AUTOMATED (POST)POSITIVISM[1]

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Abstract: With a mantra that "nobody is as smart as everybody," Google maintains giant databases that enable unprecedented quantitative analysis of a social world that is now majority urban. A Wall Street web-based broker offers an App that promises to turn "thoughts into trades." Economists and marketers now use evolutionary theory in "neuroimaging" brain scans of consumer behavior. The U.S. Air Force now trains more joystick-maestro drone pilots than old-fashioned *Do-the-Right-Stuff* human fighters and bombers. In this article, I suggest that these trends signal a troubling reincarnation of an aggressive Right-wing (post)positivist zombie reanimated by global, digitized neoliberalism. The long-forgotten revolutionary project launched by Auguste Comte in 1822 was hijacked and corrupted after his death, and now we confront a hybrid cyborg zombie, a dehumanized, automated adaptation to the poststructuralist situated knowledges of consumer sovereignty. #Comtebot: The positivist era is *right now*; the question is what kinds of politics it will have. [Key words: positivism, epistemology, social media, Internet, methodology.]

Figure 1. Auguste Comte in Hyde Park, November 2011 (photograph by the author).

"Sea changes generate tides of big ideas about cities."

Patricia Price (2011, p. 449).

Every minute of every hour of every day, millions of no-reply emails are sent by machines. A company called Immersive Labs is using facial recognition technology to tailor digital billboard advertising to the characteristics of people passing by (Singer, 2011). Scene Tap is a smartphone app hooked up to cameras that scan the crowds in Chicago's bars to post statistics like average age and female-to-male ratios so that bar-hoppers can plan the optimal route for a pub crawl. eBay is working on a mobile app that automatically identifies clothing and props in each scene of the television show you're watching so you can respond to product

placement in one-click real time; not to be outdone, Facebook's CEO Mark Zuckerberg has told investors that the company's acquisition of artificial intelligence start-up firms is part of a plan to automate the process of identifying objects in photographs posted by users, all the better to facilitate targeted advertising. Klout, a popular social networking site, calculates a score for you based on how influential you are on Foursquare, LinkedIn, Twitter, Facebook, and the rest of the social web. Until some recent bad press coverage over a mother's 13-year-old child, Klout would automatically create a profile for you even if you never used the site, because the algorithm pays attention not just to *you*, but to *who knows you*, and the digital footprints created when someone friends you on Facebook (Sengupta, 2011a).

Facebook itself has a seventh of the world's population, and is in the midst of a chaotic war with Twitter, Google, and the entire world matrix of Westphalian nation-states over who has the legal authority to regulate the authenticity of human identities used in social media (Sengupta, 2011b). The value of personal data on all the human beings on the social web -- now a billion and counting -- is the next frontier in the articulation of modes of production in a "cognitive-cultural" form of capitalism (Scott, 2012) that is remaking world urbanism. Proprietary markets like Apple's App Store and Google's Android Market "affect hundreds of millions of people and gross billions of dollars," and represent an enormous investment in the prospects of accumulation through the "social graph"; corporations police these new digital-technological junctions aggressively to ensure that they "function as hubs for consumer and social activities" that can be monetized for advertisers amidst the electronic transformation of social interactions "into tentacles of ever more powerful informational markets" (Kabahizi, 2011). There are now more wireless devices populating the United States, than human beings (Hardy, 2011), a fact that is altering the "gravitational forces" of America's suburban space

economy (Peck, 2011) and political system. Narrative Science, a start-up spin-off from the institution that geographers remember in graduate-school reflections on the quantitative revolution (Gould, 1979), produces software that scans raw sports statistics and financial disclosures, and then automatically writes basic descriptive stories in a quotidian form of "robo-journalism" (Lohr, 2011). For several years, news-driven trading systems have combined software bots that "read" raw news feeds for positive and negative trends in particular industries or companies, and automatically execute stock trades based on the news. A week before the collapse of Lehman Brothers in September, 2008, a little-noticed incident destroyed $1 billion in the market capitalization of United Airlines within 12 minutes: a six-year-old story about United's bankruptcy was somehow erroneously coded as current news, unleashing a violent cascade of news-driven robo-trading trading algorithms reacting to one another's automated sell orders (Arango, 2008). The labor theory of value meets the Twitterverse amidst accelerating circuits of fictitious capital.

<div style="text-align:center">"How is 'reality' even known"?</div>

<div style="text-align:right">Robert A. Beauregard (2012, p. 475)</div>

In this essay, I cannot offer to make sense of all of these trends. I can barely keep up with my own small stream of the digital flood. Some days, "Every visit to the departmental mailbox has turned into another occasion for heartburn" (Mirowski, 2011, p. 1). Our mailboxes, of course, are digital and infinite. Our individual, human limitations in keeping up with the inbox flow provide daily reminders of Google's mantra that "Nobody is as smart as everybody" (Shapin, 2008, p. 194, cited in Mirowski, 2011). What is offered in this essay is more modest: a

warning that some of our old ways of thinking about method, politics, and knowledge are holding us back from understanding this new world.

Specifically, we are trapped by an intellectual heritage that shapes how we think about a philosophy that is supposedly dead but inescapable. The philosopher Robert Scharff (1995, p. 1) offers a nice summary of the consensus of a post-foundational world that is suspicious of the very idea of consensus: "As hard as it is nowadays to get agreement on what analytic philosophers could still possibly have in common, at least it seems safe to say that there is something they are universally against, namely positivism." But if positivism is dead, then why is our postpositivist world just as troubling as the modernist-positivist hegemony it replaced? Urbanists have become "end-time prophets," always shouting that "everything is always going to hell" (Judd, 2005).

Postpositivism seems to have achieved a hard-fought "new position of intellectual strength" at precisely the historical moment when the empirical realities of inequality and injustice of the modernist-positivist era were getting much worse and going global (Leitner and Sheppard, 2003, p. 57). As postpositivism has accelerated in critical urbanism and other parts of the humanities and social sciences, however, new generations of scholars have learned to be deeply skeptical of conventional approaches to empirical reality (Leitner and Sheppard, 2003; Latour, 2004). Maybe the urban world is going to hell, or perhaps our social constructions of that world are going to hell (Judd, 2005; Lake, 2005; Leitner and Sheppard, 2003). Perhaps both. And if positivism is dead, the social sciences and humanities are still traumatized by a "positivist 'haunting,'" perpetuated by "positivism's paradoxical power as a zombie-like refusal to stay buried." (Steinmetz, 2005, p. 3, p. 37).

In this paper, I suggest that it is time to rethink the possibilities of positivism for urban research. Much of the anxiety and confusion in critical urbanism can be traced to a distinctive alignment of method, politics, and epistemology that coalesced in the middle decades of the twentieth century. Ever since the late 1960s, successive generations of critical scholars committed to social justice have defined their projects in opposition to a singular hegemony -- an arrogant, state-driven model of knowledge production that served the conservative interests of Cold War militarism, imperialism, and neocolonialism. The tactic of "othering the mainstream" (Leitner and Sheppard, 2003, p. 517) succeeded in creating spaces for valuable, rigorous nonpositivist science. But this success came with a price: repeated binary otherings became performative, and reinforced a widespread essentialist consensus that positivism is *inherently* conservative, hierarchical, and corrupted by state power. The radical subaltern histories and possibilities of positivism have been forgotten.

The relations among epistemology, methods, and politics have always been contested and contingent. If we accept the central postpositivist insight -- that positivism can never achieve that universal, timeless, singular Archimedian perspective on an uncontested reality -- then we must accept all the implications. Postpositivism has it right: positivism is not an infallible ontological Truth handed down from God. But even the most insistent postpositivist would be quick to agree that positivism does, in fact, exist (Scharff, 1995; Steinmetz, 2005). So if it's not Truth but it has an empirical existence, then what is it? It seems most reasonable to approach positivism as a human social and political movement, with all the quirks and inconsistencies that make human history worth studying in the first place. I argue that positivism's early political dimensions were overshadowed after the death of Auguste Comte, when philosophical struggles flourished up to the Vienna Circle of the 1920s. During the Great Depression and the Second

World War, positivism was hijacked to provide an intellectual foundation for what science-studies scholars diagnose as "technoscience" (Latour, 2005; Mirowski, 2011). At the same time, positivism was enrolled into the service of neoliberal market fundamentalism, with neoclassical economics playing a decisive institutional role. Yet this history was not preordained: if positivism is a social and political movement, that means we can play a role in reshaping what the project is all about.

Let me be absolutely clear. I am not suggesting that we have somehow escaped any or all of the injustices and evils that are traditionally associated with debates over positivism; I'm just suggesting that "positivism" is the worst possible label for what we're up against. We have never been positivist (Sheppard, 2014) *in the sense imagined by the original positivist himself.* Instead, a distorted and misleading set of associations coalesced in the word "positivism" in the twentieth century to describe epistemological arrogance, methodological orthodoxy, and political conservatism. Positivism *in this betrayed definition* is alive and well: our urbanizing world has no shortage of arrogant, elitist performances of science, policy, and politics.

I suggest that critical and radical urbanists have an extraordinary opportunity to reclaim positivism from its conservative kidnappers. We must move quickly: while philosophers and historians of science invariably locate the high point of positivism in the safe, distant past (Comte, the Vienna Circle, the U.S. Cold War science infrastructure), recent trends indicate that we are *just now* approaching the worldwide networks of human knowledge and learning first imagined by Comte in the 1820s. The positivist era is *right now.* The question is, what kinds of politics will it have?

Let me tell this story in two parts. First we'll look back to the origins of positivism itself. Then we'll consider how that history can help us understand what's happening today.

Critical urbanism is today defined in opposition to a very specific Other -- a hegemonic infrastructure of politics and science that we can call Positivist City Hall. Mountz and Prytherch (2005) portray conventional urban geography as an "aging, late modernist downtown high-rise," and Vigar et al. (2005, p. 1395, also citing Holston, 1998 and Baeten, 2001, p. 57) suggest that the old approach is unable to cope with the contemporary dynamics of multicultural urbanism:

"Such transformations challenge the modernist principles at the heart of urban

planning that tend to favour acting in a definable singular 'public interest,' with

rational 'coherence' and urban public order imposed on the city 'from above'

through the expert powers of the usually White, middle-class, middle-aged and

heterosexual men who, invariably, were the planning 'experts' [Holston, 1998].

Such traditions of modern city planning tended to favour

rationality, comprehensiveness, planning hierarchy, positivist

science with its propensity for quantitative modeling and analysis,

belief in state-directed futures and in the existence of a single

'public interest' that can be identified by planners and is gender

and race neutral [Baeten, 2001, p. 57]."

This quote is representative of "othering the mainstream," (Leitner and Sheppard, 2003), a highly effective tactic to build unity and expand coalitions. Regardless of the many disagreements among critical urbanists ever since the late 1960s, what they are "universally against" (Scharff, 1995, p. 1) is Positivist City Hall. In some ways, this history is all too

familiar: creating an easy-to-understand monolith is an effective way to set up a demonic target around which to rally -- helping to create a constituency of academics and activists to support emancipatory alternatives.[3] This process is the essence of formal politics, and the emergence of new forms of knowledge production. If there is anything unique in this particular story, it is the combination of historical obscurity of the philosophical foundations of the target, and the longevity of contemporary caricatures.

Othering the mainstream is an effective short-term tactic, but it can have disastrous consequences for long-run strategy. Three problems are most serious. First, Positivist City Hall is spectral, because the "mainstream" is rarely seen with *all* of these characteristics. In an increasingly conservative age, the "mainstream" easily co-opts its opponents by exploiting these broad-brush portrayals -- for instance, by enrolling women and racial and ethnic minorities in key planning positions to implement neoliberal policies under the banner of friendly labels like empowerment, inclusivity, sustainability, livability, or self-sufficiency.

Second, the past-tense narrative distorts the cognitive images of young urbanists when Positivist City Hall is described in the curriculum of history and theory courses in urban geography, urban sociology, and urban planning (Dear, 2005; Fainstein, 2005). Generations of students have come to see "positivist urbanism" as the philosophically and methodologically naive yet closed-minded, arrogant stepchild of American Fordist industrialism in the Cold War years (Steinmetz, 2005; Mirowski, 2005). Since history is (believed to be) over and done with, young urbanists today begin their careers with high expectations: post-Fordist, post-industrial cities look nothing like the cities of the bad old modernist positivist days, and the old restrictive one-size-fits-all Scientific Method has now been replaced by a diverse array of choices, ologies and isms in today's "pluralist nonpositivist counterworld" (Steinmetz, 2005, p. 26). Our students

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[3] I am grateful to David Wilson for these turns of phrase.

are well trained to be on the lookout for positivist urban planners like Robert Moses, whose famous boast of using a "meat-axe" to cut highways through the Bronx was the domestic counterpart to the Vietnam war positivism of Robert McNamara -- the Defense Secretary once described as an IBM mainframe with legs. Our students are not quite so well prepared to confront the poststructuralist identity politics of today's mayors and planners who bust unions and gentrify working-class neighborhoods while speaking of inclusion and empowerment. At the national level, right-wing poststructuralists learned about power creating its own reality (Karl Rove, as interviewed by Suskind, 2004) and the situated, reflexive standpoint epistemologies of Donald Rumsfeld's "unknown unknowns." Histories of Positivist City Hall leave our students with a healthy suspicion of declaration of "true facts," and then we see crafty right-wing operatives undermine the legitimacy of a one-time community organizer who worked Chicago's South Side by convincing millions of Americans that his birth certificate is a fake. (Sadly, we also see a president awarded the Nobel Peace Prize while massively expanding the use of drone strikes for targeted assassinations and a "kill list" beyond *habeus corpus* review; Chomsky, 2012). In their war on the right to the city, conservatives have found it all too easy to hijack poststructuralist, postpositivist theory through the language and practice of consumer choice and personal freedom. The signal contribution of postpositivism -- the careful documentation and analysis of the socio-political construction of (certain types of) scientific facts -- has been co-opted and corrupted by an increasingly aggressive, anti-urban right-wing performativity machine.

The third problem with today's memory of Positivist City Hall is a deeper historical distortion. When the inequalities and injustices of mid-twentieth century urbanism are blamed on "positivism," the critical perspective reinforces an intellectual-historical narrative that has

achieved the status of Kuhnian normal science in a self-consciously post-Kuhnian world that rejects the teleology of paradigm shifts. Cold War Positivist City Hall serves as a *recent-history* construct that unifies the oppositional binary otherings of today's emancipatory nonpositivists.

But portrayals of Positivist City Hall are themselves built on deeper ontological foundations, going back to the origins of positivism as a dominant philosophical position. Our students learn that all the arrogant pretensions of Positivist City Hall -- the assertions of pure, untainted observation, factual objectivity, the cumulative development of scientific laws -- can ultimately be traced back to the birth of sociology and positivism in the work of the French philosopher Auguste Comte (1798-1857). With the consolidation of consensus on the death of positivism as a viable epistemology, (Sheppard, 2014) however, Comte has been pushed so far into obscurity that actually reading Comte is no longer regarded as a prerequisite for judgments on the positivist legacy. This is a catastrophic error. Comte has been widely, and wildly, misunderstood. This matters not only for our retrospective view of the history of science, politics, and cities, but also for our understanding of today's transnational technoscience.

Comte Misremembered. When (if) Comte is remembered, it is because of his monumental *Course in Positivist Philosophy*, a six-volume series published between 1830 and 1842 (see Lenzer, 1998). The *Course* outlined the laws of human knowledge for which Comte would become famous, and analyzed the historical development of those domains of knowledge that had been built in humanity's transition from theology to metaphysics and then to science: mathematics, astronomy, physics, chemistry, and physiology (biology). Comte undertook parallel historiographies of each branch of study -- once to evaluate the path of scientific development within each field, and a second time to draw more general lessons about the advancement of human civilization and reason. For the first time in human history, Comte

believed, it was finally possible to direct the scientific mind towards the most complex problems of all -- the politics of human society itself. This is what Comte labeled "social physics." Since social physics dealt with human understanding about human affairs, it could only develop through an approach poised between sympathetic historical sensitivity towards what previous generations believed, and an austere scientific method -- at times ahistoric when we learn from mistakes of the past -- built on the rigor of contemporary advances. Thus a "*historico-critical reflectiveness*" was absolutely essential to understand how science transforms pre-scientific ways of knowing without superseding or destroying the work of those who have lived before us (Scharff, 1995, p. 5).

Unfortunately, outside France most of Comte's influence came through John Stuart Mill's translations and interpretations -- and Mill downplayed Comte's historical sensitivities. For Mill, "what came before science was deemed safely left to the historians .... for philosophers to bother with such matters now would be like trying to relive a battle as if we did not already know who won." (Scharff, 1995, p. 7). Mill also misinterpreted Comte on the matter of introspection. Mill's distortions were exacerbated when the Logical Positivists distanced themselves from Comte in favor of Hume, and when subsequent generations focused on the Vienna Circle as the decisive moment for positivism (Ayer, 1959). The result was a strange caricature of a stern Comte who had no patience for history, subjectivity, or reflexivity. Comte is now remembered as the cold-hearted technician of the abstract, ahistorical detachment of the Cartesian View from Nowhere, with an obsession for distanciated observation, objective neutrality, and simple linear conjunctural "if A then B" causality.

Comte's Lost World. Misinterpretation and the ravages of time have severely distorted our vision of Comte. Steinmetz (2005, p. 3) may be correct that the human sciences are trapped

by a "positivist 'haunting,'" but the ghost is *not* the enigmatic human being christened Isadore Auguste Marie Francis Xavier Comte. The positivism that has a "paradoxical power" and a "zombie-like refusal to stay buried" (Steinmetz, 2005, p. 37) is *not* the positivist world that Comte imagined and tried to build. Three fundamental features of that lost imagined world offer valuable lessons for our present global urban age.

First, Comte's world was an interwoven experience of present and past, living and dead. Comte famously insisted that human knowledge passes through three stages -- theological, metaphysical, and scientific -- and he was obviously devoted to the advance of science. But he recognized the contested and uncertain pace of the scientific transition in his own era of history, and he regarded science as a matter of relative, comparative generational progress rather than definitive, universal retrospective repudiation. Without animism and theological explanations for observed events, for example, humans would have been forever trapped without theories to guide observation, and with no means of connecting observation to theorizing. For Comte, science is inescapably historical and intergenerational: "We always labor for our descendants ... but under the impetus of our ancestors, from whom we derive both the materials with which and the processes by which we work." (Comte, 1854, p. 34, p. 31; see also Scharff, 1995, p. 10). Comte was deeply and reflexively indebted to those who came before -- he quite literally *worshipped* his intellectual ancestors (Comte, 1854, p. 461-465). The modernization and institutionalized power of twentieth-century positivism erased this history, and established an antagonism between methodological positivism and its historical, ethnographic, and genealogical others.

Yet Comte's reflexivity was necessarily cautious. This is the second key point. Scharff (1995) offers a penetrating analysis of Mill's mistaken assumption that Comte's objection to the

activity of "interior observation" meant that Comte denied the possibility of introspection and the scientist's awareness of her own intellectual activities. Rather, Comte was actually fighting a metaphysical tactic used by a group of "spiritualistic" psychologists, led by a philosopher named Victor Cousin, to defend the old guard of a medieval theology "that wraps its unscientific speculations about Mind (really, Soul) in the mantle of science by claiming to draw on an 'inwardly' focused version of the external observation that grounds the sciences of nature." (Scharff, 1995, p. 11; see also pp. 19-44). There was a deep irony in Cousin's philosophy, since it relied on an axiomatic *individual* construct as a means of defending the enormous *collective*, hierarchical political institutions of European Christianity. For Comte, Cousin's recourse to the infallibility of a Soul made by God assures that interior observation will perpetuate old pre-scientific myths. "Reason is in man," Cousin (1853, p. 100) declared, "yet it comes from God. Hence it is individual and finite, while its root is in the infinite ....". "The truth in us," Cousin (1853, p. 101) assured his followers, "is the offspring, the utterance [of] the eternal word of God." God is "the principle of principles" (Cousin, 1853, Lecture Fourth, pp. 75-101).

Comte was prepared to accept that the old pre-scientific myths of God-given truths were useful at those points in history when humanity had nothing else. But with the development of science, interior observation is a barrier and

> "...an illusion. All it has ever produced are theologico-metaphysical doctrines of the soul and bad epistemology; and now it merely impedes the development of the kinds of study that will complete the scientific hierarchy by furnishing us with knowledge of human beings that is as reliable as the knowledge of nature we are already beginning to obtain." (Scharff, 1995, p. 34).

Third, Comte's project was deeply political. Make no mistake: transported across nearly two centuries, the details of Comte's positions would make him an idiosyncratic, unreliable ally for today's critical urbanists, and on the matters of gender and sexuality this man needs a serious intervention of radical feminism and queer theory. Yet we should acknowledge Comte's history, and his opponents: Comte was laboring to advance the sciences that had been suppressed and denied by a Church orthodoxy that had been responsible for generations of war across Europe's deteriorating medieval-royal political order.

Comte is remembered as a detached, Cartesian technician because of the *Course*; we have forgotten that the *Course* was only one part of the vision Comte (1822) outlined in a manifesto he wrote in his early twenties: the "Plan of the Scientific Operations Necessary for Reorganizing Society." The goal was to organize society on the basis of human reasoning, but Comte realized that he first had to reconstruct philosophy to understand the advance of the sciences of the natural world. Once this preliminary task was complete (in the publication of the six-volume *Course*), Come set to work on his main goal of applying the positivist method to the most complex phenomenon of all -- the politics of human society.

Comte believed that the history of intergenerational progress in the positive natural sciences finally gaining acceptance in his day would build a growing consensus for a science of what he called "social physics." Social physics (which Comte also called "sociology") would then allow the negotiation of a human science of ethics to replace the capricious and unaccountable decrees of the Church. But while the *Course* earned Comte a small but growing audience of dissidents for its enlightened challenge to the dying Church orthodoxy, the sequel -- the four-volume *System of Positive Policy* (1851-1854) -- managed to confuse and offend most of Comte's allies. The *Course* had established Comte as a positivist in today's terms, but the

System was Comte's ultimate goal for a "complete" positivism -- which more closely resembles the spirit of today's *postpositivisms*, which [as I see it] are about moving empirical analysis towards "evaluating the moral implications" of the "material observations" of rigorous inquiry (Lake, 2014, p. 8) negotiated among those who wish "to be better moral agents" (Lake, 2014, p. 20). Mill, and all of Comte's other readers and followers, were flummoxed from the *System's* opening line: "We tire of thinking and even of acting; we never tire of loving." Comte's allies in his challenge to Church hegemony abandoned him, and the *System* was dismissed as the "ramblings of a ruined mind" (Wernick, 2001, p. 24) after Comte's brief but transformative affair with Clotilde de Vaux, and after his heartbreak over her death.[4]

Comte's ambition in the *System* was a breathtaking global revolution. While Comte was an unreliable ally for Marx and Engels, he certainly shared Marx's commitment to human scientific progress informed by radical politics. In the *Course*, Comte had refined a scientific-philosophical challenge to the false realities decreed by the Church; the *System* completed the project by launching a social movement to construct an entirely new political reality based on the best human knowledge of how human relations had evolved through history. Comte's historical surveys in the *Course* demonstrated that over the centuries, a positivist mode of inquiry had built a growing consensus among natural scientists to reject and transcend the pseudo-scientific theological decrees of the Church. Comte was convinced that anyone who took the time to learn this history would realize that human enlightened reason was fully up to the task of reconstructing the political order inherited from medieval Catholicism, with its reactionary

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[4] Wernick (2001, p. 24) cites a 1965 book dating her death to the spring of 1849, but Crompton (1910) specifies April 5, 1846. These temporal details matter in the context of the speedy transformations of Comte's reputation as a "positivist" in the era's philosophical and political debates.

defense of the divine right of royalty backed up by military force. Comte envisioned an entirely new political and spiritual order. Science would be freed from capricious religious decree, but the ethical and moral purposes of spirituality would flourish in a reconciliation of human imagination tempered by scientific inquiry and consensus.

Comte's vision may have begun as a utopia of spatial form in those private studies of Paris where he could find receptive audiences, but the goal was a worldwide utopia of social process (Harvey, 2000). It was premised on a revolutionary post-theistic notion: theology cannot yield reliable scientific knowledge, but the essence of all religion -- the highest forms of the sentiments of compassion and love -- defines humanity itself. Thus while theology must give way to science for knowledge of the natural world, in the social and political realms science must be put in service to the human sentiments at the heart of religion. Science, ethics, politics, and love would all be reconciled in a truly globalized infrastructure. The *System* outlined a detailed political-geographical reorganization of the entire world population, an elaborate catechism of sacraments for individuals' worship of the collective achievements of human society, and a system of "revolutionary schools" to teach *science de la morale*. The plan involved a special reverence for the intergenerational learning that distinguishes humans from other living beings: people have an 'objective' existence during their lifetimes, and a 'subjective' existence after death, in the ideas, feelings, and achievements that live on through the next generations. The entire

> "...Positivist System would provide the scientific-humanist equivalent to what systematic theology had been in the high Middle Ages: it would serve as the intellectually unifying basis of the new industrial order." (Wernick, 2001, p. 2).

Comte was *the* original secular humanist, and, in a surreal, spiritual sense, a passionate socialist. He called the grand project *la religion de l'Humanité*.

DOT COMTE

Why bother with a figure whose obscurity is matched only by his universalizing arrogance? The match lit by Comte ignited a few scattered fires in the late nineteenth century (especially in Latin America), and a few weak flames still flickered through influences in the work of Althusser, Baudrillard, and other twentieth-century French theorists (Habermas once gently confronted Michel Foucault about his "happy positivism"); but in a sympathetic analysis of the entire legacy, Wernick (2001, p. 5) pronounces the project, "like Comte himself, an easy-to-satirize victim of its own rigidities, archaisms, and inflated ambition ... a complete, even preposterous, failure."

Reclaiming Comte for the Left. Perhaps. But we are not going to escape the zombie of positivism (Steinmetz, 2005) anytime soon, so it's best we're sure we understand it properly. For the first time in human history, we now live in the globalized, majority-urban world that was only glimpsed over the horizon by Marx, Comte, and the other European systematizers of the nineteenth century. Yet within urban geography, our view of the positivist legacy is refracted through particular struggles that came to define positivism as both methodologically and politically conservative (e.g., Harvey, 1969, 1972; Berry, 1972, 2002). Urban geography's historical memory has given us a caricature that chops Comte in half -- we get the *Course* ripped away from the context of the violent theological hegemony it challenged, and we never get the *System*, with its radical (if flawed) political possibilities. With demography and urban geography

curricula safely relegating "positivism" to a past that is old enough to be obsolete but not old enough to be historically interesting, we have been unprepared for a resurgent Right that has hijacked Comte's ambitions. Post-Cold War, post-Fordist global neoliberalism (Harvey, 2000, 2005) has reanimated the arrogance of every positivist who has lived since 1822, while killing Comte's reflexivity, radicalism, and love. Even worse, transnational neoliberalism has disguised the corpse of Comte's positivism in a costume of poststructuralist, post-positivist individual subjectivity and standpoint epistemology.

The disguise is convincing. Indeed, it may be too early to tell whether it really *is* a disguise. Either way, it is my contention that we must reclaim Comte for the Left in order to mount an effective challenge to the Right-wing zombie that now stalks the globe. Three dangerous characteristics of this zombie -- three betrayals of the lost imagined world Comte tried to build -- must be our first targets. Positivism has been dehumanized, its ontology has been corrupted, and its politics have been co-opted.

Positivism Without Positivists. First, transnational neoliberalism has reconfigured the relations between past and present, living and dead. The neoliberal doctrine that is now the "apologia for the capitalist empirical status quo" (Sheppard, 2014, p. 4) is the "principle of all principles" (Cousin, 1853) that governs automation and the evolutionary ecosystem of code for mobile operating systems: the Milton Friedman App. Marx would be horrified at the accelerated use of "dead labor" in today's automated production processes, and so would Comte. "Social physics" seems an awkward and quaint reminscence on the birth of sociology, but the social and informational possibilities of today's digital capitalism are making it a transnational urban reality.

Web 2.0 *is* social physics.

Unfortunately, it is a post-Newtonian physics in which all the bots, algorithms, drones, RFID chips and QR codes are mobilized towards the light-speed pace of coercive consumption and ubiquitous surveillance. To appreciate what this means for the living and the dead, consider a small sample of quotes on the old labor processes of an age of somewhat slower dehumanization. In the Fordist methodological positivism of memory and textbook (Steinmetz, 2005; Harvey, 1969; Abler et al., 1971; Berry, 1964; Kitchin, 2006), men struggled with machines to develop new ways of answering questions (the heroic stories always seemed to be about men, even when women's work behind the scenes was crucial). The struggle was a labor relation of medieval craft guild with a few Fordist assembly lines here and there, with teams of assistants or students punching cards for input in the pre-keyboard days. One of those students, Daniel Bailey (1970, p. xiii), offered bittersweet memories of the accelerating pace of computer innovation:

> "All of these changes have been painful to a certain extent .... We went from the IBM 701 to the IBM 704, to the IBM 7090, the IBM 7094, to the CDC 6400 and at Colorado from the 7090 to the IMB 709. ... changes in computer operating systems and programming languages have been more frequent than changes in computer. As a consequence, the productive work is somewhat less than half of what would have been accomplished under stable computer conditions. Perhaps that is progress,"

Bailey reflected, but he didn't seem convinced.

Yet this entire enterprise was driven by the *human need to understand why*. The positivist scientists were trying to discern order in a chaotic world (Abler et al., 1971), and the machines were a means to an end. Here's Charles Wrigley's (1970, p. x) remembrance of

Bailey's supervisor, the psychologist Robert C. Tryon, and his work in the days before all those giant IBM beasts:

> "At that time, all computations had to be done by hand; Tryon was later to speak of his mis-spent youth, because too much of his time had been spent with a desk calculator. In the 1950s the practice of cluster analysis was restated in computer terms to enable the investigator to escape from hand calculations. Tryon and Bailey therefore planned this book to be the definitive account of postcomputer cluster analysis. The manuscript was almost finished when Tryon died suddenly in 1967."

If you're reading these words, there's a good chance you're seeing them on a computer screen, or a laptop screen, or the latest smartphone or tablet -- and there's a significant, increasing probability that your route to these words was mediated by one of the many algorithmic recommendation systems reshaping scholarly communication (Schuurman, 2013). Reading about Tryon, our attention is drawn to the fine-grained details of the technofetish: *What's a 'desk calculator'?* Don't let the details distract you. The Cold War positivist pact with the American war machine was certainly a fatal compromise (Steinmetz, 2005; Mirowski, 2005) but at least the geographers, sociologists, and political scientists working in universities supported by defense funding were ... human beings. Today's positivism -- if indeed it really is positivist -- is quickly bypassing the human being asking why. Even the (human) pioneer of virtual reality (Lanier, 2010, p. ix) begins a book with a lament that

> "...these words will mostly be read by nonpersons -- automatons or numb mobs composed of people who are no longer acting as individuals. The words will be

minced into atomized search-engine keywords within industrial cloud-computing

facilities located in remote, often secret locations around the world. They will be

copied millions of times by algorithms designed to send an advertisement to some

person somewhere who happens to resonate with some fragment of what I say.

They will be scanned, rehashed, and misrepresented by crowds of quick and

sloppy readers into wikis and automatically aggregated wireless text message

streams. ... Algorithms will find correlations between those who read my words

and their purchases, their romantic adventures, their debts, and, soon, their genes

... Real human eyes will read these words in only a tiny minority of the cases."

Not surprisingly, much of this automation is redrawing the transnational urban systems of

war and militarism (Gregory and Pred, 2007). Not long ago, U.S. Senator John McCain (R-AZ)

surveyed the automated landscape in remarks at a security policy conference in Halifax.

Responding to a question on what has changed in recent years, McCain (2011) replied that

"...a lot of it lies in technology. At this gathering ten years ago, we would never

have envisioned the capabilities we have ... as far as drones are concerned. I

believe that the F-35 will be the last manned fighter aircraft.

... The new areas of technology that we have are astounding. We won the battle

of Sadr City through technology --"

And here the long-ago pilot/bomber who had subsequently built a political career after being

tortured by humans at the Hanoi Hilton caught himself in a momentary pause, as he remembered

that drones do not (yet) vote, and corrected himself --

"-- technology and brave men and women."

Then right back to technology:

"But David Petraeus won that battle, and in his words 'made 'em take a knee'

because we kept an eye on every single one of 'em every minute of every day

until they got tired of gettin' killed. And that's the kind of use of technology that

I think we're going to have to emphasize in the future."

And that's the kind of technology now deployed at/for/by consumers in all the cities and suburbs tapped into the production and consumption circuits of planetary urbanization. From retail self-checkout lines to the Siri voice-recognition assistant on the latest iPhone to Amazon's autorecommend algorithms to the customized behaviorally-adaptive targeted advertising systems that generate more than $50 billion annually for Google, the human being asking "why?" is being sidelined as an irrelevant distraction.

Crowdsourcing, cloud computing, and Big Data are constituting a new social physics.

This is why we should care about Tryon's mis-spent youth, and our own. No matter what twenty-first century gadgets we spend time with in place of Tryon's desk calculator, we know that any knowledge or expertise we acquire will be quickly rendered obsolete as the algorithms learn faster each year. The robo-journalists of Narrative Science (Lohr, 2011) are robo-read by the robo-traders on Wall Street (Arango, 2008), while the robo-suspicion algorithms of iParadigms, LLC automate the guilty-until-proven-innocent treatment of words written by *human* students and other authors (Student, 2013). Part of Comte's challenge to theological hegemony was an attack on the Church edict -- in response to the growing scientific controversy after Descartes over the distinctions between human consciousness and animals as soulless automatons -- that humans are special because God says so (see the *Course*, III, p. 45). Comte was concerned with "*collective* human evolution" (*System*, I, p. 23, emphasis added), and the capacity of humans to pass cumulative knowledge and progress to future generations.

