Out of Control

Rita Raley

> *In each apparatus we have to entangle the lines of the recent past and those of the near future: that which belongs to the archive and that which belongs to the present; that which belongs to history and that which belongs to the process of becoming;* that which belongs to the analytic and that which belongs to the diagnostic.
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> —Gilles Deleuze, "What Is a Dispositif?" (1992, 164)

What if we were to allow for the concept of *control*—the focus of this special issue—as descriptive, one that designates a logic and regime of power that emerges in the wake of, or in tandem with, the entire apparatus of mid-twentieth century research in the computational, psychological, and biological sciences, and then ask, does *control* describe our moment? Or are we now living through a transition into a new episteme, a new kind of society, with its own economic and technological arrangements? What would such a proposition allow us to see and what forms of action would it both enable and demand?

ONE

Everything, everywhere, seems to be out of control.[1] We do not need the polar bears, the doomsday preppers, or the global political news to precipitate worry that the collapse, in Jared Diamond's terms, is less cautionary tale than credible assumption. But these things function as signs of crisis nonetheless and help to set the zeitgeist mood of apocalypse and doom that, even if collectively unconscious, has been palpable. The world is always ending, yet something feels different as we enter the third decade of the new millennium.

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[1]As I revisit this line in the time of the COVID-19 pandemic, I can only apologize for what now seems a gross understatement. The agitation here was woven into the text I presented at the SCE Winter Theory Institute in February 2019, but who knew. Many thanks to Aaron Jaffe, Robin Goodman, and Jeffrey Di Leo for the invitation to participate in the conversation.

Globalization has not worked out—this would be the colloquial form of the narrative that seeks to explain the virulent resurgence of nationalist populisms that have manifested in the rise of authoritarian leaders from Victor Orbán to Jair Bolsonaro, with of course the 2016 U.S. presidential election and Brexit vote in between. More precise academic explanations might situate the roots of our malaise and even the seeds of our eventual destruction with both the U.S.-led wars in Iraq and Afghanistan and the 2007-2008 global financial crisis, the knock-on effects of which have been so many and various as to appear overwhelmingly incalculable. Regardless, we are left with the felt sense of socio-political disorder, the feeling that no one, or perhaps a shadowy and evil someone, is at the helm, steering us all toward uncertain but surely catastrophic ends—the feeling that institutional foundations are crumbling and the ground is giving way beneath our feet, or perhaps lost to others making a territorial claim.

All of this in a moment when perhaps what feels most to be out of control is the literal ground, the planet. Whole swaths of my town, and part of my university, will most probably be underwater in my lifetime; perhaps yours will be as well or perhaps you will be in a newly formed tundra or moving away from an uninhabitable desert. What lies behind such climactic and geologic transformations of course will be centuries of extractive, destructive, and consumptive human behavior, culminating in the loss of plant and animal species and the pushing of vulnerable populations to the brink of annihilation. Observing the belated turn from circumspection and reticence to outright panic in the language used by climate scientists, David Wallace-Wells concludes with some relief that "It is O.K., finally, to freak out. Even reasonable…[because] we're at a point where alarmism and catastrophic thinking are valuable" (2019, n.p.). Apprehending the end, as is said, concentrates the mind—and it may be precisely what is needed to mobilize people to take meaningful action to try to stop the runaway train that serves as the all-purpose metaphor for out-of-control environmental processes, financial systems, and political institutions alike. But here the indeterminate ending of Bong Joon-ho's *Snowpiercer* (2013) is instructive: even if one can imagine a revolutionary movement to derail the train and liberate the indentured workers who keep it running, what awaits upon your eventual escape to the outside is a probably-hungry polar bear, which means either that the planet is not lost, or that you will surely be eaten.

In this moment, at the end—or past the end—of the American century, William Burroughs' particularly sobering caution about the menace of political systems careening toward collapse bears repeating. Evoking both the downfall of the Roman empire and the Nazi war machine, he warns: "a government is never more dangerous than when embarking on a self-defeating or downright suicidal course" (1998, 342). This remark was part of his presentation at the Semiotext(e) Schizo-Culture colloquium at Columbia University in November 1975, which he attended along with Michel Foucault and Gilles Deleuze. Burroughs' paper, "The Impasses of Control," is of

some consequence. As Deleuze will observe a decade later in an analysis of Foucault's lectures at the Collège de France, Foucault was "profoundly struck by Burroughs' analysis"—so much so that the concept of control can be said to be identifiably, unmistakably, at the root of Foucault's subsequent articulation of biopower (Nail 2016, 248).[2] Deleuze himself articulates the genesis of "control": it is "the name proposed by Burroughs to characterize the new monster," "one that Foucault recognizes as our immediate future" (1995b, 178; 1991, 4).[3] Or, as he writes in another context, "Foucault agrees with Burroughs, who claims that our future will be controlled rather than disciplined" (1992, 164).

