Cloud Control

RICKY D'ANDREA CRANO

Chun, Wendy Hui Kyong. *Updating to Remain the Same: Habitual New Media*. The MIT Press, 2016. xiv, 246 pp.

Hu, Tung-Hui. *A Prehistory of the Cloud*. The MIT Press, 2015. xxix, 219 pp.

What do Pony Express stations, Victorian sewers, World War II bunkers, interstate highway truck stops, and the post-9/11 CIA practice of extraordinary rendition all have in common? As Tung-Hui Hu demonstrates in his debut scholarly monograph, they each prefigure and in one way or another sculpt our current conceptions of digitally networked computing. Hu's wager is that, by pegging the digital cloud to these sorts of infrastructural and tactical antecedents, he can begin to reveal a gap between the virtual and the real, or between the popular technofetishistic image of the cloud as a universal good and the cloud's actual, material and historical existence. *A Prehistory of the Cloud* seeks to specify its central object, to pin it down, to make it less nebulous, as it were (Hu, whose CV includes three books of poetry and a stint as a network engineer, does not let this auspicious pun go unnoticed). In so doing, the book simultaneously supplies a riveting genealogy of the computer "user" as well as an unsettling account of how sovereign power—with all its centralizing tendencies, its territorial fixation, and its right to kill—"has mutated and been given new life inside the cloud" (xvi), rhetorical claims for its dissolution and/or distribution notwithstanding.

Alongside Wendy Hui Kyong Chun's *Updating to Remain the Same*, which I discuss below, Hu's *Prehistory* further solidifies a recent wave of thinking in new media studies that attempts to get beyond formal and phenomenological concerns in its twin efforts to historicize the technologies themselves and to assess digital culture against the economic and political backdrop of neoliberal globalization, financialization, and the ascendency of immaterial labor. Buoyant in its movements across countercultural art, U.S. Senate hearings, industry archives, and cybersecurity propaganda, Hu's book satisfyingly unveils the cloud as "a neoliberal fantasy about user participation that is so widespread and so ambient as to be universal," despite actually being "founded on a volatile layer of insecurity" (145). In fact, Hu concludes, the cloud "has never really been about computing," (145) so much as about the ways in which we have been conditioned to perceive and interpret it. As he pointedly states early in the book, "the

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cloud resides within us" (11). In order to substantiate this claim and fully unpack its political and ideological implications, Hu takes us on a lively tour through the history of network architectures, the development of early virtualization software, the increasing securitization of server farms, and the problematic assumptions of hacktivist counter-surveillance techniques. Each of these analyses provides new ammunition for Hu's relentless challenge to some of the most common truisms of the internet age.

Hu's first chapter opens rather alluringly: "Here is how you tear up railroad track..." A brief exposition ensues, nestled within a compact history of the demise of rail travel in the U.S. and a sharp explication of one photographer's moving attempt to capture the ghostly remains of the railroad's golden age. But it is not obsolescent technology that Hu is interested in. Indeed, among his book's most resolute propositions is a claim that technologies and media systems are never fully obsolete, and that, where we might be inclined to perceive each new innovation as a replacement of what came before it, we should instead seek out patterns of layering. The photograph Hu describes (Mark Ruwedel's *Central Pacific #18* (1994)) includes not just decrepit, torn-up track but also tire marks, barely noticeable at the edge of the frame; these Hu treats as evidence of the rail network's continued significance, for the tires likely belong to a truck servicing the fiber-optic cable running just beneath the surface. What we are presented with is thus not replacement but, as Hu puts it, "grafting." It helps us remember that, rhetorics of virtuality and deterritorialization notwithstanding, "space seems to continually reappear" (3), and, with it, the same "profoundly centralizing tendencies" of those earlier technologies that were erroneously assumed to have been eclipsed.

