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## Introduction. Un/Civil Engineering

2019

<https://doi.org/10.25969/mediarep/12239>

Veröffentlichungsversion / published version  
Sammelbandbeitrag / collection article

### Empfohlene Zitierung / Suggested Citation:

Pringle, Thomas: Introduction. Un/Civil Engineering. In: Thomas Pringle, Gertrud Koch, Bernard Stiegler (Hg.): *Machine*. Lüneburg: meson press 2019, S. ix–xiii. DOI: <https://doi.org/10.25969/mediarep/12239>.

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## Introduction

# Un/Civil Engineering

Thomas Pringle

In Ted Chiang's (2002) sci-fi short story "Seventy-Two Letters," the young protagonist uses epithetical codes to program the behavior of golem-like autonomous robots against the backdrop of a speculative nineteenth-century England. Upon discovering an epithet that allows the construction of automata capable of building other simple automata, the Industrial Revolution-esque society is thrown into a crisis. While the character's discovery is intended to release proletariat laborers from horrid factory conditions through the automated production of inexpensive machine engines that could potentially regrow the cottage industries lost to manufactories, the prospect of true self-reproducing machines unintentionally draws the ire of a powerful union of sculptors tasked with handcrafting the automata. The threat of reproductive machines is a contradiction, insofar as the laborers carefully sculpting the automata—with prestige and by hand—reject a technological development that promises to reinstate their own preferred labor conditions to the oppressed and demeaned textile workers. Referencing the Goethe poem "The Sorcerer's Apprentice" in support of their cause, the unionists recount the cautionary tale of the self-generating anthropomorphic brooms whose simple machinic function to fill buckets of water and clean the floor turns into an out-of-control mess.

The story's protagonist rejects the warning that automata could self-reproduce without human assistance as an outdated objection and insists that there remains a radical political potential for new

- x democratic machines working alongside laboring people. Goethe's account of automated destruction and an assistant pleading the sorcerer to rescue a situation run amok is a widely applied cliché, but Chiang's political setting offers insight for how the perception of machines as objects of work, beauty, knowledge, and play remains a societal problem. The machine could be a savior to some and a curse for others, and, either way, its mass manufacture promises to recast the social fabric at large. Today, the question is less about the dangers of total mechanization—the nightmare prediction of science fiction and antihumanism—or the operation of systems without adequate knowledge or experience, as access to technology is diffractively policed according to the persisting human assumptions of discrimination and hierarchy that machines working under capitalism tend to reproduce and reinforce. Instead, having accepted machines as ubiquitous, helpful, and necessary elements of society, the question becomes, How does machine implementation mean a vastly different promise to different collectives of people? Is the world of the engineer the same as the laborer, the same as the machine? With what framework do we describe our affinities with and hatreds of machines, as we so often learn from their vision?

In a political climate where machines operate pervasively and abundantly, on great and small scales, the precise role of human beings as operators, users, or conductors and the according social formations of humans alongside machines remain unresolved. The ideological messianism of social network politics, the belief in the powers of Big Data, the governance of algorithms, those individual habits formed alongside mass-produced devices, or the materiality and unequal availability of technological infrastructure—each scenario is politically familiar yet demands a new critique that distills how individuals have become reticulated as collectives within a thoroughly technologized landscape. Then, machines at scale both offer and demand a kind of social thinking about collectives of people and technology that operate seen and unseen, unconsciously embodied and actively felt. The mass-produced,

large- or micro-scale machine forces us to intersect and replace categories of social analysis that relate the individual to familiar groupings—like the subject to the nation—with novel modes of thinking across the singular and plural. For example, is “nationalist fervor” an appropriate description for those numerous Apple fans excited by the release of a new iPhone? How are biometric databases and technologies at once detecting and creating collectives, and are these machines useful, safeguarding, or simply discriminatory? What are “circadian rhythms” in a world with high-frequency trading, the uniformity of Google Spanner, Runtastic’s development of an iPhone app for dream betterment, or Netflix’s venture into wearable technology that pauses your film when you fall asleep? What is labor when factories are mobile, prefabricated, and autonomous or when social networks mine the reticulated composition of human relationships for value? Critical inquiry into machines operating at speed and scale is increasingly necessary, *as not all engineers are civil.*

Taking up this project from different perspectives, this book questions the contemporary status of the machine as a political configuration of the individual to the technical and the collective. Focusing on “animate,” Gertrud Koch looks at the pathological relationships that develop between people and technology. Questioning an ontological distinction between humans and machines, she locates the contemporary practice of “performance capture” in film within a longer technological history describing the technical connections interfacing humans and machines as ontologically operative. By turning from technological distinction to functionality, the technical animation of the world is tied to a dynamic development of the human. Conceptually, Koch frames the animating human as a formal medium of perception achieved through a polyvalent interchange found in the relation between the personal use of machines and the natural surface of the world that technological thinking surfaces as axiomatic. This, however, leaves an open question: what is the role of beauty in the function of a machine?

xii In his articulation of an “automatic society,” Bernard Stiegler discerns a governance of “hypercontrol” that follows from the historical installment of digital media networks. In place of functions previously tackled by the mind, the processes of mathematical automation that are externalized in digital technology operate without human direction and oversight. This externalization of formerly internal cognitive operations supplements the thought of large populations by automatically rendering each user as an individual and collective at once, through shared psychical experience mediated by social technology. Within this singular yet interlaced vision of society, for Stiegler, is a new proletariat of knowledge workers who are mnemotechnically captured and industrially automated. According to this paradigm of intellectual and informational capital, there are new arrangements of conceptual production that are consequential symptoms of an automatic society: the Anthropocene and Chris Anderson’s “The End of Theory.” Yet, there is also a latent cure, as Stiegler posits the internet as a possibly redemptive *pharmakon*. Closing with a meditation on the potential for reclaiming human agency, he describes a substitutional paradigm of a “negentropic” society that would hold the potential to release network culture from its automatic force.

Thomas Pringle describes the history of the “ecosystem” as a machinic term that allows conceptual traffic between the study of ecology and economy. Set against the background of twentieth-century technoscience, the ecosystem takes on a new political valence given its operation in resource management, national security, and environmental economic planning. Tracing the term alongside theoretical efforts to describe the operation of power as an ecology composed between the poles of mind, technology, and environment, he resolves in a sustained engagement with how the term resurfaces organicist social orientations. Most recently, this vitalism and its relationship to political economy take the form of “resilience”: a policy discourse developed from the ecosystem that seeks to strategically adapt finances and security to conditions of ecological turbulence and disequilibrium.

In each case, the author sees room for *machine*—or its animating/automating qualities—to operate as a term of media analysis giving specific attention to contemporary technosocial politics. Each author carefully avoids the pitfalls of Promethean, techno-utopian, and technological determinist perspectives in favor of positions that balance the machine on a finely nuanced line between the singular and the plural, the ideological and the scientific, the technological and the functional. While machines do hold the power to capture individuals, the authors seek critical positions from which the agency of the human is not dismissed in advance and life alongside technology can be repaired. However, a central problem and difference between entries remain in the degree to which each critic seeks to gain distance from, or proximity to, the technologies under analysis, as machines inevitably place pressure on the production of theoretical knowledge. With this reflexive notice in mind, perhaps it's best to begin with pragmatic words of advice from the engineer that could be useful for any future sorcerer's apprentice: to understand recursion, one must first understand recursion.

## Reference

Chiang, Ted. 2002. "Seventy-Two Letters." In *Stories of Your Life and Others*, 147–200. New York: Tor.