For Burroughs, modern control is psychological control, which he notices to be everywhere all around him, enforced by myriad techniques and technologies, from brainwashing and psychotropic drugs to words, for him the "principal instruments" of the "technocratic control apparatus" (1998, 339). To maintain power, he explains, force alone is insufficient; power rather needs to be exercised on both the body and the mind. Control does have limits, however, as is suggested by the title of his eventual published remarks in *Schizo-Culture*. Crucially for the emerging discourse on the control society, control needs time and it needs a response from its subjects, either rebellion or consent. MKUltra was not built in a day—the academic-industrial-military complex needs time to conduct research, to realize its thinking and implement the results—but what Burroughs is suggesting is that there is a necessary temporal gap between the programming of control subjects and the manifestation of that programming through action or reaction. The seeds of suggestion, the behavioral nudges, are sown not once but continually over time. Control subjects are not wind-up toys but enmeshed in systems and situations, as in Burroughs' parable of ten men in a lifeboat trying to survive. In this situation, two have guns and the horizon of action is not only the present time of rowing but also a speculative future moment in which there may be poisonings of the water. It is in other words a gaming scenario, the if-then conditionals a hallmark of a system in flux.

Control for Burroughs, as the biopolitical management of populations will come to be for Foucault, is thus necessarily open-ended and uncertain, and those who would master the game must develop bulwarks against the unpredictable actions of the environment and of other people. In Burroughs' imagined lifeboat scenario, those with the guns cannot comprehensively calculate the sum total of will or motivation of all of the rowers, but in order to maintain control of the situation they need to the extent possible to surmise

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[2]Deleuze's lectures on Foucault (1985-1986) have been transcribed from an archive of recordings established by the Bibliothèque Nationale de France and are hosted online by Purdue University. On the lectures and the history of their preservation, as well as an overview of the history between the two philosophers, see Morar, Nail, and Smith (2016, 1-8). It is beyond the scope of my article to trace in full the intersections between Foucault's and Deleuze's thinking on the problems of biopower, control, and resistance to control, and indeed much of this work has already been done by the contributors to that volume.

[3]This article uses both English translations of Deleuze's postscript.

all eventual outcomes. A control system, however, cannot be complete or absorb the uncertainty of life. In fact it needs a sliver of uncertainty in the form of "opposition or acquiescence" (1998, 339). Without friction, without that residual trace of resistance, Burroughs says, "there would be nothing left to control…. There would be nothing there. No persons there" (339). That friction is what gives the system its momentum; paradoxically, then, its successful foreclosing on uncertainty and error goes hand in hand with increased vulnerability. In a perfectly closed system, "the workers would no longer be alive, perhaps literally" (339). If mere automata were driving the lifeboat forward, it would not then be the machinic programming of bodies but rather just a machine. Control needs to harness, even tame, the vital energies of life but it cannot absolutely stamp them out lest it destroy itself, even as it may directly and even counter-intuitively seek to do so.

The transcript for the Q&A with Burroughs after his colloquium presentation makes even more clear the line that arcs back from Deleuze to "The Impasses of Control." Responding to a query about the possibility of a complex social system functioning without control, Burroughs declares its fundamental necessity for the administration of a "heterogeneous city population" (Lotringer and Morris 2013, 165). The survivalism of the lifeboat parable notwithstanding, however, the vision here is decidedly not akin to John Carpenter's *Escape from New York*. Instead, his reply frames the problem of living on in terms of supply lines and integrated employment sectors—in other words, logistics.

> Where's all the food come from here—it's brought in, right? There's a whole unseen bureaucracy that is bringing that food in, and putting it in the shops, it's providing power, etc. If those people didn't work, millions of people would be starving overnight. So any system must find a way to keep people on their jobs, whether economically or giving them food coupons, or whatever. (Lotringer and Morris 2013, 165)

There is more than a hint of managerialism in this answer: the deictic, "those people," demarcates the line between governed and governor, which is not a sovereign but an "unseen bureaucracy." It is then a hidden hand that directs the movements of goods, insures the feeding of the population, and coordinates the markets. And absent any specified human actants— the "system must find a way"—this enclosed city, to which food must be "brought in," appears to be self-regulating. Equilibrium is maintained by dynamically adjusting techniques and parameters: if employment cannot be sustained through markets, then "food coupons" must be distributed, and if not these processes, then the open-ended, "whatever," achieving a constancy of nutrition levels in the body politic by any other means. Hovering in the background here is the cybernetic concept of homeostasis, which, as we learn from the editors of the Transactions of the Eighth Macy Conference on Cybernetics, comes from W.B. Cannon's *The Wisdom of the Body* (1932).