This sedimentary network—upon which the physical infrastructure of the so-called information age has been built—is but one of the innumerable components that constitute what we have come to call the cloud, which, Hu contends, does not exist except as an amalgamation of distinct technologies, images, and ideas, all with their own complex and occasionally intertwined genealogies. One such idea that has considerable traction today identifies cloud computing with a certain utopian promise. (One need not look far to find this: IBM's Smartcloud advertising, for example, imagines abundantly blue skies everywhere one looks.) To properly understand this impulse, we must first divest from the standard militaristic or deep-state narrative of the origins of the Internet. It's not ARPANET, Hu argues, but the interstate highway system and community access television that supply the infrastructural inspiration for today's networks. Not Cold War paranoia but the Elysian ideals of experimental videographers and pioneering art activists of the 1960s and 1970s, who took to the roads and, in Hu's evocative telling, reimagined the potential of the highway in utopian and universalistic terms.

I should emphasize here that Hu is hardly smitten with this alternative origin story. The utopia of the counterculture was a fantasy, one that proved all too conducive to corporate and neoliberal appropriations over subsequent decades. Chapter Two, "Time-Sharing and Virtualization," turns from network infrastructure to the invention of the "user," who is revealed to be a harbinger of the new economic subjectivity that would emerge alongside the rise of immaterial labor and the growing trends of piecework and freelancing. At the heart of this chapter is the little known story of "time-sharing," a technological affordance dating back to the early 1960s that allowed multiple programmers to work in shifts at a single machine without interfering with each other's projects. This meant that a programmer could now compute data in "real time," without sending his (programmers were almost always men at the time) punchcards to an operator (almost always a woman) for batch processing that could take days to get results. The individual user would become the computer's "intimate partner" (40), and Hu does not hesitate to tease us with remarks about desire or the quasi-erotic rhetoric of code debugging (where one "peeps" around the system). By situating this development squarely within the framework of postwar capitalism, he conveys how time-sharing "ma[kes] users synonymous with their usage, and allowed them to be tracked, rented, or billed down to each tick of the clock" (41). The result is a "restructuring" of boundaries between work and leisure and between public and private life.

What follows is a "soft" or even "hidden" form of control that is not in itself unique to digital culture but rather evidence of how digital culture can revamp and intensify modes of power and governmental techniques that have been in play for centuries. Hu draws brilliantly on Foucauldian research into Victorian water and waste removal systems to reveal how individuals are made to become "willing partners" in their own control (64), that is, how populations can be effectively regulated in large part by being left alone. We now enact this partnership online, for example, whenever we "share" or "like" or "mute" a social media post, as such micro-behaviors serve as aids to the algorithms that curate our digital environs. Like the late nineteenth-century sewer, "virtualization"—a term that Hu uses to refer to any practice of outsourcing computational processes (from storage to data analysis to word processing) to the network—is not just a set of technologies but a set of beliefs that, left untroubled, impart "barely detectable methods of modifying behavior" (60). "[T]hrough the lens of waste management," then, we discover "a buried history of managerial control within the cloud" (58). The sort of power at work here does not seek to discipline us when we stray from the norms; rather, it subtly but relentlessly incentivizes us to play by the rules (offering free software, free storage, foolproof security, a supremely flexible labor pool, and so on).

The latter half of Hu's *Prehistory* sets aside the "gentle structures of control" explored

in the first two chapters and instead seeks to expose a "latent violence" in cloud computing as well as the damnable ideological positions that "the cloud" both obeys and promotes. Gradually, Hu develops a concept of "data sovereignty" to capture how power gets re-centralized through network infrastructures and how everyday computing practices come to comply with certain militaristic and imperialistic motives of the neoliberal security state. He positions his argument here against the more typical new media studies claims about democratization through networks, the decentralization of power, and the newly forged sovereignty of the self. The third chapter takes as its point of departure the data center (and the closely related server farm), an infrastructural arrangement that proceeds directly from the network architectures and time-sharing techniques discussed in the previous chapters.

