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ALL TOGETHER NOW: SYNCHRONIZATION, SPEED, AND THE FAILURE OF NARRATIVITY

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ABSTRACT

This paper looks at interconnections between social, scientific, and technical time over the period since the Enlightenment. The underlying argument is that each of these can be woven into a single narrative of our experience and description of time over that period. In particular, I maintain that the synchronization of social and natural time into ever smaller, interchangeable units has culminated today in the evacuation of the narrative of progress in favor of an ideology of the eternal present. *Contra* technologically determinist characterizations that claim a fundamental historical disjuncture occurring with the development of computers, I claim that this timeless present has historical roots going back to the origin of industrial societies through the age of Victorian certainty to our current epoch. The multiple times described here are argued to be telling a single story. I demonstrate this through developing a historiographical principle of infrastructural inversion, which foregrounds a common set of "*techniques dispositifs*" operating in the apparently separate worlds of science and industry. The assertion here is that our experiences and perceptions of time are deeply imbricated in our information infrastructures. I further argue that these ideological charged times are not hegemonic; they merely describe a motivating managerial vision of a proximate future.

Keywords: synchronization, history of technology, historiography, history of science

> "Albert calls this a failure of narrativity, of the principle that we can say everything about the world by narrating a story of how it began and how it changed over time."[1]

INTRODUCTION: A TALE OF TWO APOTHEOSES

The nineteenth century has been heralded as the century of "progress": the age of certainty.[2] According to the Google n-gram application,[3] which gives word frequency in works digitized in the Google Book Search Project, the word did achieve its peak (as Briggs suggested) in the 1850s. It rallied slightly in the 1960s, possibly related to talk of rapid social change predicated on automation and computerization, but has basically been in decline since that peak. Progress is just not part of the current globalizing vision of society.

1. David Wallace, *The Emergent Multiverse: Quantum Theory according to the Everett Interpretation* (Oxford: Oxford University Press, 2012), 304.

2. Asa Briggs, *A Social History of England* (New York: Viking, 1984).

3. Wikipedia contributors, "Google Ngram Viewer," *Wikipedia, The Free Encyclopedia*, http://en.wikipedia.org/w/index.php?title=Google_Ngram_Viewer&oldid=627190654 (accessed September 30, 2014).

We have a continuum of futures arrayed in front of us—both ends allegedly optimistic—from the subsumption of our selves into our computers (Kurzweil's singularity[4]) to the vision of our being increasingly disciplined into an external market economy in which we become passive observers of our own fate. Whichever way we go involves speeded-up, synchronized time: internal computer clocks now go up to about 10^{10} operations per second. And the market has followed suit: high-speed trading is slowed down currently only by the speed of light. In place of a progressive time, we are moving into an eternal, synchronized present.

This process of synchronization is not determined by technological developments; rather, a sociotechnical imaginary has developed over the past few hundred years that is equally organizational, technical, and social, as we shall see through tracing some dimensions of its development.

AS TIME GOES BY

We have had clocks abounding for the past several centuries. The clockwork universe, bequeathed by Newton and developed by Laplace to account for multiple perturbations in orbits, was nonprogressive: there was no end envisaged.[5] When Charles Lyell produced in the 1830s a uniformitarian vision of geological history, he cast it into clock time.[6] Each addition to the land surface was balanced by a subtraction in the form of erosion. The beating of the clock remained constant; any past effects that appeared monumental, such as the formation of the white cliffs of Dover, could be achieved by stretching the timeline such that only current causes need be considered in their analysis. Lyell was arguing against the catastrophists, who said that the world was different then: there were great causes appropriate to past epochs that flung rocks hundreds of miles (leaving the makings of Stonehenge). At the end of each cycle of the clock, nothing had changed: the universe was back in place, and we had the same amount of land and sea. Lyell devoted a few hundred pages to the argument that any changes humans wrought on the natural world (notably through breeding animals and spreading flora and fauna) were *at the end of the day* temporary—only unchanging history would prevail.[7] At the apogee of Victorian certainty, Matthew Fontaine Maury imagined our knowledge of the ocean reaching such a state of perfection that we could discern the underlying metronomic reality beneath the churning of the seas—he spoke of a "clockwork ocean" with waves and cycles of salinity as "balance wheels."[8] This is a clock of isotropic time: the histories of the earth and the solar system could be told in the same way if the clock were running backwards or forwards.

4. Ray Kurzweil, *The Singularity is Near: When Humans Transcend Biology* (London: Penguin, 2006).

5. P. S. LaPlace *Analyse de la mécanique céleste* (Paris: Duprat, 1801).

6. Charles Lyell, *Principles of Geology*, vol. 1 (London: Murray, 1831).

7. For further analysis of the curious case of double-entry bookkeeping in Lyell's work, see Geoffrey C. Bowker, *Memory Practices in the Sciences* (Cambridge, MA: MIT Press, 2005).

8. D. G. Burnett, "Mapping Time: Chronometry on Top of the World," *Daedalus* 133, no. 2 (2003), 5-19.

Human history since the Enlightenment has until the current period generally been conceived as progressive, though it should be noted that at both ends of the nineteenth century there was an argument that we had reached the end to fundamental progressive change: astronomy and physics had discovered all that could possibly be known. We had achieved timelessness. Thus in the early part of the century, Comte argued that we could not possibly know more astronomically, since Newton had given us the final word on the rotation of planets; and all we could learn about our distance from the stars was what came to us in the form of light—we had already got as much out of light as we could, and that is all we could get from the stars.[9] Similarly, the trinity of naturalist Buffon, geologist Lyell, and polymath Charles Babbage averred that we were at the end of the period of basic discoveries.[10] At the end of the century, Poincaré and Michelson argued that the future task for scientists was to build on—not transform—our fundamental insights.[11] The same epoch that gave us anisotropic time (through Sadi Carnot and the second law of thermodynamics for physics, Hegel for history, and Darwin for biology) maintained a strong discourse of the eternal changeless. The historical movement should not be seen as progress succeeding over the unchanging, but the two as being in constant, fertile tension across the board in the sciences and the humanities.

Even today, when the catastrophists have arguably again come to the fore in geology, their secular changes are often lodged in unchanging cycles (the Milankovitch cycle of 21,000 years of climate change based on astronomical precession; the movement of the solar system regularly through meteor clouds causing catastrophes during the galactic year of about 250 million years).[12] Or again in evolution (the progressive "memory" of species), there are arguments that time was different and fundamentally progressive then (as in Gould's theory of the lock-in of body types after the creativity of the Cambrian radiation),[13] and that the unidirectional mutation clock governing evolution could not be derived from biogeographical analysis, which associates new orders with geological change (the orogeny leading the Rockies, say, canceling out the normal beat of regular change by altering the conditions that needed to be kept constant for them to occur).[14] Basically, if the world keeps changing the rules for species, then progressive adaption becomes less of a driving force; it's more a matter of which species happen to be equipped to survive massive secular change. Biogeography

9. Auguste Comte, *Cours de philosophie positive deuxiéme volume: La philosophie astronomique et la philosophie de la physique* (Paris: Bachelier, 1832).

10. George Louis Leclerc Buffon, *Oeuvres complètes de Buffon* (Paris: Duménil, 1835–1836); Lyell, *Principles of Geology*; Charles Babbage, *Reflections on the Decline of Science in England* (London: Fellowes, 1830).

11. Henri Poincaré, *Science and Method* (London: Dover, 1952). For Michelson, see Peter Medawar, *The Limits of Science* (New York: Oxford University Press), 90.

12. D. V. Ager, *The New Catastrophism: The Importance of the Rare Event in Geological History* (Cambridge, UK: Cambridge University Press, 1973).

13. See, for example, Stephen Jay Gould, *Wonderful Life: The Burgess Shale and the Nature of History* (New York: W. W. Norton, 1989).

14. The complex temporality of biogeography is beautifully explored in Christopher J. Humphries and Malte C. Ebach, "Biogeography on a Dynamic Earth," in *Frontiers of Biogeography: New Directions in the Geography of Nature*, ed. Mark V. Lomolino and Lawrence R. Heaney (Sunderland, MA: Sinauer Associates, 2004), 67-86.

is particularly interesting here in its entry into the flow of time: there is no possible stable earthly chronology against which historical, evolutionary change can be described, since biological and geological times are deeply interactive. Recent talk of naming the current geological era the Anthropocene (the cadence of earth movement through dredging, landfill, and agricultural practices is currently quantitatively trumping "background" geological change,[15] *pace* Lyell) is complicating this picture by bringing to the fore human management of the earth's natural resources (animate and inaminate) so that a single time—human time—predominates. But then again, this human time is today not progressive: we talk about "preserving" species and "conserving" the environment, not about preserving mechanisms for growth and change. Indeed, the current goal for many worried about climate change is to keep our climate the same as in the eternal present we conceptually inhabit. Again we see a tension between progress and stasis, not the triumph of one or the other.

A further feature of this spreading of flat, nonprogressive clock time was the organization of world history onto a single timeline. By tying everything to this universal, synchronized timeline, historical change could be measured. Thus the recent attempt by Microsoft to create a single universal infrastructure for modeling "the history of everything" corrals cosmological, biological, and human events into an infinitely gradated timeline.[16] We need the regularity of the beating of the clock in order to make sense of the stories that we tell, in order to remember them. Thus we have developed the mitochondrial clock, whose regular pulses would allow us to synchronize chronologies of speciation and systems (Laurasian and Gondwanan) back 60,000 years through the power of the clock of mutation.[17] These are not separate, chance occurrences of a single thematic across divergent domains: they are unified precisely in an underlying discourse of *dispositifs techniques* through which we order the social and natural world.[18] There is always a sense in which clockwork time needs the background condition of all other things being equal: there is a background timelessness against which clock time can be measured.