Cannon, the editors explain, "designated as 'homeostasis' those functions that restore a distributed equilibrium in the internal environment—the complex self-regulatory processes which guarantee a relative constancy of blood sugar level, of osmotic pressure, of hydronium ion concentration, or of body temperature" (von Foerster, Mead, and Teuber 1951, xv). Homeostasis resonates strongly with Burroughs' account of civic administration as a constant process of monitoring and adjusting variables. We might note as well the "etc." at the end of his list of bureaucratic operations, which opens the temporal and spatial framework of control. Concessions are a "control bind" and a "one-way street," a risky path for controllers who wish to stay the course, but, as he says in a response to a query after his talk, there nonetheless "will be continued modifications of control" (Burroughs 1998, 342; Lotringer and Morris 2013, 163). It is difficult not to conclude, then, that what Burroughs is describing in his seminal presentation is a control system that corresponds with, and is informed by, postwar American cybernetics—a presentation that will in turn inform Foucault's thinking on bio-power and security apparatuses and, by extension, Deleuze's thinking on control.

In January 1978, Foucault begins his lecture course at the Collège de France with the announcement of the topic: bio-power. Understanding how sovereignty, discipline, and security have historically functioned in relation to space leads him to consider a series of towns as instances of the three different mechanisms. Sovereignty, he concludes, "capitalizes a territory" (2007, 20). Discipline, by contrast, "works in an empty, artificial space that is to be completely constructed" (19). And security, the true focus of the lecture, works with what is given, not only the material elements of air and water, but also elements such as crime and disease that can never be completely halted, much less eradicated. Instead of aspiring to over-write, or geo-engineer, a space into a tabula rasa, it "will try to plan a milieu in terms of events or series of events or possible elements, of series that will have to be regulated within a multivalent and transformable framework" (2007, 20). Security, in short, "works on probabilities" and "refers then to a series of possible events…to the temporal and the uncertain, which have to be inserted within a given space" (19, 20). It thus does not operate with a "static perception" of a town but rather tames uncertainty through probabilistic calculations of x possible events, which will be the basis for its managerial plan. In this manner, an entity, the inherent mutability of which is confirmed by the importing of the biological term, "milieu," might be continuously regulated (20). It follows that the temporal frame of security is not that of the present, the "perfection of the function there and then," but of "a future that is not exactly controllable, not precisely measured or measurable" (20). Good governance, then, means the calculation and management of "an indefinite series of events that will occur" (20).

In March of 1979, the following year, Foucault directs his audience to consider what awaits "on the horizon" in more explicitly epistemic terms (2008, 259). Although a complete sketch of "an image, idea, or theme-program" of a

new society will await development by Deleuze in his "Postscript," Foucault offers in this lecture a glimpse of a society in which the management of bodies and populations is achieved not through enclosure but rather through "an optimization of systems of difference, in which the field is left open to fluctuating processes…in which action is brought to bear on the rules of the game rather than on the players, and finally in which there is an environmental type of intervention instead of the internal subjugation of individuals" (2008, 259-260). This "image, idea, or theme-program" is consistent with the prior example of the town: for both the site of intervention is the milieu, the "field of intervention in which, instead of affecting individuals as a set of legal subjects capable of voluntary actions [sovereignty]…instead of affecting them as a multiplicity of organisms, of bodies capable of performances [discipline]…one tries to affect, precisely, a population," that is, a heterogeneous set of individuals who are inextricably, biologically, bound up with their material environments (2007, 21). This ground, site, or field is neither fixed nor immutable. It is again "multivalent and transformable" (2007, 20), "left open to fluctuating processes" (2008, 259) as well as "an indefinite series of events" (2007, 20). Compare Foucault's account of bio-power then appearing "on the horizon" with Deleuze's control system—which he will figure as "self-transmuting molding" or "a self-deforming cast that will continuously change from one moment to the other" (1995b, 179; 1991, 4)—and it becomes clear that bio-power and control should indeed be understood as "synonymous in both content and form," as Thomas Nail argues, and not simply because Deleuze has read Foucault in such a way as to make this so (Nail 2016, 261).

In his aforementioned exegetical lecture on Foucault, on April 8, 1986, Deleuze explores the open-ended aspect of bio-power in contradistinction to discipline and in so doing starts to articulate the contours of what will become the society of control.

> What can we call this third [type of power]? We call it, following the American author, Burroughs, a formation of control power. We have therefore: sovereign power, disciplinary power, and control power…I am authorized to say this because of Foucault's admiration and familiarity with Burroughs, even though, to my knowledge, he never spoke of him in his writings, his [influence] on him was great, notably the analyses Burroughs made of social control in modern societies after the war. (Nail 2016, 254)[4]

Indeed, we have seen the echoes of Burroughs in Foucault, and now we can consider what Deleuze sees emerging on the horizon, as it were, of Foucault. It's a "misinterpretation," Deleuze posits, "to make Foucault into a thinker who privileges confinement…sometimes he announces the end of

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[4]For English translations of Deleuze's lectures, I am reliant on Thomas Nail (2016) for excerpted quotations as well as Google Translate for overall context and meaning.

confinement in favor of another kind of function of control altogether" (Nail 2016, 255). Confinement is no longer necessary because it has been replaced by "zones of frequency" and "zones of probability": monitoring behavior through anticipation of what will be done, and by whom (256). This third type of power is exercised through a "calculus of probabilities," which he finds to be self-evidently preferable, from the perspective of the controller, to prison walls (256). "Why do you need to lock people up," Deleuze asks, "when you know you can find them all on the highway at a given day and hour?" (256).[5] "It goes without saying," he concludes, "confinement is absolutely useless. What is more, it is becoming expensive, it's becoming stupid, and socially irrational" (256).

Here it is instructive to turn back to the lecture in which Foucault points to a new image of society then coming into being. The two systems, he suggests, the disciplinary and the regulatory, are not to be thought as "mutually exclusive" (2003, 250). Indeed, this is consistent with his prior claim that the mechanisms of security do "not constitute any bracketing off or cancellation of juridico-legal structures or disciplinary mechanisms" (2007, 7). The structure is then not teleological: "there is not a series of successive elements, the appearance of the new causing the earlier ones to disappear" (8). It is rather a question of what manifests and becomes dominant, how the mechanisms align with each other, and which techniques are subject to "reactivation and transformation" (9). Seb Franklin teases out the question of the "when" of control, noting that "the two terms cannot be reduced to one of direct succession or linear extension" and, with fine exegetical work, reads Deleuze as both "extending Foucault's periodizing project" and at the same time problematizing linear historical narratives with a "recursive temporality" (2018, 46, 51).[6] Indeed, there is an aspect of both in "Having an Idea in Cinema," where Deleuze notes that "there are all kinds of things left over from disciplinary societies" (1998, 17) and points to "the themes that are surfacing, which will develop in forty or fifty years" (18). There is a trace of the doubling of a linear and a recursive structure as well in the "Postscript" itself, where he summons a life cycle for discipline: it is being nursed through its "death throes" or prepared for "last rites," while at the same time "new forces [are] knocking at the door" to "take over" (1995b, 178; 1991, 4). These "new forces" are, as he remarks in an essay querying

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[5]"In making highways, for example, you don't enclose people but instead multiply the means of control. I am not saying that this is the highway's exclusive purpose, but that people can drive infinitely and 'freely' without being at all confined yet while still being perfectly controlled" (Deleuze 1998, 18).

[6]A full accounting for the many amplifications and applications of Deleuze's analysis of control is well beyond the scope of this paper, but in addition to collections edited by Gilbert and Goffey (2015) and Beckman (2018), as well as the journal, *Studies in Control Societies*, Franklin's book, *Control: Digitality as Cultural Logic*, cannot go unmentioned. The doubling that he sees in Deleuze's periodization—temporality as linear sequence but also recursive—is in an interesting way echoed in his own definition of control as both "a set of technical principles" and "a worldview that persists beyond any specific device or set of practices" (2015, xv).

the meaning of "dispositive," "very different from recent closed disciplines" (1992, 164).

While Deleuze makes explicit in the "Postscript" the notion that there is, or will be, a transition from discipline to control—disciplinary "institutions are in more or less terminal decline," or they "are finished, whatever the length of their expiration periods" (1995b, 178; 1991, 4)—at the same time the temporal hedging ("more or less," "whatever the length") stops short of articulating a break. Here too we can notice the heavy use of the continuous present: control mechanisms "are taking over" or "are in the process of replacing the disciplinary societies" (1995b, 178; 1991, 4). In one translation, "businesses are replacing factories"; in another, the sense of the processual is communicated through the conjunctive phrase, "as the corporation replaces the factory" (1995b, 179; 1991, 5). On or around 1990, then, a "process of substitution" is underway, control "already taking the place of the disciplinary sites of confinement" (1991, 7; 1995b, 182). And, again on or around 1990, the environments of enclosure "are in a generalized crisis" and "in the midst of a general breakdown" (1991, 3-4; 1995b, 178). If Deleuze was to find his concept of control latent in Foucault's concept of biopower, therefore, it is perhaps that the "expiration period" of disciplinary institutions, the final stretch of a relatively short historical run, could only be said to be approaching asymptotically toward a conclusion. It is for this reason that I think it is possible to read Deleuze's proclamation—"What counts is that we are at the beginning of something" or "The key thing is that we're at the beginning of something new"—as both descriptive and prescriptive, and perhaps also performative (1991, 7; 1995b, 182). *Control*, after all, becomes an order word, a foundational term for the end of the twentieth century and the beginning of the twenty first—one that constellates or otherwise arranges processes, apparatuses, and actors into the form, "society."

TWO

True to the archaeological mode of analysis, we are left with the demarcation of historical phases that may co-exist but nonetheless adhere to an underlying diachronic logic, at least insofar as Deleuze extensively situates control within historical formations such as the floating of monetary exchange rates and educational assessment.[7] The more striking and even intuitive aspect of Deleuze's formulation of the control society in this regard is the delineation of three successive machinic or technological ages, which he neatly sets out in conversation with Antonio Negri in 1990: "One can see how each kind of society corresponds to a particular kind of machine—with simple mechanical machines corresponding to sovereign societies, thermodynamic

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[7]Many have explored this question but for another look at the problem of periodizing security, discipline, and control, see Gilbert and Goffey (2015, 9-10).

machines to disciplinary societies, cybernetic machines and computers to control societies" (1995a, 175). Machines are not strictly deterministic, and they may not in isolation, as entities separate from human activities of explanation and interpretation, communicate the character of the societies in which their functioning is dominant. There is nonetheless, Deleuze suggests, something about their material particularity that both reflects and informs an episteme, which after all is a symbolic structure that organizes sensibilities and an understanding of the world. Machines thus "express the social forms capable of producing them and making use of them" (1995b, 180). They are symbolic of a population and at the same time they materialize a discursive formation that is that population. In other words, they both encapsulate and instantiate who we are.

Alexander Galloway's periodization map for the three phases (sovereignty, discipline, control) elegantly advances the project of embedding discrete machines (mechanical, thermodynamic, cybernetic) within an age that they then express as technological actors (2004, 27). His map, which as an approximation aligns the control society with Watson and Crick's discovery of DNA (1953) and the shift to the TCP/IP Internet protocol suite (1983), offers a snapshot view of each phase's diagrammatic and managerial principles, the means by which knowledge is organized and systems are managed. Just as Deleuze's figurative sketch—we go from moles to snakes—makes visible the new logics of work, finance, and education, Galloway's map, in tabular form and itself a diagram, makes visible, and with greater specificity, the political and technological arrangements that ground the epistemic formation containing both the society of control and late capitalism.[8] The book's purpose is to open up the third phase, which he reads less in terms of cybernetics than, as its title suggests, Internet protocols. This has the effect of extending the phase well into the twenty-first century and positions his study as a codification of the discourse on networked conflict and control that also pulls future work on, for example, the politics of the micro-decisions intrinsic to packet switching, into its ambit (Sprenger 2015).

It does not come as a surprise that the furious proxy speech against San Francisco that concludes Jarett Kobek's well-titled novel, *I Hate the Internet*, includes a repeated denunciation of packet switching as evil (2016, 271). If one wants to tell the story of the radical transformations in society, communication, and control, packet-switching technology would indeed be situated at the juncture, the historical join, as it is by Galloway. The awakening in the mid-twentieth century to the notion that life can be thought as informational is necessary preamble, as of course is the development of cybernetics as a science of prediction and control. Packet switching though exactly instantiates, and conditions, some of the primary logics of control: recall the "self-transmuting molding," the continual changing of form, along

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[8]The schematic aspect of the "Postscript" does also lend itself to visual representation. See, for example, Taeyoon Choi, "Notes on the Control Society" (2015), http://taeyoonchoi.com/poetic-computation/control-society/.

with continual monitoring and modulation (199b, 179). "But the machines don't explain anything," Deleuze cautions, "you have to analyze the collective arrangements of which the machines are just one component" (1995a, 175).

Much work has been done in this spirit, if not in this vein, coextensive insofar as each study probes, albeit differently, the edges of control and seeks to articulate the organizational and political logics of this third phase. There have been multiple articulations of these "collective arrangements." For example, Manuel Castells' chronicle, *The Information Age: Volume 1, The Rise of the Network Society*, begins with the "assumption that, at the end of the twentieth century, we are living through one of these rare intervals in history… characterized by the transformation of our 'material culture' by the works of a new technological paradigm organized around information technologies" (1996, 29). And, in addition to all the work exploring historical formations in common currency, such as the post-industrial society and the information society, there have been more precise articulations of societies of surveillance (David Lyon), burnout and transparency (Byung-Chul Han), and metadata (Matteo Pasquinelli). For Bernard Stiegler, smart devices, smart houses, and smart cities are the paradigmatic features of what he terms the "automatic society," which partakes of the same digital logic as the control society, and by extension, the same opacity (2016). What it thus needs to forestall in order to perpetuate itself is not the exception but the improbable—the Black Swan event that may open up a space for thinking of alternatives and escape. Such a list, while necessarily incomplete, would be especially so without mention of Antoinette Rouvroy, whose brilliant analyses of "algorithmic governmentality" inform Stiegler's recent work on automation. Rouvroy works in part from Foucault to understand how Big Data, as an ideology and a regime, has substituted quantification and calculation for interpretation and decision (2013, 2016). Studies such as these are all concerned to some degree with making visible the constitutive, at times determinative, effects of specific technological formations, helping us to see and understand the sociotechnical processes, practices, and mechanisms of subjectification in the extended present. Rouvroy's intervention is perhaps the sharpest, and offers the most dire warning: algorithmic governmentality is "without world, without life, without subjects…uninhabited and uninhabitable" (2016, 35). These are the stakes: apprehending the logics of control is the necessary precondition to both the exploitation and the enactment of its limits.