The first thing one should know about data centers is that they are massive. As Hu points out, it's not uncommon for one "mega" data center to consume the same amount of energy as around eighty thousand homes. While there are currently more than three million data centers in the U.S., industry experts estimate that just ten mega centers (owned by companies like Google, Amazon, and IBM) handle more than seventy percent of cloud traffic. Hu finds this unprecedented centralization problematic on a number of fronts. For one, it promotes a "bunker mentality" (100) that expects disaster and leads to a retrenchment in past practices of securitization. (The elegance of Hu's thought is perhaps nowhere better displayed than in his working through the surreal "future perfect" temporality of this bunker mentality.) It also betrays a colonial legacy long masked by the rhetoric of universal access. Not only are the predatory "others" we imagine ourselves to be vulnerable to (hackers, spammers, and the like) frequently racialized, as in the Department of Homeland Security's "Invasion of the Wireless Hackers" flash game that Hu cunningly dissects, but the defense of the cloud itself relies on cloud-sourced, outsourced labor practices whereby dangerous or offensive content is policed by poorly paid, precarious laborers in the Global South who are themselves largely excluded from the occident-centric Web community and its cheery universalist vision.

Hu's final chapter homes in on what he calls "the militarized architectures within the cloud" (110). He is particularly forceful in chronicling our passive, everyday collusion with the evolving project of data sovereignty, and he ferrets out a formidable if delicate complicity between the military-data apparatus and those hacktivists and artists that would appear to be among its most vocal critics. Invoking the ways in which "targeting" doubles as both a marketing and a military strategy, Hu makes the case that cloud usage of even the most banal kind implicitly endorses the neoliberal logic of efficiency central to both new modes of warfare and new modes of advertising. War in the twenty-first century is no longer about spectacle but about data; the era of remote seeing, famously articulated by Virilio in *War and Cinema*, has given way to a

new era of "cloud seeing" (113). The most extreme incarnations of data-driven warfare—extraordinary rendition during the Bush-Cheney regime, Obama's relentless deployment of weaponized drones—should not be understood as deviations from routine practices of social regulation but as part of a "continuum of power" that pulls all our quotidian cloud-based activities right into the fold.

The counter-surveillance artist Trevor Paglen takes center stage in Hu's closing arguments, for Paglen, despite appearing to challenge state surveillance in our age of big data, ultimately replicates not just the tactics but also the beliefs of his opposition: "namely, that in order to effect change one must actively engage as a user" (114). Paglen's art, according to Hu, only fortifies the neoliberal subject position. Intending to expose our victimization at the hands of the surveillance state, Paglen winds up duplicating "a violence that fails to respect the boundaries between real and virtual space" (115). More broadly, Hu argues, "the do-it-yourself tactics of participatory media are a perfect match for the surveillance state: any citizen, it says, can engage with his or her security regime by exercising surveillance over budgets and other tasks of management" (123).

Reading *A Prehistory of the Cloud*, one becomes saturated with a sense of just how difficult it is to adequately capture and criticize our everyday engagements with contemporary media, and just how hard it will be to effectuate real change, change that cannot be instantly co-opted by the neoliberal logic within which cloud computing emerged. Hu offers two starting points for extrication from the current regime. They remain underdeveloped, but bristle with possibility. The first proposes a reversal of the trending reliance on data-based cloud seeing through a restored "faith in images." ("In a world where each user is an iconoclast, perhaps the bravest thing of all is to become—to resurrect a very old word—an *iconodule*" (143).) The second proposes that, upon exposing "the cloud" as a sly "metaphor for private ownership" (147), we "return [it] to the scarcest space of all: the space of public life" (148). Daunting tasks, to be sure, but Hu succeeds foremost in convincing us of their urgent necessity, not because "the internet must be defended," as per the favored slogan of the hacktivists, but because "the slow violence of the information economy" must be brought to a halt.

Wendy Hui Kyong Chun proffers a similar plea in her perspicacious new book, *Updating to Remain the Same*. Like Hu, Chun seeks to reimagine networks, to think through ways in which we might begin "to inhabit networks differently" (160), as unabashedly public and promiscuous spaces in which one "can be vulnerable and not attacked" (158). The neoliberalization of the Web—its myth of the self-same user, its emphasis on privacy and personal rights, and its dominance by corporate titans like Google, Facebook, and Netflix, each with their own data-capture techniques and