The so-called "tree of life" is an enduring metaphor of the ticking clock of evolutionary change. Haeckel's influential "genealogical tree of humanity" is a case in point. Unlike the standard genealogical tree, it started from the beginning ("monera" for him) and worked up until gorilla and orang were superseded by Man at the top of the tree:[19]

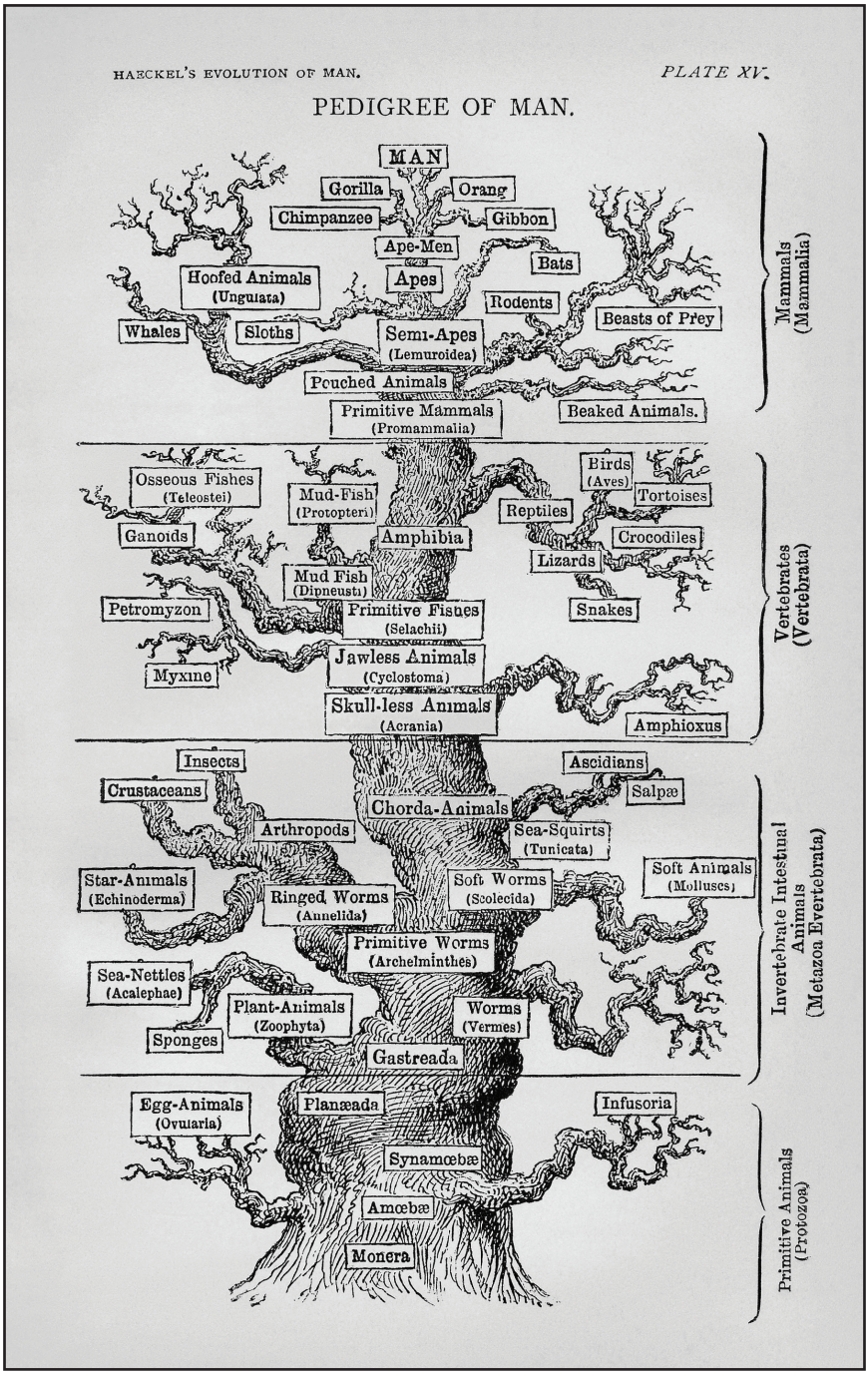
15. See the essays in Katrin Klingan, Ashkan Sepahvand, Christoph Rosol, and Bernd M. Scherer, *Textures of the Anthropocene: Grain Ray Vapor* (Berlin: HKW, 2014).

16. *ChronoZoom*. http://www.chronozoom.com (accessed September 29, 2014).

17. For the recent use of a mitochondrial clock to give the history of human migration, see James Chatters *et al*., "Late Pleistocene Human Skeleton and mtDNA Link Paleoamericans and Modern Native Americans," *Science* 344 (2014), 750-754.

18. It is beyond the scope of this paper to defend this position in more detail; however, the business of storing data (the database), tracking it (recently, the "barcode" in books and on supermarket shelves), and organizing it temporally adopts the same techniques regardless of subject matter. For the barcode as technology and metaphor in biology, see Claire Waterton, Rebecca Ellis, and Brian Wynne, *Barcoding Nature: Shifting Cultures of Taxonomy in an Age of Biodiversity Loss* (Milton Park, UK: Routledge, 2013). I am adopting Foucault's term in French, since no translation can capture the mix of the technological and the organizational in the concept; see Michel Foucault, *Sécurité, territoire, population* (Paris: Gallimard/Seuil, 2004).

19. From Ernst Haeckel, *Generelle morphologie der organismen: Allgemeine grundzüge der*



Ernst Haeckel, *The Evolution of Man: A Popular Exposition of the Principal Points of Human Ontogeny and Phylogeny* (New York: Appleton & Co., 1897), Plate xv.

organischen Formen-Wissenschaft, mechanisch begründet durch die von Charles Darwin reformirte descendenztheorie (Berlin: G. Reimer, 1866).

As the various trees of life developed in the nineteenth and twentieth centuries, they accreted a particular temporality. Each branch point in the tree, down to the veriest twig, was binary—one species splitting off from another. No backwards evolution occurred (characteristics being gained and lost and perhaps gained again): time went forward. This binary, forward-moving development furnished a clockwork temporality in which species fell out as the natural unit of analysis. Similarly, the tree of knowledge gave us discrete units (species/disciplines) that moved only forward. And in both cases, the temporality of the tree is under challenge, as Manuel de Lima beautifully illustrates.[20] Genes jump between species and genera; life looks different if the relationship among many is taken as central (we humans are constituted of far more microbial cells than cells generated by our DNA). Concepts jump between disciplines; knowledge looks different if the symbiosis among arts, humanities, and sciences is taken as central.[21] The act of giving an arrow to time and a rate to its clock is one that historically has been associated with a reductionist ontology, as Michel Serres discusses.[22]

These clocks, then, have consequences. The Svalbard Global Seed Vault on the Norwegian island of Spitsbergen, which attempts to provide a "bank" of the world's seeds for the re-creation of the eternal present in a future world stripped of biodiversity, is a rich example. It weaves together human and natural temporalities in wild and wonderful ways. The human story, one might say, is one of the progress of our species. We could not trust to seeds being held in Costa Rica, say, since Latin America is unstable politically, whereas northern Europe is quintessentially stable. So northern Europe is at an endpoint of evolution; it has moved out of time. (This kind of claim has a rich lineage over the past few hundred years—from Marx's vision of the end of history as the completion of our social evolution to Francis Fukuyama's paean to liberal democracy.[23]) As such, it is a safe house for a vault. Further, the species is the sole unit of analysis: what needs to be preserved is genetic information. All plants subsist only in complex biological and chemical communities, but for this concern only the singular data concerning the gene need be preserved. (The *nec plus ultra* have been propositions to preserve biodiversity as information within computers if we can't do it in the wild: in this case we no longer trust nature to house its own memory.) So we humans remove ourselves from history, for Western democracy will never change, in order to safely remove seeds from history: both move into regular, unchanging clock time. Social time and natural time work well together along one dimension through the metaphors of the metronome and the tree, the metronome giving regularity and the tree a form of change with both regular time in its development and an apogee that is outside of time, an eternal present: *this* political form with *these* species present. (The unit of preservation of much biodiversity policy is the current species, not the possibility of speciation. The end to human history and the end to evolution resonate.)

20. Manuel Lima, "The Power of Networks." http://www.youtube.com/watch?v=nJmGrNdJ5Gw (accessed September 29, 2014).

21. *Practising Re:Enlightenment*. http://www.reenlightening.org (accessed September 29, 2014).

22. Michel Serres, *Genèse* (Paris: Grasset, 1982).

23. Francis Fukuyama, *The End of History and the Last Man* (New York: Free Press, 1992).

THE PAUSE THAT REFRESHES

From the early nineteenth century on, we have seen the growth of vast amounts of data collection about our citizens, the rise of national censuses leading to a flourishing of the arts of statistics (etymologically, information about the state) and classificatory practices.[24] Equally, we have seen the rise of large-scale natural history surveys (enabled by the classificatory practice of Linnaeus) that enabled us to first conceive of the principle of planetary management. This latter can be dated, as Michel Serres argues, to Malthus's essay on population, which brought together in a single equation human growth and the natural capacity of the earth.[25] When you bring together the natural and the social—and, in general, large-scale, cross-domain analogies hover in the air—it's time for an infrastructural inversion,[26] by which I mean turning attention away from the unquestionably contrasting categories of our current chronological time (the natural, the social) and looking at the common tools (the infrastructure) with which we conjure both into describable, manipulable, manageable form. We are not dealing with two temporalities, but with one. It comes down to organization: a commonality of *techniques dispositifs* yields a commonality of temporalities, and these commonalities have been core to our bureaucratic practice for the past several centuries.

In the early nineteenth century, information and communication technologies such as the steamship, the railway, and the telegraph vastly increased the number of connections to be made socially and the extent and potential sway of empires pulsing with a single beat. A large, interconnected population must be able to be managed; the great national censuses provided the key move of taking us from dealing with people in contexts to dealing with classes of people and rationalizing our policies on the basis of these classes.[27] In the same way, the great natural history surveys over this period allowed us to conceive of nature as something to be managed, within human temporality, rather than an infinite resource to be exploited.[28]

The fundamental logic was that as empires grew, information infrastructures accompanied and enabled their development. You needed to manage a lot of people and things. It has been argued, for example, that computing originated

24. See Alain Desrosières, *La politique des grands nombres: Histoire de la raison statistique* (Paris: Editions la Découverte, 1993), and Alain Desrosières and Laurent Thévenot, *Les catégories socio-professionnelles* (Paris: Editions la Découverte, 1988).

25. Michel Serres, *Le contrat natural* (Paris: F. Bourin, 1990).

26. For this concept, see Geoffrey C. Bowker, *Science on the Run* (Cambridge, MA: MIT Press, 1994). Somewhat cryptically, it's where the ontological priority of mediation (there are no essences) meets the ontological priority of infrastructure (our ontologies are inscribed in our [information] infrastructures), and it is very hard to escape them.

27. For the importance of these censuses and their performative power in *creating* categories of work that then became institutionalized, see Desrosières, *La politique des grands nombres*.

28. See, for example, the account of geological mapping in England (matched by work in France and other countries) in Simon Winchester, *The Map That Changed the World: William Smith and the Birth of Modern Geology* (New York: Harper Collins, 2001).

with the organization of the massive insurance agencies that blossomed in the nineteenth century (and whose actuarial tables, later to serve as a basis for epidemiology, relied on census techniques) or in the development of the Hollerith punch-card machine, which enabled the processing of vast datasets in the 1890 American census.[29] In the mid to late nineteenth centuries, railway and insurance industries were the two great behemoths of private enterprise, the largest industries in the world. The railway industry was crucial, as Alfred Chandler notes, to the development of new forms of organizational management, as was the insurance industry.[30] The big thing here was the problem of how to sell insurance to those who traditionally could not afford and would not consume it (in the words of a modern entrepreneur, they were competing with nonconsumption). To make it affordable, you needed really precise actuarial tables and very low-cost procedures for both gathering those tables and processing claims—the margins were very thin, so every efficiency counted. So, as Martin Campbell-Kelly argues, new forms of office organization were developed around the drive for flows of data/information. Punch-card technology such as the Hollerith machines were developed in the context of this pre-prepared niche. The point here is that the infrastructural technology that is said to characterize our epoch—the computer, with its very fast internal clock—is an outcome of empires spreading across the world with the teleology of effective social and natural management. (A point being uncomfortably underlined today by the promises of big data for both the social and the natural world.) In a sense, the niche created the technology, which in turn developed the niche in wildly new directions—a form of circular causal chain that is familiar to biogeographers (it is interminably circular to ask whether the niche or the terraforming organism came first). Ian Hacking, in his work on the traveler's fugue, makes a similar argument about niches and railway technology in mental disorders: he argues that you cannot have a mental illness of people walking in straight lines for days with no memory (Wim Wenders's *Paris Texas* gives a beautiful rendering in its opening sequence) without a transport infrastructure (the railway) that went in very straight lines; for him, the condition is a disease of empire.[31]

And then came the Second World War. In a stunning investment in an untried concept, the US government plowed $3 billion into a massively interdisciplinary project involving chemists, mathematicians, and engineers in order to create a singular weapon of mass destruction: the atomic bomb.[32] A major issue that developed along the way was that you needed very complicated, dense, and precise mathematical calculations in order to get conventional explosives to create just the right symmetrical implosive force to bring the core of the weapon to

29. JoAnne Yates, *Control through Communication: The Rise of System in American Management* (Baltimore: Johns Hopkins University Press, 1989); Martin Campbell-Kelly, "The Railway Clearing House and Victorian Data Processing," in *Information Acumen: The Understanding and Use of Knowledge in Modern Business*, ed. Lisa Bud-Frierman (London: Routledge, 1994), 51-74.

30. Alfred D. Chandler, *The Visible Hand: The Managerial Revolution in American Business* (Cambridge, MA: Belknap Press, 1977).

31. Ian Hacking, *Mad Travelers: Reflections on the Reality of Transient Mental Illnesses* (Charlottesville: University of Virginia Press, 1998).