This is the essence of the "subjective synthesis" by which the best minds live on, and of course it is also the fountainhead for all the ecological metaphors that would prove so decisive in the Chicago School of sociology. Our reaction to the hegemony of the Chicago School in the twentieth century gave us a healthy suspicion of all structural-functionalist reasoning and ecological metaphors. But we now stand by while accelerated automation kills everything that is not code, and while accelerated commodification sidelines everything that is not consumption. All of us -- you and I, and everything we read, write, think, and feel -- will die and be forgotten faster than in any generation since the development of writing (and perhaps all of human history). There is a human counterpart to the vast "urban e-waste circuitry" connecting the world's wealthy wired to the poor slum-dwellers who dismantle Silicon Valley visionaries' latest idea when it's tossed aside for the next new thing (Grant & Oteng-Atabiabo, 2012). "Steve Jobs" peaked at 15.6 percent of all tweets in early October, 2011 in the hours after Jobs's death, as #ThankYouSteve shot up to 35,000 tweets per hour; only a few hours later the figures collapsed as attention moved on to the next new thing. The first generation to live in a majority-urban world is the generation quickest to forget the ancestors who built our cities. We will ourselves be quickly forgotten as $\lim_{N \to \infty}$ Web N.0.

The New Old Ontology of Interior Observation. The second threat from the neoliberal reanimation of positivism is the return of the spiritualistic psychology of Victor Cousin and his allies (see Scharff, 1995, pp. 22 ff, and Cousin, 1853). Cousin's doctrine of interior observation, premised on the Cartesian axiom of a non-deceiving God accessible through the self-reflexive, thinking Soul, is now the theory and digitally automated practice of consumer sovereignty. Consumer choice is the answer, the question, and the method in the increasingly aggressive colonization of the human attention span. "Why" matters less and less. From the standpoint of

the busy consumer, who cares how and why the app works the way it does? From the standpoint of corporate marketers and advertisers, it is now standard procedure for test-marketing plans to deploy multiple products across multiple sites and channels, with pseudo-randomized trials providing streams of real-time Web data allowing definitive verdicts on which pricing options or advertising tactics work best (Ayers, 2007). *Why?* The question is a quaint curiosity, and in the short run not really relevant when reduced to the ontological axioms of neoliberalism (market demand, consumer choice, innovation, speed, efficiency). *Look at the page-views, the click-throughs, the revenue. Who cares why consumers are choosing what they choose? They just are, so let's make money.* The capitalist correlation imperative is clear: spurious correlation is fine, so long as it's *profitable* spurious correlation. This is Nightingale's (2004, pp. 1271-1272) diagnosis of technology as partially autonomous from science: "...it is possible to know how to produce effects without knowing how those effects are produced."

At first glance, this new "computational social science" (Lazer et al., 2009) with its capacity to "read" 100,000 Web pages per hour (Hardy, 2011) and sift through millions of tweets to discern trends in the Arab Spring (Zimmer, 2011), looks like just the latest positivist fashion. But this interpretation is completely, dangerously wrong. The old quantitative revolutionaries were *human scholars* who *cared deeply* about meaning, explanation, and understanding. The new automated epistemology is "inextricably tangled up with the neoliberal project" (Mirowski, 2011, p. 32), and thus it is dominated by corporate priorities and corporate data. Automated, privatized data production and analysis now drive the globe-trotting travels of neoliberal urban policy, with massive implications for theory and practice (Robinson, 2011). The enterprise is a cyborg instrumental rationality embedded in codes and algorithms, designed according to the

imperative that "caring" only happens when consumers are willing to pay to care, or when advertisers are willing to pay to attract the attention of consumers who care.

Computational social science is not positivist in any sense understood by Comte. To be sure, the emphasis on computation, data, observation, and conjectural causality does bear a striking resemblance to our snapshot memories of Fordist methodological positivism (Steinmetz, 2005). And the mining of massive corporate databases to detect, for example, aggregate global emotional trends through Twitter posts is certainly reminiscent of Comte's extravagant ideas on "social physics." Yet all of these contemporary developments are ontologically distinct from the twentieth-century positivism that critical theorists and activists have struggled against for so long. Postpositivists were and are correct to challenge methodological positivism as a mechanistic, atomizing, parochial vision of the world that advances particular kinds of knowledge through elitist, privileged constructions of scientific method.[5] These constructions yield a rigidifying vision replete with an onerous methodology that imposes a mechanistic order of authoritarian truths on the world. This strain of methodological positivism freezes the world in static equilibrium, imposes artificial binaries on multidimensional dialectical relations, erases processes and flux, and confines the pursuit of truth to narrowly-defined forms of testable propositions.

But the new social physics is very different, because it is now possible and practical to automate many of the foundational doctrines of neoliberalism itself -- including some of the production of subjectivities and governmentalities of neoliberal subject positions. When individual consumers act, they create digital individuals (Curry, 1997) who become dynamic, performative actors in corporate data ecosystems sanctioned by laws governing various constructions of property (including digital intellectual property). The aggregation of digital

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[5] I am grateful to David Wilson for multiple insights and turns of phrase in this section.

individuals' behavior interacts with dynamic, evolving systems of observation, classification, surveillance, and targeting in those corporate ecosystems where automated machine-to-machine communication is now likened to "a stream of consciousness based on semiconductors" (O'Brien, 2012); these ecosystems then reconstitute the array of choices presented to digital individuals (standing in for real consumers). While the essence of this process is not new (see Goss's 1995 analysis of Baudrillard and urban geodemographic systems), the current acceleration and automation of the process seems to be accomplishing precisely the kind of "epistemological break" that Althusser (1969) borrows from Gaston Bachelard to analyze Marx's historical materialism (see Wernick, 2001, p. 35).

Lanier (2010, p. 186-187) borrows Bachelard, too, comparing virtual reality to "a consciousness-noticing machine" as software elements allow human brains to accept the disappearance of the avatar/"real" binary. This is what is happening in computational social science (Lazer et al., 2009), and in behavioral economists' fascination with data-driven, semi-automated decisions of public policy. It is also apparent in the current enthusiasm for functional MRI brain scans to refine advertising messages in the fast-growing field of "neuromarketing," which implements a hybrid of neoclassical theory and evolutionary psychology perspectives on the human mind as a set of "computational systems that have evolved ... in evolutionarily relevant domains such as survival, mating, kin selection, and reciprocity." (Garcia & Saad, 2008, p. 397). This is an explicitly adaptive, dynamic, situated, and "Darwinized" form of neoclassicism taken right down to the neurons in a technological culmination of Victor Cousin's (1853) doctrine of interior observation. With the automated algorithms and software-generating software of the social network, this new zombie positivism is no longer a humanly constituted

scientific method in pursuit of objective truth. It now regularly enacts process and flux in ways that erase any binaries that stand in the way of circulation and consumer 'choice.'

With atomized consumer sovereignty embedded into codes, algorithms, and business processes governed by property law, the entire regime thus easily co-opts poststructuralist worlds of situated knowledges and co-produced realities of consumer identities performed through class, race/ethnicity, gender, age, sexuality, and every other changing position of standpoint epistemology.[6] You can *be* who you want to be in your digital individual(s), you can *like* whatever person or product you want to like, and you can *follow* whomever you want to follow -- but you'll always be followed by the increasingly automated algorithms of the neoliberal noosphere, the capitalist-consumption Singularity (see Lanier, 2010, p. 18). The science historian George Dyson (2012) estimates that the "universe of self-replicating code" is now growing by five trillion bits per second. This system is not yet totalized -- there certainly are parts of social life that have not yet been colonized by automated epistemology, where *individuals* are more than *digital individuals*. But more and more urban life today is lived in the data ecosystem, where "digital reduction becomes a causal element" (Lanier, 2010, p. 69) as people are subjected at every turn to data-driven systems of ranking, measurement, and

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[6] It tells us something, then, that Kobayashi's (2014, p. 15) wise emphasis on how "personal choices are made" in the performance of theories during geography's quantitative revolution meant that "the experiences of people of color [got] lost," is now replaced by the algorithmic diversity promised by the firm Entelo, which for a fee of $10,000 will help Silicon Valley's White-male-dominated firms "target certain groups like women, black men, or 'old' people, with certain skills for job openings using [the firm's] 'proprietary algorithm'" (Greenfield, 2014). Kobayashi's (2014, p. 25) exhortation to *human* geographers that "the *biography* of an idea needs to consider not only the content, but also the context in which ideas emerge," is re-contextualized through partially-automated, situated, and dynamic proprietary market performances of new social constructions of ethnoracial quantified selves.

classification to optimize "choice" in an expanding panorama of ever more finely-tuned targeted advertising and behavioral modeling.

Hundreds of millions of consumers, of course, eagerly cooperate in these systems, reinforcing a strange Angie's List epistemology of comments and rankings and Facebook likes that will download and crowdsource the costs of persuasion and consumer subject-formation to consumers themselves -- once the pesky legal barriers to fully automated consumer deception are removed.[7] Democracy is being redefined as crowdsourcing, measuring, monitoring, and benchmarking. This is why the old publicly-accountable data systems of governmentality of methodological positivism -- government censuses -- are being destroyed, while massive corporate data citadels grow under the protection of the speed differential between corporate innovation and democratic legal and judicial systems. Privacy concerns are manufactured to justify destroying the census infrastructure of the social sciences (Shearmur, 2010), while right-wing newspapers publish print editions and searchable online multimedia productions naming individual public-school teachers ranked according to their students' standardized test scores,[8] and while private marketing firms maintain and sell detailed personal financial and consumption information on hundreds of millions of individuals.

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[7] These barriers are the current frontier of class-action lawsuit battles that feature detailed estimates of the per-user-per-month corporate revenue derived from the monetization of each consumer's "likes" in the social network (see the redacted sections of *Fraley v. Facebook*, 2012, p. 23). More recently, the frontiers of accumulation by legal dispossession involve attempts to use the voluminous terms and conditions of online social networks to impose mandatory arbitration clauses -- 'When 'liking' a brand online voids the right to sue,' as a *New York Times* headline puts it (Strom, 2014).

[8] In the *New York Post* and the *Wall Street Journal*, respectively, on the days the AAG met in New York City in 2012.

Cities as Data Systems Within Data Systems of Cities. The third co-optation of Comte is more explicitly and formally political. Automated (post)positivism is intensifying the contradictions between representative democracy and the more agile, fickle "democracy" of infinite polling and shifts in consumer-voter sentiments (cf., Peck, 2011) as the news cycle shortens. Ubiquitous smartphones and the intermingling of formal paid work and the unpaid social work of consumption/prosumption have undermined labor law while eroding the spatial constraints that define daily urban systems nested within national urban and regional networks of production, consumption, and communication. If consumer-voters want to tailor their political sentiments in real-time based on the latest budget battle (Peck, 2011), we'll soon see an app for that. City-boosters trying to position themselves in the competitive world-city networks of cognitive-cultural capitalism (Scott, 2011) can now mine global Twitter streams to measure urban happiness gradients in real time. Compare Berry and Okulicz-Kozaryn's (2011) meticulous analysis of survey data on happiness with the real-time flows of data into the "Hedonometer" of the University of Vermont Complex Systems Center (Computational Story Lab, 2014) and the Princeton Global Consciousness Project's attempt to "examine subtle correlations" that may reflect "the presence and activity of consciousness in the world," with the hypothesis of coherence during "major global events that engage our minds and hearts." (Global Consciousness Project, 2014).

The atomism of consumer sovereignty -- the mantra that there is no such thing as society, only individuals -- is aggregated up to a rigid and universalizing world politics (see, for example, Clark and Clark's [2012, p. 567] analysis of the abuse of evolutionary theory to justify Thatcherite doctrine). In the dreams of the Mont Pelerin Society members all the way back to Hayek, The Market always "knows more than any individual, and therefore it cannot be

surpassed as a mechanism of coordination" (Mirowski, 2011, p. 29). The Market rapidly and efficiently processes "information in ways that any human mind would be stymied in attempts to imitate, such that no central planner" -- or nation-state, or *any* non-market political institution -- "could ever mimic its operation" (Mirowski, 2011, p. 29). Today, operationalizing "The Market" in digital terms helps to accelerate the neoliberal project, with its politics of corporations-can-do-no-wrong and markets as the solution to all problems (even problems caused by markets) (Peck, 2011).[9] Replace "market" with "Google" or the "social web" or "the cloud," and consider the implications for politics. Lanier (2010, p. 68) is not joking when he declares that "Facebook is similar to No Child Left Behind," with everything reduced to institutionally automated algorithms of ranking, sorting, and disciplining. Milton Friedman is coded as a do-loop in the Foucault App.

This is a structural-functionalist political Frankenstein of the social theories of the Chicago urban ecologists -- and it is also a bitter spectacle viewed with horror through the stone eyes of the profile of Auguste Comte etched above the entrance to the Social Research Building in Hyde Park (Figure 1). This is why it is worth paying careful attention to the theological allusions when dissidents attack neoliberalism as "market fundamentalism." We come full circle to Comte, the lapsed Catholic who built a positivist scientific challenge to Church hegemony but whose attempt to preserve human ethics and spirituality led him to "outchristian Christianity" (Nietzsche, 1982, p. 83). "Comte's contribution" in the *System* and his project for the Religion of Humanity "was to push the idea of the social all the way. Society was to be *worshipped* -- not

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[9] Automation thus involves a deeply political transformation, embedded into code and mobile devices, of the "here of our collective presence and the now of our collective interests" (Ley, 2003, p. 537).

only because of the functional requirements of establishing industrial order, but because it is the genuine source of all that is sacred." (Wernick, 2001, p. 191).

This is not an unreserved defense of Comte. I'm not sure how to feel about resurrection. I'm simply recommending that we rethink our historical memory of positivism as *inherently* conservative, and give a sympathetic consideration to Comte's context "as part of a renewed effort to clarify, and soberly rethink, what most deeply define a progressive, emancipatory, or ... communist commitment." (Wernick, 2001, p. 9). If we on the Left don't do this, it will be done *to* us. If we are deceived by the historically constructed divisions between separate equations

positivism $= f$ (orthodox quantification, mechanistic determination, political conservatism)

postpositivism$= f$ (qualitative pluralism, situated and contextual contingency, emancipatory politics)

then we become easy prey for the neoliberal and neoconservative co-optations of science as well as theology. When our cautious skepticism slips into cynical condescension towards the discredited dreams of Enlightenment reason and the capital-S Science of capital-P Positivism, we play right into the hands of a dangerous Right defending the cathedral of capitalist power, privilege, and inequality. WWACD? What Would August Comte Do, when presented with Karl Rove's dismissal of "the reality-based community," the famous tobacco-industry memo declaring "Doubt is our product," the "junk science" charges of industry-financed coalitions, the fusion of Frank Luntz's right-wing discourse analysis with the Koch brothers' billions, and the

hijacking of Galileo by a Manhattan Institute "scholar" (Huber, 1991; Latour, 2004; Suskind, 2004; Mirowski, 2011, pp. 298-302)? A decade after obituaries proclaimed the death of postmodernism as an academic philosophy of social science (Ley, 2003) it has become the paradigmatic status quo in public debate; journalists are struggling with the reality that "...there are no standards of fact anymore for a lot of people. We have gone from selecting sources of opinion that we agree with to selecting facts we agree with" (James B. McPherson, quoted in Peters, 2011). Motivated by the best ambitions of critical thought and goals of social justice, postpositivists were deceived and distracted by an historical caricature of Comte while the Right built a contemporary "mirror-world" (Mirowski, 2011) in a restoration of the pre-scientific metaphysics that Comte struggled against. Warning: your Science App has been hacked by market theologians.

(POST) POSITIVISM TODAY

"Suddenly the social and political future looks radically open."

--Excerpt from "A Manifesto for the Poetry of the Future," Neil Smith's words on

posters appearing in Vancouver for the *Urban Subjects* events, Spring 2011.

"Does it matter that we cannot pay attention as geographers -- or as human

beings?"

--Nadine Schuurman (2013, p. 375).

We seem to have a curious paradox: in a postpositivist world, positivism appears as just another choice in the marketplace of ideas. The pluralist postpositivist counterworlds

(Steinmetz, 2005) built in the last half-century have destabilized the high mountain peak of the single, unified reality accessible through One Right Way of Doing Science, exposing a complex topography of alternative paths as we search for contextual, partial, and situated realities. Yet in some domains there still are objective truths that persist whether or not we share a unified epistemology to confront them. In an urbanizing world of class oppression, war, and a "biological crisis of existence," (Bunge, 1973) our choices have momentous consequences. The purpose of this paper has been to reassess our historical memories of the positivist project: if positivism is a choice, we better have a good understanding of what that choice really means.

Remembering the historical context of Auguste Comte's challenge to theocratic hegemony helps to remind us of the radical utopianism of what the original positivist always understood as a "complete" science-politics-theology "subjective synthesis." When we remember how Comte struggled to liberate science from theological doctrines of Soul and interior observation, we get a better appreciation of the implications of today's social networks, where different factions of finance, media, and venture capital compete to monetize the global human attention span. The conservative neoclassical commandments of consumer sovereignty are written in code, with friendly user interfaces that enroll billions of eager consumers into the accelerating pace of choosing, watching, and consuming in an expanding thoughtscape of automated surveillance, evolutionary advertising, and customer relationship management. Comte's grand(iose) vision of a scientific-subjective synthesis in the Religion of Humanity has been reincarnated in a global neoliberal market fundamentalism, with a harsh Right politics of infinite commodification and accumulation. It is all premised on achieving increasing economies of scale in reaching the individual consumer -- that rational-actor, utility-maximizing decider of neoclassical economic theory and law. Crowdsourcing is nothing more than

aggregation, and nothing less than a reconstruction of personhood. It may no longer be voluntary in a world in which a *Forbes* blogger notes that mass murderers Anders Breivik and James Holmes "both lacked much of a social media presence, leading to the conclusion, in Slashdot's phrasing, that 'not having a Facebook account could be the first sign that you are a mass murderer.'" (Hill, 2012).

Think different. Phrases like this once had *human* meaning before they were redefined by billions of dollars of corporate advertising and mobilizations of intellectual-property law. Automated postpositivism is a deeply unstable reconfiguration of humankind and "machinekind" (Bunge, 1973),[10] and the spatio-temporal acceleration of automated digital capitalism intensifies the system's internal contradictions, particularly the paradox of *collective* emancipatory possibilities of networked social movements in the 'encounters' of planetary urbanization (Castells, 2012; Merrifield, 2012) juxtaposed with worsening risks endured by *individuals*. It is no accident that we see dramatic advances in evolutionary neuromarketing (Garcia & Saad, 2008) at the same time we see a flood of anxious commentary on what *Newsweek*'s cover of July 16, 2012 diagnoses as "iCrazy" -- an epidemic of panic, depression, and psychosis as "connection addiction is rewiring our brains." (See also Schuurman, 2013; Carr, 2011; and Choudhury and McKinney's [2013, p. 208] portrayal of the cellphone as "an extension of the mind's capacity to store information or to communicate," collapsing the "distinction of brain and environment."). Wall Street is iCrazy, too. Real people and real places are paying the price for yesterday's Wall Street innovations in high-risk securitization and leverage (Schafran &

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[10] It is also deeply contextual, and I recognize that my account is, all declarative statements notwithstanding, a partial and situated story. Hopefully it's wrong. But it seems that in digitally-mediated planetary urbanization, our cities and our social relations are fast being destructively rebuilt before our eyes, as corporate capital battles social scientists and civil society to construct new kinds of walls and gates (Yip, 2012; Wang, Li, and Chai, 2012).

Wegman, 2012), while today's innovations are devoted to time-slicing precision on high-speed trading platforms that repeatedly trigger cascades of "flash crashes." These sudden stock market gyrations cannot be understood by individual human brains, since all the damage is done by algorithms. Wall Street's mathematical wizards can't predict the results of their creations, and S.E.C. regulators can't make sense of the simple positivist A→B conjunctural causality. There are simply too many interaction terms amongst the coefficients for the structural equations for methodological, epistemological, and political power.

The current acceleration of an unstable, highly-capitalized automated epistemology, therefore, makes it both more urgent and more realistic to imagine and enact alternatives to the current hegemony. Scientists are revolutionaries; if they avoid revolutionary inquiry they betray the true meaning of the subversive movement that came to be called science; this is what Comte reminds us. To really be a positivist, a true scientist in the spirit of the original social scientist, requires equal parts rigor and radicalism, and a balance of objective science and subjective humanity. This is "radical openness as method in *Urban Geography*" (Wolch, 2003). Part of that radicalism involves questioning, reconsidering, resisting some of the daily social lifeworlds created in automated postpositivism. In the face of neoliberal commodification and a digital-individual informational Singularity, we can fire up the radical science App of our choice -- Siri replaced by a composite of Comte, Marx, and Foucault, perhaps -- use the hacker ethic to crowdsource some new code for Cousin's (1853) interior observation, hook ourselves up to the neuromarketers' MRIs, and create a new kind of data trail for the universe of self-replicating code in the planetary networks of outrage and hope (Dyson, 2012; Castells, 2012). Or we can just disconnect. Or we can just *think* about disconnecting. Think different.

REFERENCES

Abler, Ronald, John S. Adams, and Peter R. Gould (1971). *Spatial Organization: The Geographer's View of the World.* Englewood Cliffs, NJ: Prentice-Hall.

Althusser, Louis (1969). *For Marx.* London: Allen Lane Penguin.

Arango, Tim (2008). I Got the News Instantly, Oh Boy. *New York Times*, September 13.

Ayer, Alfred J. (1959). *Logical Positivism.* New York: Free Press.

Ayres, Ian (2007). *Super-Crunchers: Why Thinking By Numbers is the New Way to be Smart.* Authors@Google, November 8, webcast.

Baeten, Guy (2001). Cliches of Urban Doom: The Dystopian Politics of Metaphors for the Unequal City -- A View from Brussels. *International Journal of Urban and Regional Research*, 25(1), 55-69.

Bailey, Daniel Edgar (1970). Preface. In Tryon, Robert Choate, and Daniel Edgar Bailey, *Cluster Analysis*. New York: McGraw-Hill, xi-xiv.

Beauregard, Robert A. (2012). What Theorists Do. *Urban Geography* 33(4), 474-487.

Berry, Brian J.L. and Adam Okulicz-Kozaryn (2011). An Urban-Rural Happiness Gradient. *Urban Geography* 32(6), 871-883.

Berry, Brian J.L. (2002). Big Tents or Firm Foundations. *Urban Geography* 23(6), 501-502.

Berry, Brian J.L. (1972). Revolutionary and Counter Revolutionary Theory in Geography -- A Ghetto Commentary. *Antipode* 4(2), 31-33.

Berry, Brian J.L. (1964). Cities as Systems within Systems of Cities. *Papers of the Regional Science Association* 13(1), 147-163.

Bunge, William W. (1973). The Geography of Human Survival. *Annals of the Association of American Geographers* 63(3), 275-295.

Carr, Nicholas (2011). *The Shallows: What the Internet is Doing to Our Brains.* New York: Norton.

Castells, Manuel (2012). *Networks of Outrage and Hope: Social Movements in the Internet Age.* Cambridge, UK: Polity Press.

Chomsky, Noam (2012). The Shredding of Our Fundamental Rights and the Common Good. lecture at University of St. Andrews, June 19, via www.alternet.org

Choudhury, Suparna, and Kelly A. McKinney (2013). Digital Media, the Developing Brain and the Interpretive Plasticity of Neuroplasticity. *Transcultural Psychiatry* 50(2), 192-215.

Clark, Thomas L., and Eric Clark (2012). Participation in Evolution and Sustainability. *Transactions of the Institute of British Geographers* 37(4), 563-577.

Computational Story Lab (2014). *Daily Happiness Averages for Twitter, September 2008 to Present.* Burlington, VT: University of Vermont Complex Systems Center. http://hedonometer.org/index.html, last accessed April 18.

Comte, August (1854). System of Positive Polity, Vol. 4. In Lenzer, Gertrud, ed, [1998] *August Comte and Positivism: The Essential Writings.* Piscataway, NJ: Transaction Publishers.

Comte, August (1822). Plan of the Scientific Operations Necessary for Reorganizing Society. In Lenzer, Gertrud, ed., trans., *Auguste Comte and Positivism: The Essential Writings.* Piscataway, NJ: Transaction Publishers, Rutgers University, 1998, 9-67.

Cousin, Victor (1853). *Lectures on the True, the Beautiful, and the Good.* Translated by Wight, O.W., and reprinted, 1890. New York: D. Appleton and Co.

Crompton, Albert (1910). *Confessions and Testament of Auguste Comte and his Correspondence with Clotilde de Vaux.* Liverpool: Henry Young & Sons.

Dear, Michael (2005). Comparative Urbanism. *Urban Geography*, 26(3), 247-251.

Dyson, George (2012a). A Universe of Self-Replicating Code. *Edge*, http://edge.org, March 26.

Dyson, George (2012b). *Turing's Cathedral: The Origins of the Digital Universe*. New York: Vintage.

Fainstein, Susan (2005). Planning Theory and the City. *Journal of Planning Education and Research* 25(2), 121-130.

Fraley v. Facebook (2012). *Plaintiffs' Motion for Preliminary Approval of Class Action Settlement*, Case No. CV 11-01726 LHK. San Jose, CA: U.S. District Court, Northern District of California, San Jose District.

Garcia, Justin and Gad Saad (2008). Evolutionary Neuromarketing: Darwinizing the Neuroimaging Paradigm for Consumer Behavior. *Journal of Consumer Behavior* 7(4-5), 397-414.

Global Consciousness Project (2014). *What is the Nature of Global Consciousness?* Princeton, NJ: Princeton University. http://noosphere.princeton.edu, last accessed April 18.

Goss, Jon (1995). We Know Who You Are and We Know Where You Live: The Instrumental Rationality of Geodemographic Marketing Systems. *Economic Geography* 71(2), 171-198.

Gould, Peter R. (1979). Geography 1957-1977: The Augean Period. *Annals of the Association of American Geographers* 69(1), 139-151.

Grant, Richard and Martin Oteng-Abiabo (2012). Mapping the Invisible and Real 'African' Economy: Urban E-Waste Circuitry. *Urban Geography* 33(1), 1-21.

Greenfield, Rebecca (2014). Silicon Valley turns to an algorithm to fix its diversity problem. *Fast Company*, April 30.

Gregory, Derek, and Allan Pred, eds. (2007). *Violent Geographies.* New York: Routledge.

Hardy, Quentin (2011). Crushing the Cost of Predicting the Future. *New York Times*, November 17.

Hardy, Quentin (2011). The US has More Wireless Devices than People. *New York Times*, October 12.

Harvey, David (2005). *A Brief History of Neoliberalism.* Oxford: Oxford University Press.

Harvey, David (2000). *Spaces of Hope*. Berkeley: University of California Press.

Harvey, David (1973). *Social Justice and the City*. London: Edward Arnold.

Harvey, David (1972). Revolutionary and Counter Revolutionary Theory in Geography and the Problem of Ghetto Formation. *Antipode* 4(2) 1-13, 36-41.

Holston, James (1998). Spaces of Insurgent Citizenship. In Sandercock, Leonie, ed., *Making the Invisible Visible*. Berkeley: University of California Press.

Huber, Peter (1991). *Galileo's Revenge: Junk Science in the Courtroom.* New York: Basic.

Judd, Dennis R. (2005). Everything is Always Going to Hell: Urban Scholars as End-Times Prophets. *Urban Affairs Review* 41(2), 119-131.

Kabahizi, Manu (2011). Personal Communication by Email, November 16.

Kitchin, Rob (2006). Positivistic Geographies and Spatial Science. In Aitken, Stuart and Gill Valentine, eds, *Approaches to Human Geography*. Thousand Oaks, CA: Sage Publications, 20-29.

Kobayashi, Audrey (2014). Neoclassical urban theory and the study of racism in geography. *Urban Geography*, this volume.

Lake, Robert W. (2014). Methods and Moral Inquiry. *Urban Geography,* this volume.

Lake, Robert W. (2005). Urban Crisis Redux. *Urban Geography* 26(3), 266-270.

Lanier, Jaron (2010). *You are Not a Gadget: A Manifesto.* New York: Knopf.

Latour, Bruno (2005). *Reassembling the Social.* Oxford: Oxford University Press.

Latour, Bruno (2004). Why has Critique Run Out of Steam? From Matters Of Fact To Matters Of Concern. *Critical Inquiry* 30(2), 225-248.

Lazer, David, Alex (Sandy) Pentland, Lada Adamic, Sinan Aral, Barabasi, Albert Laszlo, Devon Brewer, Nicholas Christakis, Noshir Contractor, James Fowler, Myrom Gutmann, Tony Jabara, Gary King, Michael Macy, Deb Roy and Marshall Van Alstyne (2009). Life in the Network: The Coming Age of Computational Social Science. *Science* 323(5915), 721-723.

Leitner, Helga, and Eric Sheppard (2003). Unbounding Critical Geographic Research on Cities: the 1990s and Beyond. *Urban Geography* 24(6), 510-528.

Lenzer, Gertrud, ed. (1998). *Auguste Comte and Positivism: The Essential Writings.* Piscataway, NJ: Transaction Publishers.

Ley, David (2003). Forgetting postmodernism? Recuperating a Social History of Local Knowledge. *Progress in Human Geography* 27(5), 537-560.

Lohr, Steve (2011). In Case You Wondered, a Real Human Being Wrote this Column. *New York Times*, September 11, BU3.

McCain, John (2011). *Remarks at Halifax International Security Forum*, November. Halifax, NS: Halifax International Security Forum / Canadian Public Affairs Channel.

Merrifield, Andy (2013). "The Urban Question Under Planetary Urbanization." *International Journal of Urban and Regional Research* 37(3), 909-922.

Mountz, Allison, and David Prytherch (2005). Digression Analysis: A Decidedly Editorial Introduction to the Symposium on the State of Urban Geography: Dispatches From the Field. *Urban Geography* 26(3), 243-246.

Mirowski, Philip (2011). *Science-Mart: Privatizing American Science*. Cambridge, MA: Harvard University Press.

Mirowski, Philip (2005). How Positivism Made a Pact with the Postwar Social Sciences in the United States. In George Steinmetz, ed., *The Politics of Method in the Human Sciences.* Durham, NC: Duke University Press.

Nietzsche, Friedrich (1982). *Daybreak: Thoughts on the Prejudices of Morality.* Cambridge: Cambridge University Press.

Nightingale, Paul (2004). Technological Capacities, Invisible Infrastructure and the Un-Social Construction of Probability. *Research Policy* 33(9), 1259-1284.

O'Brien, Kevin J. (2012). Talk To Me, One Machine Said To The Other. *New York Times*, July 29.

Peck, Jamie (2011). Neoliberal Suburbanism: Frontier Space. *Urban Geography* 32(6), 884-919.

Peters, Jeremy (2011). The Right's Blogger Provocateur. *New York Times*, June 26.

Price, Patricia L. (2011). Post-Postmetropolis: Taking Stock of the Urban Condition. *Urban Geography* 32(4), 449-450.

Robinson, Jenny (2012). The Travels of Urban Neoliberalism: Taking Stock of the Internationalization of Urban Theory. *Urban Geography* 32(8), 1087-1109.

Schafran, Alex, and Jake Wegmann (2012). Restructuring, Race, and Real Estate: Changing Home Values and the New California Metropolis, 1989-2010. *Urban Geography* 33(5), 630-654.

Scharff, Robert C. (1995). *Comte After Positivism*. Cambridge: Cambridge University Press.

Schuurman, Nadine (2013). Tweet Me Your Talk: Geographical Learning and Knowledge Production 2.0. *Professional Geographer* 65(3), 369-377.

Scott, Allen J. (2011). A World in Emergence: Notes Toward a Resynthesis of Urban-Economic Geography for the 21st Century. *Urban Geography* 32(6), 845-870.

Sengupta, Somini (2011a). When Sites Drag The Unwitting Across the Web. *New York Times*, November 13.

Sengupta, Somini (2011b). Who Decides Who You Are Online? *New York Times,* November 14.

Shapin, Steven (2008). *The Scientific Life: A Moral History of Late Victorian Vocation.* Chicago: University of Chicago Press.

Shearmur, Richard (2010). A World Without Data? The Unintended Consequences of Fashion in Geography. *Urban Geography* 31(8), 1009-1017.

Sheppard, Eric (2014). We Have Never Been Positivist, *Urban Geography*, this volume.

Singer, Natasha (2011). Face Recognition Makes The Leap From Sci-Fi. *New York Times*, November 13, BU 3.

Steinmetz, George (2005). Introduction: Positivism and its Others in the Social Sciences. In Steinmetz, George, ed., *The Politics of Method in the Human Sciences.* Durham, NC: Duke University Press.

Strom, Stephanie (2014). When 'liking' a Brand Online Voids The Right To Sue. *New York Times*, April 17, B1.

Student (2013). The Automated Epistemology Of An Iparadigm Shift. *Human Geography* 4(2).

Suskind, Ron (2004). Without a Doubt: Faith, Certainty, and the Presidency of George W. Bush. *New York Times Magazine*, 17 October, 44-106.

Wang, Donggen, Fei Li, and Yanwei Chai, (2012). Activity Spaces and Sociospatial Segregation in Beijing, *Urban Geography* 33(2), 256-277.

Wrigley, Charles (1970). Preface. In Tryon, Robert Choate and Daniel Edgar Bailey, *Cluster Analysis*. New York: McGraw-Hill, v-x.

Wolch, Jennifer (2003). Radical Openness as Method in Urban Geography. *Urban Geography* 24(8), 645-646.

Vigar, Geoff, Stephen Graham, and Patsy Healy (2005). In Search of the City in Spatial Strategies: Past Legacies, Future Imaginings. *Urban Studies*, 42(8), 1391-1410.

Yip, Ngai Ming (2012). Walled Without Gates: Gated Communities in Shanghai, *Urban Geography* 33(2), 221-236.

Zimmer, Ben (2011). Twitterology: A New Science? *New York Times*, October 30, SR9.