their own motives for manipulating aggregate behavioral patterns—has precipitated or exacerbated a host of social and personal tragedies. Chun explains, for example, how the suicide of Amanda Todd and the Steubenville gang rape case—both from 2012 and both widely reported on by the old media old guard—have given rise to a discourse around social media participation that completely misses the point, which is not that individuals must learn to better protect their secrets but that all online communications are fraught and ambivalent and that the increasingly open communities forged therein hold love, shame, and hatred precariously close. In a similar vein, Chun insists repeatedly that "the most surprising and alarming [thing] about the Snowden revelations is the fact that they counted as revelations" (13). What the NSA whistleblower brought to light was nothing we shouldn't have already known. The ensuing protests from Silicon Valley ring exceedingly false, as tech firms have had a long history of collusion with the state security apparatus. The point, again, is not to demand better privacy protection but to recognize that "leakiness" is a natural condition of digital networks. Only once this is properly grasped can we move to "become characters, not marionettes, in the ongoing drama inadequately called Big Data" (62).

It's the paradoxical nature and effects of networks that Chun seems most intent on drawing out: they are "wonderfully creepy," both thing and description, revolutionary yet banal, and they operate according to a temporality that is at once "belated" and "too soon" (ix). While Hu comes off as nearly nostalgic, Chun finds more to celebrate in the strange and paradoxical nature of new media (despite its vagaries, the term remains Chun's preferred referent). Her reputation precedes her. With *Control and Freedom* (2006) and *Programmed Visions* (2011), she solidified her position as one of the most important media theorists of the twenty-first century. *Updating to Remain the Same* builds on those earlier projects, and readers of those books will find familiar the dense weave of theoretical insight, philosophical citation, and technical prowess that constitute the present volume. Whereas Hu is a storyteller, Chun is a Baroque composer: her argument proceeds by way of repetition, variations on a theme, bolded phrases that become clear only on second or third encounter. In this sense her style well reflects the content of her claims, for it's the repetitive, habitual ways in which we have come to work with and inhabit new media that remain most ripe for critical analysis.

Moving deftly from Hume, Ravaisson, and James to the journalist Charles Duhigg's recent bestselling work, Chun demonstrates how habit has come to be seen as addiction, that is, as behavior that must be changed. "Habit + Crisis = Update," as one of Chun's many salient slogans goes. The formula concisely encapsulates neoliberalism's logic of capture, according to which past behavior becomes reified and coded into predictive algorithms that infer—but also prescribe—how we will respond to fu-

ture changes in our hyper-marketized economic, social, and political environments. "Crises," having become ordinary and banal, "make the present a series of updates in which we race to stay close to the same" (3). Crucially, Chun argues that the "we" in the preceding sentences is actually a misnomer, for neoliberalism—the inborn ideology of new media—dissolves collective subjectivity. Chun advances an alternative theory of YOU, a figure "central to the operation of networks because it is both singular and plural. [But] [i]n its plural form, it still refers to individuals as individuals, rather than creating another communal subject, a 'we,' from more than one 'me'" (118). New media are in turn a function of this YOU; the corporate monoliths of the digital economy extract great value from YOU's online habits, "from searches to mouse clicks, from likes to posts" (118).

Chun's work resonates neatly with many recent critiques of neoliberalism, and she does well to situate her research alongside that of figures like Naomi Klein and David Harvey. She works closely in and through the poststructuralist and deconstructionist traditions (Jameson, Derrida, and Agamben, for example, play pivotal roles), writing always with an eye towards paradox and surprise. And surprises abound: reading Chun, we light upon "the undead of information" (90), the "loving side of spam" (127), the power of "found collectivity" in Natalie Bookchin's recent video installation art (173), and an incisive takedown of the rhetoric of virality ("Information is not Ebola, but instead the common cold" (3)). *Updating to Remain the Same* stands as a worthy capstone to Chun's acclaimed trilogy on new media, subjectivity, and social control. Like Hu's *Prehistory of the Cloud*, *Updating to Remain the Same* is an indispensable read for anyone interested in thinking critically about digital networks, where they come from, their political, economic and social effects, and how we might begin to conceptualize radical change.

Ricky d'Andrea Crano is a lecturer in English and the Science, Technology, and Society program at Tufts University. His writing as appeared in such venues as *Foucault Studies*, *Radical Philosophy,* and the Oxford University Press anthology *Sampling Media*.