32. Richard Rhodes, *The Making of the Atomic Bomb* (New York: Simon and Shuster, 1986).

critical mass and unleash the furies. One of the first electronic stored-program computers, the ENIAC, was born. So, fairly directly, a scientific need gave rise to another computer processor. (One could tell two other stories here—about Norbert Wiener, cybernetics, and anti-aircraft guns; or about Alan Turing and codebreaking—that would complicate the picture in interesting ways.) The lesson to be drawn from this is that if one looks at "computers" and "society" as separate and separable things, then one immediately gets drawn into some kind of determinism. With the fundamental cognitive tools of our time, we are dealing simultaneously with industry, organization, and science—and although we might not have a good word for that which is developing and subtends all three, we need the concept if we are to make sense of the question of digital technology and epistemology.

Further, we need to understand that the "digital" occurred before the advent of binary computing per se (indeed, one filiation goes back to the *I Ching* by way of Leibniz).[33] So occurrences of new digital epistemology and ontology can be traced back to earlier branches of the Tree of Knowledge—they certainly predate the Apple. I am making a double point here. First, we know about the world today through binary logic—but this does not mean that this logic is derived from computing: rather the computers that were built reflected the binary logic of empire. Second, we describe our world as made up of binary entities (for example, in the tree of life, it's always a single branching point of this and not that)—and again, this binary division is a management logic and neither a fact about the world nor a consequence of the computing technology we have developed.

Crucial here is that when you make the sociotechnical move to dealing with classes of things rather than the thing itself, you unleash a particular kind of temporal potential, one intimately related to the power of commodification: when in the late nineteenth century a bag of corn became less a singular product from a farm in Illinois and more a class of corn, bundled with its own temporality, the American state became more densely interconnected—essentially through moving from a sequence of handoffs of a bag of corn bundled with its own history (so that the grower would get his cut of the final market price) to being a class of corn existing in a timeless present (and the strongest indicator of the timeless present is the development of the futures market, which relies on stateless entities floating in nonhistorical time).[34] The same *techniques dispositifs* that have worked so well in the social and business worlds have been deployed for our understanding of nature. From the late nineteenth century, natural history surveys have drawn up lists of flora and fauna not by listing individuals but by describing classes. As we have increasingly recognized that nature needs to be managed—just like people and commodities—it is unsurprising that we use the same underlying techniques. Surveillance and monitoring techniques work for both human and natural populations, as do stock-monitoring techniques such as barcoding.

So the organizational form of the census, precipitated by massively increased modes of interconnection (consonant with each of our apotheoses) ushered in

33. Gottfried Leibniz, *Writings on China* (New York: Open Court Publishing, 1994).

34. William Cronon, *Nature's Metropolis: Chicago and the Great West* (New York: W. W. Norton, 1991).

a set of memory practices according to which history does not matter and we operate within an eternal present. It is somewhat true that industry executives are always at optimal age and energy levels, provided our units of analysis are classes of executive (Chief Information Officer) rather than individuals (Roger Brown). Industry executives exist outside of time from the point of view of census time. It is equally true that a bag of Grade A corn from Illinois is the same as one from either of the other "I" states (Iowa and Indiana), providing we do not care about the particularities of soil and microbiome in each. And if we are to manage our planet, let's take ahistorical species out of the flow of time and lodge them in seed banks—taking particular care to let them float outside of time—with our ultimate goal being to preserve current species for all time.

In this modality, we no longer need to remember the particulars; we remember and preserve the categories. This interpellation of classification into the flow of time is resonant with, and as consequential as, our interpellation of bits and bytes into the business of daily life. Recent history has not just been about the triumph of the digital: it is the digital and the database; the analytic potential and the memory practice combine to forge new means of control and communication by tying us to a colonizing temporality.

EFFECT WITHOUT CAUSE . . . SYNCHRONICITY[35]

The Human Memome Project[36] aims to "accomplish for memetics what the Human Genome Project, 1000 Genomes and the Human Variome projects have done for genetics." By sequencing "the memes from 100 of the greatest achievers in the world" they will: "correlate success, impact, health and wellbeing with memes for thought-leaders and world-change." Though many will trace the concept of the meme to Richard Dawkins and *The Selfish Gene*, it is also useful to go back to Gabriel Tarde.[37] For Tarde, the great and good had their ideas copied through imitation, so that the city, which had the greatest number of interconnections, would serve best to rapidly spread "memes" for the betterment of all. Equally, for him, developed nations would spread ideas through imitation by the underdeveloped. The temporality of Tarde and the Human Memome is that ultimately, courtesy of an ever greater density of connections and ever faster information and communication networks, we would all be dancing to the same enlightened tune at the same time. Synchonicity brings us all into an ever faster, ever more synchronized beat, Napoleon's vision of schoolchildren across the French Empire reading the same page of the same book at the same time of day writ even larger.

Synchronization as increasing rapidity matched by ever better coordination has spawned its own industry—the aptly named *Masterclock Times*[38] has a byline:

35. Possibly more obscure than my other subtitles—this is from the Police song.

36. *The Human Memome Project*. http://www.thehumanmemomeproject.com/ (accessed September 30, 2014).

37. Matei Candea, *The Social after Gabriel Tarde: Debates and Assessments* (New York : Routledge, 2010).

38. *The Masterclock Times*. http://masterclocktimes.wordpress.com/ (accessed April 21, 2014).

"In a world demanding ever more precise synchronized time." There are only two spheres of human activity for which the speed of light really is a little bit too slow. First and most obvious is cosmology: our collective ability to observe the universe (especially its putative origin) is severely hampered by the time it takes for signals from the Big Bang and beyond to reach us. The other is the Stock Exchange. *Bloomberg Business Week* headlined a new cable route that would shave off 5.2 milliseconds from the business of stock trading. Not to be outdone, several trading firms have moved within meters of Wall Street so as to get that all important nanosecond advantage. Again, an ever-faster time moves us outside of history by bringing us into an eternal present.

Synchronization has been central to post-Enlightenment historiography. In the 1830s, Jules Michelet produced a nested, three-world theory of human history. On the largest scale was the whole world, with France at its center. Nested inside this was the world of Europe, with France at its center. Nested inside this was the world of France, with Paris at its center. Each of these worlds had synchronic and diachronic extensions. At each level, as you went out in space from the center, so you went back in time, and so you had a smaller-scale recapitulation of world history. The further you went out, the closer you were to nature; India at the first level was maximally subject to the environmental effects of race and climate. At the second level, Germany was Europe's India, and so on.[39] At each point, as you go out in space you both go backwards in time and you go more slowly: India fit in the cadence of the *longue durée*, France to the much faster heartbeat of industry. The ever-increasing pace of time has been commented on since the early nineteenth century: Auguste Perdonnet and others spoke of the annihilation of space and time by the steamship and the train in the 1830s; Babbage averred that ten years in modern England was worth a thousand in Old Cathay; Whitehead believed that there had been more change in five decades in the twentieth century than in the previous fifty centuries. Not to be outdone, Victor Gioscia wrote at the end of the 1960s that there had been more social change in the previous decade than there had been in Whitehead's five, adding: "All this *before* computers."[40] Singularity, anyone?

Time is going faster and faster for those surfing the advancing wave of history. As this happens, the slow are getting relatively ever slower and are effectively excluded: they either get themselves together, go with the flow, or they remain irrelevant and invisible. The same temporality that many comment on in their personal lives—the busier getting busier, the unemployed getting unemployable—is writ large in the temporal logic of the Industrial Revolution. And in both cases synchronization (including using software called "Insync"[41]) is pivotal. Whichever your apotheosis, the pulse needs to be ever faster and globally synchronized so that we can capitalize on ever-denser connectivity afforded by information and communication technology. Time again for an infrastructural inversion.

39. Jules Michelet, *Introduction à l'histoire universelle* (Paris: Hachette, 1831), I, 229-238.

40. Victor Gioscia, *TimeForms beyond Yesterday and Tomorrow* (New York: Gordon and Breach, 1974), 42.

41. *Insync*. https://www.insynchq.com/ (accessed 21 April, 2014).

The temporality of the singularity is of course akin to that of the last days for some Christians: there will be those left behind, and those in the vanguard who will achieve cosmic consciousness. Thomas P. M. Barnett, security advisor to the US military since the end of the cold war, once attained the lofty post of Assistant for Strategic Futures in the Office of the Secretary of Defense.[42] He produced in the early years of the millennium a map entitled "Mapping America's War on Terrorism: An Aggressive New Strategy."[43]

It is an eldritch map of the world. A standard Mercator projection of the world centered on Africa has two zones: an inner zone entitled "the boundary of the non-integrating gap" and an outer zone called "functioning core." The dotted line that separates the two is quite wavy, but continuous. American military activity (hotspots) for the period 1990–2002 is denoted by assorted colored circles indicative of the degree of violence. On the map legend, he writes: "Any time American troops show up . . . it tends to be in a place which is relatively disconnected from the world, where globalization hasn't taken root because of a repressive regime, abject poverty, or the lack of a robust legal system. It's these places that incubate global terrorism." What we need to do is mind the gap: "The goal of this new strategy is simple. *Shrink the Gap*. Don't contain it, shrink it." This paean to globalization makes the link: where we are densely interconnected, there is no problem. And indeed Barnett's chilling map is an uncanny representation of Internet penetration at the period it was produced. (And as Ian Miles has noted, the gap here contains Iraq, which folded into Mesopotamia—a region that Bacon claimed was outside of civilization and thus liable to holy war.[44])

Helge Jordheim has explored the development of single, universal historical timelines out of the historiographical turn in the late eighteenth century (a move explored less analytically, I believe, in Yerushalmi's *Zakhor!*, which chronicles the move in Jewish historiography from an eternal repetition of events to a universal timeline[45]). Hegel was part of this historiographical trend. Stefan Tanaka has shown beautifully how institutions in Meiji Era Japan found themselves constrained to synchronize their histories with world history in order to become true members of our globalizing epoch.[46] New histories of the Japanese people, language, and geology were created to fit the global narrative. As with the Pentagon map, you have to fit into "our" temporality, "our" memory practices in order to partake of the new world order.

But how do we motivate this story of the conjuring of our past into a single, shared memory, a global memory that shapes our individual narratives? The

42. Thomas P. M. Barnett. http://thomaspmbarnett.com/ (accessed September 30, 2014).

43. "Mapping America's War on Terrorism: An Aggressive New Strategy." http://commons.wikimedia.org/wiki/File:Map_of_the_Pentagon%27s_War_on_Terrorism_strategy_2010.jpg (accessed September 29, 2014).

44. Francis Bacon, *An Advertisement Touching a Holy War* [1629], ed. Laurence Lampert (New York: Waveland Press, 2000).

45. Helge Jordheim, personal communication and presentation at Regimes of Temporality conference: http://www.uio.no/forskning/tverrfak/kultrans/aktuelt/konferanser/regimesoftemporality/program/ (accessed October 23, 20140. The title of his talk there was "Temporal Regimes and the Work of Synchronization"; Y. H. Yerushalmi, *Zakhor*: *Jewish History and Jewish Memory* (Seattle: University of Washington Press, 1996).

46. Stefan Tanaka, *New Times in Modern Japan* (Princeton: Princeton University Press, 2004).

epoch of synchronization has been that of the steamboat, the railway, the telegraph, the airplane, and the Internet. As we come closer and closer together, in denser webs, we have to choreograph the movement of capital in such a way as to let it flow frictionless in ideal space/time (a tendency Alfred Sohn-Rethel tied to the invention of Galilean universal space and time[47]); and we have to choreograph our own movements so that they can best match this flow. In so doing, we have to develop a shared memory of the past: a set of containers that will allow us to see that we are the same types of entity engaged in the same processes so that we can profess to be truly synchronized.

The times into which we conjure our history—from the nation-state to the globe, from the individual to the society—are held stable by our information and communication technology. We are dealing at every level with a complex, multifaceted, active time that is contained in and sustained by our information and communication technology. As with the interpellation of binary, tree-based classification into memory practices across the natural and social sciences, this compelling drive to synchronize is intimately tied to our economic and political order.

SAYING IT AIN'T SO

I have been talking about hegemonic sets of memory practices (writ large), which seem in my story to have become our sole resources for describing the past and understanding the present. I have concentrated on machineries of sameness. There are always, at the same time, machineries of difference. The breakdown of binary classifications tied to a single genealogical tree has in many ways already occurred. Many biologists would not accept the tree of life as an accurate representation today (genes jump between species and genuses; backwards evolution occurs). Similarly, many sociologists and anthropologists would not accept the synchronizing narrative: the English language, for example, has simultaneously achieved global status and yet continues to spawn multiple, dynamic, local variations. My real point has not been so much about the realities of the present as about a coherent (if frightening) ideology about the proximate future: our managerial ways of dealing with nature and with one another consistently posit that these will become true (in the future, and in our future stories about the past: one could imagine an inversion of Koselleck's wonderful *Futures Past* as *Future Pasts*).

CONCLUSION: TIME AFTER TIME

This brings us back to the introduction. I began with two proximate futures, by which I mean in general futures that are always somewhere between five and fifty years away. I have endeavored to show that one cannot conceive of any discourse about the future without understanding its memory practices;[48] and further that

47. Alfred Sohn-Rethel, "Science as Alienated Consciousness," *Radical Science Journal* 5 (1975), 65-101

48. I am working with Judith Gregory on classifying the varieties of the future: proximate, the adjacent possible (Kaufmann), the discontinuous future (the singularity), and the incomplete utopian project (Gregory).

these future discourses structure a powerful set of practices in the present that in turn act as gatekeepers for memory practices of the past. I ranged between the social and natural worlds precisely because the rubber hits the road in our management of both in the same sets of information and communication technologies enfolding the same ideologies.

I have claimed that we should see that "progress," invented in the period of the Enlightenment, has always been in tension with an eternal present. Further, I have argued that this eternal present (putting the natural and the social onto regular clock time) is both descriptive about the world and performative in the world (in the sense of reifying categories). I have explained the observation that we used this powerful tool indifferently with regard to the social and the natural in terms of the organization of empire (its management). Finally, I have argued that a core movement today—consequent upon these changes—has been the attempt to tie us all to a single, ever-faster, clock time, though with the codicil that as with all universalizing attempts it bears the mechanisms of its own failure.

This paper is a counterpoint to the mythology of progress that seems so hard to shake: even as the word disappears from the English language, it continues to hold sway over many historical accounts. Progress may indeed be a thing of the past; may we find a current counter to the eternal, synchronized present.

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