Digital Weberianism: Bureaucracy, Information, and the Techno-rationality of Neoliberal Capitalism

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ABSTRACT

The social infrastructures that constitute both public and private administration are increasingly entangled with digital code, big data, and algorithms. While some argue these technologies have blown apart the strictures of bureaucratic order, we see more subtle changes at work. We suggest that far from a radical rupture, in today's digitizing society, there are strong traces of the logic and techniques of Max Weber's bureau; a foundational concept in his account of the symbiotic relationship between modernity, capitalism, and social order. We suggest the manner through which these techniques have shaped contemporary systems of social administration helps explain the remarkable legitimacy digital governance has acquired. We do this by exploring how digital

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technologies draw from, and give new substance to, the three key principles of Weber's theory of the bureau—efficiency, objectivity, and rationality. We argue that neoliberalism, or the widespread economization of politics, has conditioned the digital versions of these principles, not least by subordinating social ends to technical means. At the same time we argue that digitalism engenders the privatization of authority, not least through its "elective affinity" with market logics.

I. NEW ORDER

At the heart of our digitally mediated world is a social paradox that arcs between order and emancipation. On the one hand, digital technologies appear to have contributed to a new era of openness, adaptability, and transparency in the spheres of public and private administration.[1] For instance, it requires little effort, cost, or transportation to enroll in online university classes with preeminent scholars. It has become routine to track passport renewals through the Home Office and know in every instance its change in status. Anyone with an internet connection can view seemingly endless hours of legislative deliberation and international diplomacy, sometimes in the form of leaked documents, from the comfort of their home, and it is similarly convenient to publicly comment on government (in)efficiencies or corporate performance through online ratings.

These affordances have led celebrants of digital technologies to argue that the hierarchical governing typical of the classic bureaucracy has collapsed.[2] It is proposed that the porosity of boundaries around previously impervious social categories, like public and private, can be understood as the proverbial rusting away of the iron cage of modern bureaucratic life, giving rise to new freedoms, new social relations, and new cognitive orientations.[3] In this emancipated world, cities are now "smart" because of constant data representations and possibilities for real-time feedback. Science and academic research are now "open," no longer cloistered in intellectual citadels. Data is now "big" and

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1. *See generally* YOCHAI BENKLER, THE WEALTH OF NETWORKS: HOW SOCIAL PRODUCTION TRANSFORMS MARKETS AND FREEDOM (2006) (discussing the production and freedom of information, knowledge, and culture as well as their effects on the way we see the state of the world).

2. *See generally* Daniel Kreiss et al., *The Limits of Peer Production: Some Reminders from Max Weber for the Network Society*, 13 NEW MEDIA & SOC. 243 (2011) (exposing the analytical weaknesses in the consensus view and offering a new perspective for studying contemporary digital media).

3. *See id. See generally* R.A.W. RHODES, UNDERSTANDING GOVERNANCE: POLICY NETWORKS, GOVERNANCE, REFLEXIVITY AND ACCOUNTABILITY (1997) (discussing developments in British government).

accessible for interpretation and interrogation by amateurs and experts alike.

Yet, rather than less bureaucracy, we seem to experience its propagation and expansion at every turn. There has been a rapid proliferation of procedures, rules, and new forms of surveillance approaching what some have called "total"[4] or "universal" bureaucratization.[5] Whether interacting with corporations, markets, governments, or just other people, contemporary life seems to be drowning in a tsunami of rule-based, digitally-mediated, interactions. The list is long and growing, from e-government to online commercial transactions, navigation systems, credit and identity checks, data-driven reputation tables, and so on. Purchases are logged, performances are evaluated, preferences and decisions are archived, and suggestions are put to us based on what others read, do, and think.

The accumulation of data, recognition of patterns, and profiling of the social body is not limited to individuals or relationships between them. Large data sets are being created and consumed by public and private institutions alike. From small spinoff companies to large corporations, governments to think tanks and specialist data firms, all are engaged in combining, recombining, and presenting data to tell new stories about social life. Universities, publishers, and funding bodies track academic texts with digital object identifiers like ORCID, not unlike the radio-frequency identification (RFID) microchips embedded in commodities, passports, and pets, if not human bodies.[6] Universities gather massive amounts of data on their researchers, teachers, and student bodies; buy space on commercial platforms; upload data; and buy it back as reputational values. The list goes on.

What are we to make of this state of affairs? The apparent paradox, of both greater transparency and greater opacity, or of emancipation, but with greater control and order, produces more questions than it

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4. *See* DAVID GRAEBER, THE UTOPIA OF RULES: ON TECHNOLOGY, STUPIDITY AND THE SECRET JOYS OF BUREAUCRACY 18 (2015).

5. *See* BEATRICE HIBOU, THE BUREAUCRATIZATION OF THE WORLD IN THE NEOLIBERAL ERA: AN INTERNATIONAL AND COMPARATIVE PERSPECTIVE 15 (2015).

6. ORCID codes or Open Researcher and Contributor IDs are internationally standardized alphanumeric codes that uniquely identify academic and scientific authors. They are similar to digital object identifiers (DOI) that are used to identify texts, but in the case of ORCID they are attached to and identify people. *See* ORCID, https://orcid.org/ (last visited Feb. 19, 2018). Proponents argue that academic DOIs improve efficiency, which is most likely true. Others argue that academic DOIs such as ORCID also enable new forms of enclosure, commodification, and marketization. For a discussion, see Chris Muellerleile, *Open Access Panacea: Scarcity, Abundance, and Enclosure in the New Economy of Academic Knowledge Production*, *in* THE ROUTLEDGE HANDBOOK OF THE POLITICAL ECONOMY OF SCIENCE 132 (David Tyfield et al. eds., 2017).

answers.[7] What, for instance, does "openness" really mean, to whom, and in relation to what?[8] If, as Deleuze argued, the important institutions of modernity, such as the factory, the school, and the family, are doomed in the new "society of control," what roles are digital technologies and big data playing in their reformulation?[9] If the old bureaucratic hierarchies have come tumbling down, how do we explain greater inequalities and new forms of stratification? In this paper, we explore these paradoxes. However, rather than argue that the old bureaucratic order has collapsed and that a radically new, post-bureaucratic order has now emerged, we suggest that key features of Weber's political bureaucracy—efficiency, objectivity, and rationality—have morphed and given form to a less visible, but no less powerful *digital bureaucracy*.

No longer is the modern bureaucracy an anonymous world of "papers in motion."[10] Rather, the digital bureaucracy is a world of *data in motion*, given direction and shape by new kinds of digital infrastructures—from codes to algorithms to platforms, whose digital footprint replaces the material archive, and whose experts are the new data scientists.[11] However, like all institutions of rule, the new digital bureaucracy—like Weber's classical bureaucracy, faces challenges to its legitimacy, especially following the erosion of the border between economic and political, and public and private life. This struggle over legitimation is intensified by the post-modern "condition," where it is seemingly impossible to form consensus around any sort of universal truth or knowledge claim, particularly when concerned with a *social* ambition.[12] As we demonstrate below, legitimation is now managed through the *relative disinterest* of numbers, the *relative distance* between the architects/experts managing the digital bureau and those that it is governing, and the *relative alignment* between digital technologies and the marketization of social relations.

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7. On this general paradox between emancipation and control, not tied directly to digital technologies, but nevertheless apt to our general argument, see ZYGMUNT BAUMAN, LIQUID MODERNITY (2000); Gilles Deleuze, *Postscript on Societies of Control*, 59 OCTOBER 3, 4 (1992).

8. For a discussion of the political, economic, and moral complexities of the notion of "openness" in academic publishing, see Jana Bacevic and Chris Muellerleile, *The Moral Economy of Open Access*, EUR. J. SOC. THEORY 1 (2017), http://journals.sagepub.com /doi/full/10.1177/1368431017717368.

9. *See* Deleuze, *supra* note 7, at 4.

10. *See* PETER BERGER ET AL., THE HOMELESS MIND: MODERNIZATION AND CONSCIOUSNESS 47 (1974).

11. See Figure 1 for a sketch.

12. *See* David B. Clarke, *Space, Knowledge and Consumption*, *in* KNOWLEDGE, SPACE, ECONOMY 209, 209–25 (John R. Bryson et al. eds., 2000).

We have organized our argument in the following way. We begin with an account of Weber's notion of bureaucracy, focusing on its DNA: the principles of efficiency, objectivity, and rationality. We then review the emergence of digital technologies in the context of various theorizations of the information society and economy. In light of this, we then consider how bureaucratic ordering has been transformed as capitalism has become more dependent upon both information and neoliberal markets. We then revisit the three fundamental components of bureaucratic order, and investigate how they have changed in the digital age. In the penultimate section we explore the issue of the legitimation of digital governance, and show how techno-scientific rationality combined with neoliberal ideology have worked together to subordinate social ends to economic means. We conclude by questioning the future possibilities of fracturing what we call the *silicon web*.[13]

II. DEFINING ORDER

The Oxford English Dictionary defines bureaucracy in the first instance as "[g]overnment by officials; a system of government or (in later use) administration by a hierarchy of professional administrators following clearly defined procedures in a routine and organized manner."[14] In this organizational structure of public administration, Hegel saw the consummate historical manifestation of human reason and social ethics as exemplified in the Prussian state.[15] Marx drew upon Hegel's arguments, but was more critical in that he saw the bureaucracy as the direct link between civil society and the state, and as such, a symptom of the bourgeoisie's influence over the state.[16] For

13. Our invocation of a web is not unlike the sieve or mesh that Deleuze uses to describe the society of control. Referring to the change from Foucault's "closed" disciplinary institutions to the relatively open institutions of the "society of control" he says, "[e]nclosures are *molds*, distinct castings, but controls are a *modulation*, like a self-deforming cast that will continuously change from one moment to the other, or like a sieve whose mesh will transmute from point to point." Deleuze, *supra* note 7, at 4.

14. *Bureaucracy*, OXFORD ENGLISH DICTIONARY, http://www.oed.com/view/Entry/24905?redirectedFrom=bureaucracy#eid (last visited Nov. 5, 2017).

15. *See* M.W. Jackson, *Bureaucracy in Hegel's Political Theory*, 18 ADMIN. & SOC'Y 139, 149 (1986). Jackson argues that a key distinction between Hegel's and Weber's theories of (state) bureaucracy is that the former imbues bureaucracy and bureaucrats with an ethical imperative to serve the common good. Weber is not unconcerned with ethics, but is more interested in the autonomy of bureaucratic structures from the realm of moral-ethical or "political" questions. For Weber, the bureaucracy is driven first and foremost by what we might today call "technocratic" rationality (see the below discussion of various forms of Weberian rationality).

16. *See* NICOS P. MOUZELIS, ORGANIZATION AND BUREAUCRACY: AN ANALYSIS OF MODERN THEORIES 8–10 (1968).

Marx, then, bureaucratic public administration was one of the many manifestations of the class dynamics of capitalism.[17]

But it was Max Weber who was particularly interested in exploring and explaining the institutions of state rule, and particularly how the operations of bureaucratic organization produced the legitimacy necessary for domination by legal-rational means.[18] For Weber, bureaucracy was the organizational manifestation of a formal techno-scientific rationality that in part defined modernity.[19] However, as Berger et al. point out, while technologically-driven production and bureaucratic administration are both key phenomena of modernity, there is an important difference between them in that bureaucracy is not intrinsic to a particular goal—such as profit making.[20] In other words, it is not necessary that the bureaucratic form becomes dominant in modernity and capitalism. That said, Weber's bureaucratic form of organization, while a contingent alignment in the sense referred to above, has nevertheless been a highly synergistic form for the expansion of modern capitalism, and as a primary carrier of modernization.

Weber was broadly interested in how, throughout history, social domination appeared as a legitimate form of social order. As opposed to "traditional" or "charismatic" domination, which were more common in patrimonial or feudal systems, bureaucratic organization is based on legal domination, or power that is limited by an abstract, but codified, set of rules.[21] Weber argued that it was possible to observe bureaucratic structures throughout human history, but it was only in the modern industrial socio-economy that he found truly efficient and rational bureaucratic structures. Crucially, in the maturing industrial capitalism of the early twentieth century, he observed that bureaucratic ordering was important not only for public administration through what he called the "agency," but also the private administration of large-scale production, or what he called the "enterprise."[22]

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17. *See* DANIEL BELL, THE COMING OF POST-INDUSTRIAL SOCIETY: A VENTURE IN SOCIAL FORECASTING 28–29 (1999). Marx did not spend much time on bureaucracy, particularly after his turn to economics, although a critical analysis of bureaucracy is implied in much of his critique of the capitalist state. For a thorough discussion of Marx's and Marxism's conceptions of bureaucracy, see *id*. at 49–119.

18. *See generally* 1 & 2 MAX WEBER, ECONOMY AND SOCIETY (Guenther Roth & Claus Wittich eds., 1978) (providing an outline of interpretive sociology).

19. *See* Herbert Marcuse, *Industrialization and Capitalism*, I/30 NEW LEFT R., 3, 5 (1965).

20. BERGER ET AL., *supra* note 10, at 41.

21. *See* WEBER, *supra* note 18, at 217–26. *See generally* MOUZELIS, *supra* note 16 (discussing the study of bureaucracy).

22. WEBER, *supra* note 18, at 956.

Weber's description of the modern bureaucracy in Chapter XI of *Economy & Society*[23] is extensive, and we will not attempt to reproduce it here. There are, however, *three crucial characteristics* of a Weberian bureaucracy that need a clear definition at the outset.[24] The first is that the labor of bureaucratic administration is divided up into offices or "bureaus" constituted by professional and specialized workers who are, or have, the potential to become, technical experts.[25] Bureaucratic officials are thus hired and promoted based on objective criteria related to this vocation or expertise. Second, the bureau is managed according to a codified and exhaustive set of procedures or rules, as well as through a managerial hierarchy, the rulings of which are subject to appeal and potential redress.[26] And third, the bureau is constituted out of its management of communication and information, or what Weber calls "the files,"[27] and Berger et al. call "papers in motion."[28] In other words, a bureaucracy is an organizational form reliant upon, and designed to, exert control over information, knowledge, and communication.[29]

Extending his argument from these three characteristics, