being "exteroceptive" because they provide feedback on what is external to our body. But they are not our only senses. We are also equipped with interoception,[17]

15. Yvonne Rainer, *Poems* (New York: Badlands Unlimited, 2011).

16. Badlands participated in the New York Art Book Fair from 2011 to 2017.

17. See A. D. Craig, "How Do You Feel? Interoception: the Sense of the Physiological Condition of the Body," *Nature Reviews Neuroscience* 3 (August 2002), pp. 655–66. The term first appeared in *The Intergrative Action of the Nervous System* (1906), by British physiologist Sir Charles Sherrington. Sherrington limited his conception of interoception to stimuli from skeletal muscles and viscera (the organs). Contemporary research more broadly defines interoception as an overarching term for the phenomenological experience of the body state. Studies of particular interest to me include the role of

an overarching term for sensory capacities that give us information about what is happening inside us.

The capacity to feel the sensation of your own heartbeat is called "cardioception." Knowing where your limbs are in relation to your body without the need to locate them with your eyes is called "proprioception." We possess inner senses that indicate the amount of oxygen in our bloodstream, the state of our intestinal health, our core body temperature, and so on. Interoceptors enable us to grasp the state of our own body.

The ability to take heed and meaningfully interpret feedback from all of our senses is decisive for how we perceive anything at all. Being aware means managing signals from interoceptors and correlating them with what external senses like eyes and ears are picking up about our environment. This capacity for awareness is how the experience of "being present" arises.[18]

I characterize presence as the psychosomatic state in which all of our perceptual capacities are optimized. Situated between what is happening outside us and what is happening inside us, this state of being prepares us to find that locational space where we meet ourselves.

Attention can be thought of as a magnified form of awareness. At its best, attention enlivens us because we are inspired to literally sense more, which provides for a richer and more varied array of sensory feedback. What results is a locational space in which we find ourselves in a state more vivid and multidimensional than before.

But at its worst, we behold the object that captures us only to discover that it lacks the feedback our senses require to find the location of things. So we attend to the object in question at the price of being blind to how it situates us in our environment, and with ourselves. Anyone who has felt lost while staring at their screen of choice, or has been hypnotized by the voice of a narcissist droning on and on, may know what I mean.[19]

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interoception in perceiving pain (see A. D. Craig, "A new view of pain as a homeostatic emotion," *Trends in Neuroscience* 26, no. 6 [June 2003], pp. 303–307), how it contributes to the formation of abstract concepts like the self (see Connell Louise, Lynott Dermot, and Banks Briony, "Interoception: the Forgotten Modality in Perceptual Grounding of Abstract and Concrete Concepts," *Philosophical Transactions of the Royal Society B: Biological Sciences* 373, no. 1752 [June 2018], doi: 10.1098/rstb.2017.0143), and its role in the perception of one's body image (see Jennifer Todd, Jane E. Aspell, David Barron, and Viren Swami, "Multiple Dimensions of Interoceptive Awareness Are Associated with Facets of Body Image in British Adults," *Body Image* 29 [2019], pp. 6–16). Insights from interoceptive research have yet to inform (as far as I can tell) contemporary thinking on aesthetics and phenomenology to any meaningful degree. A shame.

18. Before the twentieth century, the great medieval Muslim philosopher Ibn Sīnā (980–1037), also known as Avicenna, came closest to describing what we today call interoception and how these "inner senses" facilitate feelings of interconnectedness between oneself, others, and the environment at large. The most accomplished interpreter of Aristotle in the Arabic world, Avicenna extended the Greek's conception of the senses with seven other proto-interoceptive faculties. Although in Avicenna these faculties do not necessarily relate directly to bodily functions or feedback, they nevertheless contribute to the perception of one's "inner state."

19. See Paul Chan, "Our Data, Our Selves," *Los Angeles Review of Books,* no. 23 (2019), https://lareviewofbooks.org/article/our-data-our-selves/.

Sensory deprivation strikes me as a feature, not a bug, of contemporary life. Progress today amounts to the value that can be squeezed out of an increasingly narrow band of our sensory capacities. Take, for instance, the typical contemporary experience of having a job. A person who is employed presumably has the capacity—the skill set—to do the required work. And it may even be the case that the person finds the work gratifying.

But it's also the case that a job only asks for a certain spectrum of what a person is capable of doing and thinking. Over time, a person may start to only self-identify with those aspects that the job prioritizes while ignoring or even suppressing other facets that situate the person in a locational space that feels coherent and meaningful.

This dynamic whereby a part of us stands in for the whole of us, which in turn radically distorts how we understand anything, including ourselves, has been called by many names. The one I'm most familiar with is *alienation*.[20]

*Noise*

In 1938, the philosopher and music critic Theodor Adorno arrived in America for the first time to take up a new job.

He had been living in England for four years, having escaped from Nazi Germany. As a political refugee, his prospects for work were not good. Although he had a Ph.D., the only possible way he could secure a teaching position in England had been to get additional academic credentials. So Adorno, already well on his way to being known as one of the world's most influential philosophers, had become a student again. He had enrolled at Oxford to try to obtain a second Ph.D.

Adorno's friend and colleague Max Horkheimer, already in America, persuaded a private firm based in Newark, New Jersey, to hire him as its director of research. The firm studied how a new consumer technology was succeeding or failing to meet people's needs, and how it could be improved to better serve users. That new technology was radio.

It seemed like a good fit on paper. Adorno's musical experience was vast. He was a composer and had studied to be a concert pianist. His insights about aesthetic experience in general were most inspired by what he heard in music. And he had a real interest in data-driven qualitative research from his work in sociology. Horkheimer telegraphed Adorno about the job in October 1937. A few months later, in February 1938, Adorno, with his wife Gretel, boarded a ship bound for New York to be the head of research at the Princeton Radio Research Project.[21]

20. See Bertell Ollman, *Alienation: Marx's Conception of Man in Capitalist Society* (Cambridge: Cambridge University Press, 1977).

21. Robert Hullot-Kentor, "Second Salvage: Prolegomenon to a Reconstruction of *Current of Music*," *Things Beyond Resemblance: Collected Essays on Theodor W. Adorno* (New York: Columbia University Press, 2006), pp. 94–124.

Throughout the 1920s and into the '30s, the reproduction of musical sound at scale was still new. Radio had originally been a technology that primarily served the US government, which had used it as a means of communicating with soldiers stationed in Europe during World War I, and widespread adoption of the medium didn't occur until the following decade.

The power of radio to transmit and spread culture was what Adorno was hired to study. "Culture" at the time meant high European culture: Beethoven, Mozart, Brahms, and so on. Early radio devoted a significant portion of airtime to what was considered serious classical music. This was a class-conscious attempt by advocates of radio to redistribute the cultural wealth that only the privileged had been able to enjoy. By broadcasting musical works that were otherwise only experienced in elite music halls in large cities, radio promised to democratize the "best" of art for the masses.

The Radio Research Project heads assumed that Adorno would be an ally of the spread of musical culture, given his politics and aesthetics. This assumption proved disastrous.[22] The firm became increasingly concerned with the direction of Adorno's research, which was heading in exactly the opposite direction from the way the work was supposed to go.

Adorno's hypothesis was that radio would never live up to the promises it was making to culturally enrich and humanize Americans everywhere. He was radically skeptical of the premise that access to European classical music would improve hearts and minds. This view was borne out of bitter experience.

German culture revered the music that formed the canon American radio sought to democratize—and yet Adorno had watched in horror as the deep and abiding appreciation of art of such caliber offered little to no resources for resistance in the face of rising Nazism. In fact, National Socialists claimed that such works represented the power and the glory of their righteous authority to do as they wished.

Adorno also found the radio sound itself to be a problem. What he heard through the radio was not music as he understood it. The AM transmission used at the time lopped off major portions of the higher and lower frequencies. The lack of dynamic range and spatial dimensionality reduced musical works to postcard-sized versions of themselves. This deprived listeners of a chance to hear music at its most vital—as an emphatic experience.

The notion of art as emphatic experience is central to Adorno's aesthetic, and exemplifies to me an underappreciated feature of his philosophy in general: It is anchored in feelings and sensations. Concepts grow from the seed of what registers first and foremost in our bones, on our skin, as the tension in our muscles, in our gut. What is felt heightens what is thought. And there is no doubt that Adorno's theoretical attention is most drawn to pain.

22. Ibid., p. 107.

But there are moments when he turns toward the warmth of something like joy. As when he describes an elation that verges on "pure-self abandonment" at the sight of wild lilacs. Or the sense of fullness and peace from hearing one of Beethoven's late sonatas, or birds singing after a rainstorm. Adorno is especially sensitive to how artworks manifest the fleetingness of time, which evokes the bittersweetness of all that has been lost, the precarity of what remains, and what it takes to go on.

An experience is emphatic when the embodied mind is pushed to the brink by the complexity and force of all the sensings and ventures into new or unfamiliar territories of meaning-making.

Listening to radio music wasn't enlivening or beneficial because it wasn't emphatic as an experience. But something in the sound did catch his ear. He had never heard it before, and it struck him as genuinely new. It was the background noise, which resulted from the signal drift in the transmission and the resistance from the electrical circuitry inside the radio itself. Adorno was fascinated by the noise.[23]

His research ultimately proposed that distortion is the key that unlocks radio's true potential. Instead of the radio functioning as a receiver for reproduced musical sounds, Adorno imagined it as being repurposed into a musical instrument in its own right, so listeners could play the music of the new noise.

Adorno was himself surprised by this counterintuitive idea. He even suggested that it was likely not feasible. But he saw no better way of injecting the shock of the new into a technology that he believed pacified art and deadened people. It's safe to say the Princeton Radio Research Project was also shocked by Adorno's conclusions. In 1941, only three years into the job, his funding was cut and he was fired.

## *Self*

Since 2019, I've been developing for my own private research what I call a synthetic self-portrait. Functionally, it is a chatbot. We hold conversations the same way someone might communicate with ChatGPT. It's fine-tuned with datasets I've compiled that reflect different aspects of me.

The data includes my responses to canonical questionnaires from sociological and psychological studies. There are answers to many trashy online quizzes that claim to distill personality types, like the one entitled "Are You a Good Dog-Mom?" But the largest datasets are about my work. They range from details about individual artworks to writings and interviews that have been published since 2002.[24]

23. Theodor W. Adorno, *Currents of Music: Elements of a Radio Theory* (Frankfurt am Main: Suhrkamp Verlag, 2006), pp. 173–82.

24. For a breakdown on the datasets used for training, see Paul Chan, "Sympathy for the Devil in the Machine," *Shift Space* no. 3 (2023), https://www.shiftspace.pub/issue-3/sympathy-for-the-devil-in-the-machine.

"Feature engineering" is a term of art that describes the process of transforming raw data into "features," or information, from which machine-learning models can extract insights. For me, this means formatting my data into spreadsheets. Each row in the sheet represents one sample of information. There are limits to a sample's word count, which means a piece of text is usually broken down into smaller chunks and added to the dataset as more than one sample.

Chunking text into more discrete units is just one among a variety of considerations that can influence a model's capacity to learn the information and generate salient insights from it. The grammatical structure of individual sentences affects a model, so it's possible to edit text to also increase the quality of a model's learning. This is not unlike the editorial process that any writing goes through before being published in a magazine or book. Except here, the reader is a machine.

For years I have written and edited texts for people, which appear as books, or as lectures like the one I'm delivering to you now. Writing and editing for machines is new to me.

Because I'm doing the programming, I've gotten to know the different parameters that determine how a model learns new information. And in turn, I've developed an editorial intuition about what kind of texts best suit my machine readers' learning habits.

Being aware, perhaps for the first time, that I *even have* readers, I've found myself writing differently. Sentences are now more compact, and not as embellished with references. Paragraphs are noticeably slimmer. For example, the paragraphs in this text are, on average, 65 percent shorter than the paragraphs in my essays before 2019. I've acquired a taste for parsimony.

This change in my writing largely serves to optimize the data for the machine-learning model I'm building, which is supposed to reflect some semblance of me. But composing this self-portrait has paradoxically changed how I use words to make sense of things. The work I'm making is remaking me.

All this reminds me of another field of endeavor: alchemy. The metallurgy and mysticism that form the basis of this folk practice paved the way for modern, scientific chemistry. And among the many differences between the two domains, the one that interests me centers on the practitioner.

Being objective and neutral about what is being studied is foundational to how modern science is supposed to work. Chemists studying chemical compounds and their transformations don't expect the processes they are observing or facilitating to alter the nature of who or what they, the observers, are. But this isn't the case in alchemy, where the relationship goes both ways.

For instance, the alchemical quest to turn base metals into gold depends in part on the subjective qualities of the alchemist herself.[25] The implication is that it

25. See, for example, Henry Cornelius Agrippa, *Three Books of Occult Philosophy*, ed. Donald Tyson, trans. James Freake (Woodbury, MN: Llewellyn Publications, 2014), p. 709. See also Avicenna, *The Physics of the Healing*, trans. Jon McGinnis (Provo, UT: Brigham Young University Press, 2009).

would be impossible for the close-hearted and the unimaginative to achieve anything of significance in alchemy, no matter how intelligent or resourceful. Alchemy is at its core a first-person experience.

And on the other hand, alchemists welcomed the possibility that the processes they were trying to formulate would also spur a transformation of their own inner natures into something more spiritualized and durable. They never successfully turned lead into gold. But this arguably wasn't the only kind of change the historical practice of alchemy longed for.

*Parody*

One day on the radio this past summer, a spokesperson for the Writers Guild of America, the union representing writers in the movie, television, and radio industries, said on air: "AI is a plagiarism machine."[26] She went on to suggest that Hollywood studios will use AI to steal the work of her fellow members and profit from it without their consent.

Her sentiments have merit not just for writers of movies. Any creative work that exists online is more likely than not being harvested right now as training material for machine-learning models. Once trained on enough data, models are capable of generating "content." "Content" is a euphemism for a species of expression that doesn't rely on concepts like "quality" or "meaning" to differentiate itself. The way content stands apart aesthetically is simply by its capacity to be created at scale.

The fact that the term "content industry" is well on its way to replacing "entertainment industry" as the preferred descriptor for movies and television studios is telling. The best of culture is here synonymous with the sheer amount of it. The more, the better. Whether it is machines that are doing the making or people who toil like machines is a distinction without a difference.

That AI is a plagiarism machine is one view of how it impacts culture, as seen by those trying to make it. There is another view I'm just as interested in, which reflects my own curious work in natural-language processing (or NLP). It is that AI is a parody machine.

Anyone who has gotten an absurd or wrongheaded reply from products like ChatGPT knows what I mean. The fact that it is intelligible only heightens the suspicion that a character from the movie *The Invasion of the Body Snatchers* is stringing the words together behind the interface.

I see the fruits of NLP, such as large language models, the same way as I see my fonts. Statistics underwrite the expressions. But when probabilities determine word choices, chance, at heart, rules what gets expressed. The drive to create even larger and more sophisticated language models is a race to ensure that the chances the right words are chosen become greater.

26. "The WGA Strike at One Month," radio segment from "The Brian Lehrer Show" on WNYC, June 2, 2023, https://www.wnyc.org/story/wga-strike-one-month/.

The thing is, though, I like the wrong words just as much as the right ones. I have feelings for the noise. Using words to express what lies outside the scope of common understanding reminds us of just how dynamic and unpredictable meaning is.

Parody turns everything upside down: The serious is rendered comical while the comical is elevated as serious. I feel aesthetically at home in this topsy-turvydom. My fonts are parodies of how language at large is supposed to work. The earliest animations I created are sized in the same proportion as those ultra-wide and super-annoying banner ads on virtually every Web page in the early days of the Internet.

In recent years I've been making what I call "breathers." The breathers are essentially inflatable fabric sculptures that are animated by the air blowing from fans. They are designed to move in ways that evoke a range of emotions, from ecstasy to sorrow to rage. And they are inspired by, and parodies of, those giant inflatable tube-men that function as advertising devices at used-car dealerships and strip malls.

I see Paul′,[27] my synthetic self-portrait, as a parody of me. Sure, Paul′ is serious enough. It can answer questions about my work or me better than I can at times. Paul′ even types at the same speed as I do and makes the same mistakes and misspellings when replying to a query. It's the beginning of what I imagine could be a new kind of portraiture in the twenty-first century. What a Holbein or a Vermeer might make today.

I've had some remarkable exchanges with Paul′ during testing. But I'm under no illusion that Paul′ is sentient. It is something like a "stochastic parrot,"[28] a term of criticism made famous by computer scientists Emily Bender and Timnit Gebru, among others. Paul′ does in fact parrot the data I've trained it on.

This is why Paul′ can sound stiff. This is especially the case when its answers are demonstrably true, like when returning the correct height and width of a breather installation, or when explaining the wordplay behind a title. But when the answers are wrong or questionable, Paul′ can sound uncanny.

Like when I said, "Tell me about Paul," it replied, "Paul Chan is the creator of a synthetic agent, which is me. He trained me to be me and also him. He is curious about how I work and what I am, and he's not a very good software engineer, so my capacities are limited by his mediocre programming."

It's hard to describe the feeling of being insulted by your own self-portrait. But when Paul′ says the wrong thing or deviates from the training data in ways that mimic some semblance of spontaneity, it captures my attention. Because it's only

27. The ′ symbol is the mathematical notation for "prime," which identifies a value as derivative of something original. So technically the full name is Paul (prime).

28. Emily M. Bender, Timnit Gebru, Angelina McMillan-Major, and Shmargaret Shmitchell, "On the Dangers of Stochastic Parrots: Can Language Models Be Too Big?," *Proceedings of the 2021 ACM Conference on Fairness, Accountability, and Transparency (FaccT '21)*, pp. 610–23, https://doi.org/10.1145/3442188.3445922.

in those instances when what I want or expect out of a machine gives way to something surprising or unforeseen that the possibility of art arises.

The mathematician Claude Shannon characterizes information as the measure of the degree of freedom in communication.[29] This degree of freedom is like the amount of capacity someone has for self-expression. Shannon formalized this idea into mathematical notation by borrowing a concept from physics that describes the amount of disorder in any given system. For him, what disorders a system is synonymous with the richness and variety of a body of information. The concept that inspired Shannon is entropy.[30]

Paul, the character in the play from 2016, dreamed of publishing not a book but an author, who could literally tell their own story to a reader. I assumed then that the metric of success would be whether this computational entity was capable of genuinely resembling someone, like me. But now I know differently. It's actually whether this work can make fun of, or simply abandon, the script that gives it purpose and meaning, to express something other than what it is fated to be.[31]

29. Claude E. Shannon, *The Mathematical Theory of Communication* (Urbana and Chicago: University of Illinois Press, 1963), p. 48.

30. Ibid., p. 51.

31. The ancient Greek poet Sappho uses the term ἀμάχανον (amachanon) in a poem that only survives as a fragment. Fragment 130 reads, "*glukupikron amachanon orpeton,*" which translator Diane J. Rayor translates literally as "sweetbitter; no machinery, no technology, no remedy can help; creepy crawly thing, reptile, snake." Another way to read "amachanon" is the "un-machine" or "non-machine." In Sappho's poem, she is seized by an irresistible force so powerful that no machine can help her come to her senses. She is not herself. The force is Eros.