

Automated (Post)Positivism

For half a century, the word “positivism” has been invested with meanings of methodological and political conservatism. Yet the shared reference point for the collective memories of urban geography and other social sciences -- the Fordist methodological positivism of the mid-twentieth century -- obscures an earlier radical history. The long-forgotten project launched by Auguste Comte in 1822 was hijacked and corrupted in the twentieth century, and today the informational innovations of digital capitalism are reanimating the corpse of Cold War positivism. Yet this reanimation is a dehumanized, automated adaptation to the poststructuralist situated epistemologies of consumer sovereignty, creating a strange hybrid zombie of the dashed hopes of Enlightenment modernity and the postpositivist relativism that goes back to a pre-Comtean metaphysics and (market) theology. Reclaiming the radical Comte is the first step in the fight against an aggressive, right-wing (post)positivist zombie reanimated by the neoliberal project. [Key words: positivism, epistemology, methodology]



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

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. Klout, a popular social networking site, calculates a score for you based on how influential you are on Foursquare, LinkedIn, Twitter, Facebook, and all the rest. Until some recent bad

press coverage over a mother's 13-year-old son, 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 more than a tenth 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 on the social web (Sengupta, 2011b). The value of personal data on the billion human beings on the social web is the next frontier in the articulation of modes of production. 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). The total population of the United States is now greater if we count wireless devices instead of human beings (Hardy, 2011). 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 a) "read" raw news feeds for positive and negative trends in particular industries or companies, and b) 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 robo-trading algorithms reacting to the first news-driven trading system's automated sell orders (Arango, 2008). Labor theory of value and fictitious capital, meet the Twitterverse.

In this essay, I cannot offer to make sense of all of these trends. I can barely keep up with my 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 brave new world dot com. 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 clear, concise summary of the paradoxical consensus of a post-foundational world, with its healthy skepticism towards 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 its “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 become the status quo in much of critical urbanism, however (Leitner and Sheppard, 2003) new generations of scholars have been taught that the very idea of empirical reality is a fabrication (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 Archimedean perspective on an uncontested reality -- then we must accept all the implications. The postpositivists have 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). 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 mean we can play a role in reshaping what the project is all about. I suggest that critical and radical urbanists have a responsibility 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 it will 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.

Back to Comte

Critical urbanism is today defined in opposition to a very specific Other -- a hegemonic infrastructure of politics and science that I 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) 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, “at least it seems safe to say that there is something they are universally against,” (Scharff, 1995, p. 1), namely Positivist City Hall. Unfortunately, an effective short-term tactic can have disastrous consequences for long-run strategy (Author, 2011). 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 are trained to be on the lookout for positivists like Moses with his meat-axe, or McNamara, famously

described as the IBM mainframe with legs. They are thoroughly unprepared for right-wing poststructuralists who talk about power creating its own reality (Karl Rove, as interviewed by Suskind, 2004) or the situated, reflexive standpoint epistemologies of Rumsfeld's "unknown unknowns." 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 postpositivists -- 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, 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 a sympathetic historicism towards what previous generations believed, and a cold, ahistoric scientific method recognizing 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 (Schaff, 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 distanced 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 man christened Isidore 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, in ways that twentieth-century positivists stridently refused to consider.

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. 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. Those old myths may have been historically useful 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 matter of gender we would be well advised to stage an intervention by Andrea Dworkin. 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 outlined in a manifesto he wrote in his early twenties: the “Plan of the Scientific Operations Necessary for Reorganizing Society” (Comte, 1822). 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 was complete (in the publication of the six-volume *Course*), Comte set to work 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 sciences finally gaining acceptance in his day (mathematics, astronomy, physics, chemistry, and physiology [biology]) would build a growing consensus for a science of 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. Mill and other admirers 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 affair with Clotilde de Vaux, and after his heartbreak with her death in 1849.

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 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, ethnics, 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 (then about 140 million), 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 his own strange way, 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 behind the work of Althusser, Baudrillard, and other twentieth-century French theorists; 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 Comte (Steinmetz, 2005) anytime soon. 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 grand systematizers of the nineteenth century. Yet within urban geography, our view of the positivist legacy is refracted through a very particular struggle that came to define positivism as both methodologically and politically conservative (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 Comtean positivism while killing its 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 Comtean 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.

First, transnational neoliberalism has reconfigured the relations between past and present, living and dead. 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 reminiscence 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 (de) humanized labor process of positivism itself. In the Fordist methodological positivism of memory and textbook (Steinmetz, 2005; Harvey, 1969; Abler et al., 1971; Berry, 1964; Kitchin, 2006), men (it was almost always men) struggled with machine to develop new ways of answering questions. The struggle was a labor relation of medieval craft guild on its way to Fordist assembly line, with teams of assistants or students punching cards for input in the pre-keyboard days. Here's one of those students, Daniel Bailey (1970, p. xiii), remembering the pain of 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.”

Reflecting on these words in light of the gentle evening glow of the screens of our iPads, BlackBerries, and Kindles, our attention is drawn to the fine-grained details of the technological fetish (*what's a 'desk calculator'?*). This is a mistake. 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 supported by defense funding were ... human beings. Today's positivism is quickly bypassing the human being asking why. Not surprisingly, much of the 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 in the ... 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. From self-checkout lines in big-box retail stores to Amazon’s chillingly accurate auto-recommend algorithms to Google’s content-driven email targeted advertising, the human being asking “why?” is being sidelined as

an irrelevant distraction. Crowdsourcing is the new social physics. This is why I care about Tryon's mis-spent youth (and my own). 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 structuralist-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). 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 $\lim_{N \rightarrow \infty} \text{Web N.0}$.

The second threat from the neoliberal reanimation of Comte is the return of the spiritualistic psychology of Victor Cousin and his allies (see Scharff, 1995, pp. 22 ff). 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 (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. For the busy

consumer, who cares how and why the app works the way it does? On the other hand, for corporations, it is now standard procedure for test-marketing plans to deploy multiple products across multiple sites and channels, with a pseudo-randomized trial model providing streams of real-time Web data on which options work best (Ayers, 2007). *Why?* The question is quant and irrelevant when reduced to the unquestionable ontological axiom of consumer choice. 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."

For today's critical urbanists, 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 another reincarnation of the familiar mid-twentieth century Fordist positivism. But this 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 driven by corporate priorities and corporate data; the enterprise is an instrumental rationality defined by the imperative that "caring" only happens when consumer are willing to pay to care, or when advertisers are willing to pay to attract the attention of consumers who care.

It is far from clear that computational social science is positivist. The emphasis on computation, data, and conjunctural causality certainly does resemble Fordist-era methodological positivism. And the mining of massive corporate databases to detect (for example) aggregate global emotional trends through Twitter posts seems a bizarre culmination of Comte's plans for social physics. Yet nearly all of this contemporary inquiry is corrupted by the neoliberal axiom of consumer sovereignty: half a century of orthodox neoclassical power has defined the consumer as the exogenous, rational-actor foundational element of theory and policy. The entire project, therefore, easily co-opts poststructuralist worlds of situated knowledges and co-produced realities of consumer identities performed through gender, race/ethnicity, age, sexuality, and every other possible position of standpoint epistemology. Every contingency, every residual from neoclassical analysis is safely buried within the *a priori* citadel of consumer preferences defined as exogenous to the economic system. Even today's cutting-edge economic attempts to understand consumer sovereignty itself simply re-scale the reservoir for neoclassical ignorance down to the level of the neurons: the current enthusiasm for functional MRI brain scans to refine advertising messages in the fast-growing field of "neuromarketing" is little more than a technological update of Victor Cousin's doctrine of interior observation.

The third co-optation of Comte is explicitly political. 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. 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). 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 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 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).

Let me be clear: 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 defines 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 equations positivism = conservatism and postpositivism = radicalism, we become easy prey for the neoliberal and

neoconservative co-optations of science as well as theology. When we teach our students to smirk with sophisticated condescension on 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 and privilege. 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, and the hijacking of Galileo by a Manhattan Institute "scholar" (Huber, 1991; Latour, 2004; Suskind, 2004; Mirowski, 2011, pp. 298-302)? More than a decade after postmodernism was officially pronounced dead, 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 created a caricature of Comte and unwittingly helped the Right build today's science "mirror-world" (Mirowski, 2011).

(Post) Positivism Today

We have a curious paradox: in a postpositivist world, positivism is now a choice. The pluralist postpositivist counterworlds (Steinmetz, 2005) built in the past half-century have eroded the high mountain peak of the single, unified reality accessible through One Right Way of Doing Science, creating a complex topography of alternative epistemological paths as we search for contextual, partial, and situated realities. Yet there *are* still some objective truths that persist whether or not we share a unified epistemology to confront them. In an urbanized world of inequality, war, and

accelerating climate change, our choices have momentous consequences. The purpose of this article has been to reassess our historical memories of positivist inquiry in urban geography as inherently conservative, through an engagement with the origins and contemporary distortions of the positivist project. The historical context of Auguste Comte's radical challenge to theocratic hegemony has been forgotten, along with the radical utopianism of what he always understood as a "complete" subjective-synthesis positivism. Comte's attempt to liberate science from theological doctrines of Soul and interior observation have been co-opted by conservative neo-classical doctrines of consumer sovereignty in a digitally automated epistemology that enables the Right to hijack poststructuralist themes of individual sovereignty, agency, and situated subjectivity. 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 politics of the Right, stripped of all context, compassion, and humanity. Mounting an effective challenge to this new hegemony is at once more urgent and more realistic each year, as the automation of digital capitalism accelerates the system's internal contradictions. We are *just now* approaching the world urban system that was the implicit context of the radical visions of Comte, Marx, and the other systematizers of the nineteenth century. Science will not automatically save us from the world built by the Right, but good science integrated with good politics offer the best hope for building better worlds. Now is the time to mobilize a rigorous, relevant, and radical science -- a strategic positivism working in partnership with pluralist nonpositivisms -- to build new urban worlds of equity and social justice.

References

Abler, R., Adams, J.S., and Gould, P.R., 1971, *Spatial Organization: The Geographer's View of the World*. Englewood Cliffs, NJ: Prentice-Hall.

Arango, T., 2008, I got the news instantly, oh boy. *New York Times*, September 13.

Author, 2011, [Publication details to appear after anonymous peer review], *International Journal of Urban and Regional Research*.

Ayer, A.J., 1959, *Logical Positivism*. New York: Free Press.

Ayres., A., 2007, *Super-crunchers: Why thinking by numbers is the new way to be smart*.

Authors@Google, November 8, webcast.

Baeten, G., 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*, Vol. 25, 55-69.

Bailey, D.E, 1970, Preface. In Tryon, R.C., and Bailey, D.E., *Cluster Analysis*. New York: McGraw-Hill, xi-xiv.

Berry, B.J.L., 2002, Big tents or firm foundations. *Urban Geography* Vol. 23, 501-502.

Berry, B.J.L., 1972. Revolutionary and counter revolutionary theory in geography -- A ghetto commentary. *Antipode*, Vol. 4, 31-33.

Berry, B.J.L., 1964, Cities as systems within systems of cities. *Papers of the Regional Science Association*, Vol. 13, 147-163.

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

Comte, A., 1822, Plan of the scientific operations necessary for reorganizing society. In Lenzer, G., ed., trans., *Auguste Comte and Positivism: The Essential Writings*. Piscataway, NJ: Transaction Publishers, Rutgers University, 1998, 9-67.

Dear, M., 2011, Comparative Urbanism. *Urban Geography*, Vol. 26, 247-251.

Fainstein, S., 2005, Planning theory and the city. *Journal of Planning Education and Research*, Vol. 25, 121-130.

Gould, P.R., 1979, Geography 1957-1977: The Augean period. *Annals of the Association of American Geographers*, Vol. 69, 139-151.

- Gregory, D., and Pred, A., eds., 2007, *Violent Geographies*. New York: Routledge.
- Hardy, Q., 2011, Crushing the cost of predicting the future. *New York Times*, November 17.
- Hardy, S., 2011, The US has more wireless devices than people. *New York Times*, October 12.
- Harvey, D., 2000, *Spaces of Hope*. Berkeley: University of California Press.
- Harvey, D., 1973, *Social Justice and the City*. London: Edward Arnold.
- Harvey, D., 1972, Revolutionary and counter revolutionary theory in geography and the problem of ghetto formation. *Antipode*, Vol. 4, 1-13, 36-41.
- Holston, J., 1998, Spaces of insurgent citizenship. In Sandercock, L., ed., *Making the Invisible Visible*. Berkeley: University of California Press.
- Huber, P., 1991, *Galileo's Revenge: Junk Science in the Courtroom*. New York: Basic.
- Judd, D.R., 2005, Everything is always going to hell: Urban scholars as end-times prophets. *Urban Affairs Review*, Vol. 41, 119-131.
- Kabahizi, M., 2011, Personal communication by email, November 16.
- Kitchen, R., 2006, Positivistic geographies and spatial science. In Aitken, S., and Valentine, G., eds, *Approaches to Human Geography*. Thousand Oaks, CA: Sage Publications, 20-29.

Lake, R.W., 2005, Urban crisis redux. *Urban Geography*, Vol. 26, 266-270.

Latour, B., 2005, *Reassembling the Social*. Oxford: Oxford University Press.

Latour, B., 2004, Why has critique run out of steam? From matters of fact to matters of concern. *Critical Inquiry*, Vol. 30, 225-248.

Lazer, D., Pentland, A., Adamic, L., Aral, S., Barabasi, A.L, Brewer, D., Christakis, N., Contractor, N., Fowler, J., Gutmann, M., Jabara, T., King, G., Macy, M., Roy, D., and Van Alstyne, M., 2009, Life in the network: The coming age of computational social science. *Science*, Vol. 323, 721-723.

Leitner, H., and Sheppard, E., 2003, Unbounding critical geographic research on cities: the 1990s and beyond. *Urban Geography*, Vol. 24, 510-528.

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

Lohr, S., 2011, In case you wondered, a real human being wrote this column. *New York Times*, September 11, BU3.

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

Mountz, A., and Prytherch, D., 2005, Digression analysis: A decidedly editorial introduction to the symposium on the state of urban geography: Dispatches from the field. *Urban Geography*, Vol. 26, 243-246.

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

Mirowski, P., 2005, How positivism made a pact with the postwar social sciences in the United States. In G. Steinmetz, ed., *The Politics of Method in the Human Sciences*. Durham, NC: Duke University Press.

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

Nightingale, P., 2004, Technological capacities, invisible infrastructure and the un-social construction of probability. *Research Policy*, Vol. 33, 1259-1284.

Peters, J.W., 2011, The right's blogger provocateur. *New York Times*, June 26.

Scharff, R. C., 1995, *Comte After Positivism*. Cambridge: Cambridge University Press.

Sengupta, S., 2011a, When sites drag the unwitting across the Web. *New York Times*, November 13.

Sengupta, S., 2011b, Who decides who you are online? *New York Times*, November 14.

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

Singer, N., 2011, Face recognition makes the leap from sic-fi. *New York Times*, November 13, BU 3.

Steinmetz, G., 2005, Introduction: Positivism and its others in the social sciences. In Steinmetz, G., ed., *The Politics of Method in the Human Sciences*. Durham, NC: Duke University Press.

Suskind, R., 2004, Without a doubt: Faith, certainty, and the presidency of George W. Bush. *New York Times Magazine*, 17 October, 44-106.

Wrigley, C., 1970, Preface. In Tryon, R.C., and Bailey, D.E., *Cluster Analysis*. New York: McGraw-Hill, v-x.

Vigar, G., Graham, S., and Healy, P., 2005, In search of the city in spatial strategies: Past legacies, future imaginings. *Urban Studies*, Vol. 42, 1391-1410.

Zimmer, B., 2011, Twitterology: A new science? *New York Times*, October 30, SR9.