We do not need another articulated Society, but the circumstances of our moment are such that we might nonetheless consider the premise that we are now *out of control* in this more academically precise sense and explore the technological basis for such an idea. Deleuze suggests that "it's easy to set up a correspondence between any society and some kind of machine" but that is perhaps true only when the "machine" as such has an inaugural and classificatory value—when it founds both a scientific discipline and a discourse for which it becomes a primary point of reference (1995b, 180). On or around 2020, that machine is machine learning, so-termed Artificial Intelligence.

My assumption, then, is that we are now living through another interval, a time in between that is also a bridge, which has been precipitated by the exponential developments in machine learning and its cognate discipline, data science. To Galloway's tripartite map of historical phases aligned with their respective network models (centralized, decentralized, distributed) we can, I think, now add a fourth: the neural network, which reinstates the deep structure that is anathema to the rhizomatic, distributed systems that govern life in the societies of control.

While Artificial Intelligence (AI) has historically been the stuff of feverish and fantastic dreams of bending whichever seemingly inviolable physical laws governed the world as it was known, the scientific breakthroughs in deep learning in the past decade have radically transformed our thinking about what is now actually possible. Where we are today with research clearly goes beyond the limits of what it would have been possible to foresee on the horizon of both bio-power and control. Foucault's present, and Deleuze's present, is not our own. Deleuze projected that the modes and motifs of control would unfold over the course of "forty or fifty years" and that has indeed proven to be the case (1998, 18). Concurrent with that unfolding has been the emergence of a new way of thinking, a new way of thinking about thinking, such that the control mechanisms that Deleuze describes, as the disciplines were described for Foucault, "are the history of what we gradually cease to be" (Deleuze 1992, 164). We can then in our moment trace "the lines of the recent past and those of the near future" (Deleuze 1992, 164). But, apposite for technologies—TCP/IP and neural networks—for which the organizing principle is the layer, this interval, this period in which new themes will be surfacing, would be better conceived as a strata than a strictly linear diagram.[9] Indeed, as many have observed, our currently operative assumptions about AI and the interactions between humans and machines can to a non-trivial extent be found in Alan Turing's paper on "Computer Machinery and Intelligence" (1950), the period of the Macy Conferences as well as the CIA's MKUltra program for psychological control (see, for example, Duguid).

We are undoubtedly still in the phase of control, as essays in this issue, and the headline news on any given day, can attest. But we are at the same time *out of control* because a "calculus of probabilities," in Deleuze's language, and as he and Foucault both articulated the technique by which a field or milieu could be managed, is gradually being replaced as the privileged principle of governance (Nail 2016, 256). A new "process of substitution" is underway, and what is becoming dominant is unsupervised learning from massive quantities of data, with systems that use probability theory but function with a calculus that differs from an actuarial table (Deleuze 1991, 7). Recurrent neural networks, which are particularly suitable for language generation, do

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[9]For an explanatory overview of the layers for Internet protocols see Galloway (2004, especially 39-42). The OpenAI microscope visualizes the layers and neurons of different vision models such as AlexNet and Inception. See https://microscope.openai.com/models.

model the probability of the next token in a sequence based on what had come before (Karpathy 2015). And image classification algorithms do use probability vectors in the process of determining whether a set of pixels is or is not a cat.[10] But we might contrast the probabilistic calculations of car accidents from the perspective of a city manager with the use of unsupervised machine learning on an unstructured dataset to determine the medical cause of a symptom such as eye pain. The logical reasoning for the former is inductive: you know you can find x number of people on the highway at 5:00pm because there were x number of people there the previous day, etc. As Josephson and Josephson explain, however, researchers in artificial intelligence found deductive and inductive reasoning processes insufficient for modeling human intelligence, so they had recourse to "abductive inference," the title of their explanatory textbook (1994). In the case of a medical diagnosis, the reasoning process, which derives from Charles Peirce's inquiry into abduction, seeks to find the best explanation, which is not to be determined on the basis of a series, logical steps, or causal connections.

It is for this reason then that Luciana Parisi describes AI, which she recasts as "artificial thinking," as the "*non-logical* thinking of automated systems" (2019, 91, emphasis mine). Such a system, she explains, "overlaps with," but differs from, "a cybernetic calculus whereby control and prediction rely on inductive learning" (91). Predictive analytics for supply chain management, policing, and threat assessment may incorporate statistical and probabilistic thinking, but there is a next level, as Parisi succinctly explains:

> the automation of cognition has introduced a new mode of algorithmic processing that learns from data without following explicit programming. The increasing adaptation of machine learning systems across financial, military, governmental and educational systems is fundamentally challenging notions of automation classically intended as mere reproduction of physical or mental functions (90).

There is then both a practical and a conceptual difference between an airline passenger screening program that uses prescribed criteria such as one-way ticket purchases to deduce potential threats, and a program that generates real-time terror-watch lists with unsupervised machine learning by detecting clusters, segments, and anomalies (de Goede and Sullivan 2016; Amoore and Raley 2017). The difference between the automation of logical and probabilistic thinking and the automation of machine learning might also be understood by general analogy with Deep Blue and DeepMind's MuZero, respectively — the latter an algorithm that combined a tree-based

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[10]For explanations of machine learning I am reliant on expert overviews such as Alpaydin (2016), along with tutorials, lectures, blog posts, and technical papers too numerous to count. I am also indebted to Fabian Offert for his wonderful course on the philosophy and technology of AI in Spring 2018.

planning algorithm (like DeepBlue) with model-free reinforcement learning and learned to play Atari games, chess, Go, and shogi at a superhuman level without any prior knowledge of game rules (Schrittwieser et al. 2019).

What has made all of this possible has been the expansion of compute resources, as well as the development of techniques such as the backpropagation algorithm, which trains multilayer models, and the availability of immense datasets and their necessary precondition, Amazon's microlabor platform, Mechanical Turk. To formalize the extension of Galloway's periodization map into a fourth phase, dates are needed. For such a fast-moving and distributed field, particularly one that is accretive, the articulation of an evental structure is arguably a project for the future, but even now one could point to the announcement of the ImageNet visual dataset in 2009 as a moment that can be understood to have opened the door (Deng et al. 2009). The histories to come will need to root the technological discoveries and developments that followed, particularly the opening of AI labs at the "big 5" (Google, Facebook, Microsoft, Amazon, Apple), in economic, environmental, and political systems. Such analyses would consider the extent to which machine learning has been co-constitutive with the generation of ever-more abstract and complex financial instruments and the intensification of exploitative labor practices and extractive industries. These analyses might also speculate on the relationship between the decade of machine learning and the new global authoritarianism—why should people choose the "strong man" at the very moment when we are becoming aware of the real possibilities of artificial control systems and persuasion architectures? Such a question may not be as reductive as it initially appears. If one takes seriously the imperative to "analyze the collective arrangements of which the machines are just one component," then surely there is something to be said about about DeepMind and Facebook AI as proxies for Viktor Orbán, Narendra Modi, Rodrigo Duterte, Donald Trump, Recep Erdogan, and Jair Bolsonaro (Deleuze 1995a, 175).

THREE

All that can be said of discipline and control—that they constitute two societies, two phases, two mechanisms, two systems, or two regimes; that they are not necessarily linear or successive and not mutually exclusive—can be said of control and what is beyond control. Control, too, could be said to be attenuated and exhausted, in its "death throes," or ready for its "last rites" (1995b, 178; 1991, 4). Certainly we could point to the seemingly antiquated quality, even the futility, of its operations within a mutating field, true to its origins in a Lamarckian milieu, over which it increasingly cannot gain purchase. (A clunky ankle bracelet for home confinement—how low-tech and retro. Assessment processes for higher education—how quaint to think that the University of Excellence continues on.) The question then is which

themes are manifesting now, what they portend for our future, and what forms of resistance are possible.

The schematic quality of the "Postscript" invites the filling in of the third row or column with the awareness that we can say of control, as Deleuze was able to say of discipline: "it is becoming expensive, it's becoming stupid, and socially irrational" (Nail 2016, 256). Such a project also awaits completion by follow-up studies, but given the seed of the idea with Burroughs and his (quite legitimate) worries about mind control, we might begin with the articulation of human attention as a site for the production and extraction of value, as well as entanglements of brains and algorithms in the form of recommendation systems that anticipate, and indeed shape, our preferences and choices (Cohn 2019; Cheney-Lippold 2017; Zuboff 2019). Once fragmented and disintegrated into "dividuals," the individual as such is now being reconstituted through social credit systems that incorporate biometrics and big data analytics. Another taxonomic formulation would proceed from the individual to the "dividual" to people who do not exist—the unending parade of anonymous faces that are the product of Generative Adversarial Networks (Karras et al. 2018). Deleuze noted that money was particularly expressive of social forms and in this regard one could point to the expanded field of cryptocurrencies, and the block-chain technology on which they are based, as an instance of a society that is out of control in both senses (Golumbia 2016; Ferguson 2019). And to Deleuze's rhetorical query, what need of the prison when you have the highway, we might add, what need of humans when the cars and trucks can drive themselves (Hancock, Nourbakhsh, and Stewart 2019). Undergirding it all perhaps, precisely because they have ceased to serve that supportive function, is the crisis of our institutions as manifest in the devolution of education into pure certification that is at the same time without value or meaning, the growing realization that our political institutions are legitimated not by the law but by consensus and shame, and the attendant feeling of helplessness about the battle to mitigate environmental damage because "the New Climatic Regime has no institutional embodiment" that could be mobilized to action (Latour 2018, 91).

This "New Climatic Regime" is overwhelming in part because of its scale; it seems too big to be managed and contained by markets, nation-states, municipalities, or by any structure that might in previous moments have offered a dwelling place and some measure of belonging. This scalar problem is not unlike that presented by the regime of "Big Data," which in the shorthand of business literature, refers to datasets that exceed the capacity of the usual database storage tools, although scale in this context presents less a practical problem than an epistemological and cognitive impasse. As Kate Crawford puts it, the mandate to "Collect it all," to capture natural and social phenomena without principles of selection or discrimination, not just all of our "patterns-of-life"—what we do, where we go, whom we contact—but also the data traces of the things that surround us, has resulted in "a profusion and granularization of information to the point of being incomprehensible,"

and cast us adrift in "an ocean of potential interpretations and predictions" (Steyerl and Crawford 2017). Interpretation and causal thinking is precisely not the means of making sense of Big Data, as Antoinette Rouvroy (2013), Hito Steyerl (2018) and others have noted. Sense in the form of hypotheses is rather produced by post-hermeneutic machine learning techniques for sifting, sorting, and identifying patterns in unstructured datasets. Apophenia, then, is one of the most exhilarating "passive dangers" for a society *out of control*, as Steyerl has riotously argued (2018).

Scale is a problem for academic writing as well, and in the compressed space of an article, I can only begin to speculate on the "new weapons" that have been made both possible and necessary by artificial intelligence—an outline of "future forms of resistance" that will be even rougher than that offered in Deleuze's postscript and its speculative conclusion (1995b, 178, 182). Especially pressing for the moment of machine learning are ethical, political, and legal questions about how and to what extent the rationale for decisions made by such systems can be interpreted and understood by humans. We can perceive and understand bad outcomes—an autonomous vehicle mistakes the side of a white truck for the sky—but as Rouvroy has argued, we cannot make sense of such an incident in terms of intentionality, causality, or rational decision making (2013). Machine learning systems nonetheless contain within them an array of past human decisions: which training data set to use, where to set the threshold for sensitivity, whether to use this nearest neighbour algorithm or another one in the same family, how to verify the model for operational use. These systems also extend and modify human action through the encoding of values, priorities, and prejudicial assumptions, which is why the AI subfield devoted to Human Interpretability could be construed as a second passive danger to a society *out of control*.

What though would be the active danger on par with sabotage, or piracy and viruses? In short, machine learning systems can be tricked with adversarial methods: distorting the input so as to cause targeted misclassifications (Knight 2019). Altering some of the pixels in a picture of a turtle, for example, might result in a picture that an image classifier could "see" as a rifle, even though to a human it would unambiguously look like a reptile (Athalye et al. 2017). Adversarial machine learning can be used to attack any system and is not limited to the lab: medical imagery can be manipulated to produce an incorrect diagnosis; with a bit of black tape on a road sign, a Tesla can be fooled into "thinking" that the speed limit is 85 rather than 35 MPH; or facial recognition systems can be diverted with colored eyeglasses (Sharif et al. 2016). Armed with an image-independent adversarial patch, and thus able to thwart a real-world classifier without having prior knowledge of the site, the guerrilla patcher becomes the new saboteur.

Yann LeCun, whose research has been foundational to the development of the field of machine learning, has observed that the practice and the artifacts, neural networks themselves, are more advanced than the theory

because actual building was the necessary first step toward understanding intelligence (LeCun 2018). So too tricking, experimenting with, or otherwise engaging machine learning systems may allow us to determine what roles we have to play in a society out of control. While Jupyter notebooks, pre-trained models, and open datasets have made machine learning more widely accessible, the doxa nonetheless holds that we are not experts, so our role as end users is limited to ironic complaint and the acknowledgement of the terms of our consent. Adversarial methods, conceived here as a new form of resistance, would unsettle the deep taken-for-grantedness of our inability to understand machine learning and open up a space for grappling with the programs of a society that is *out of control*.

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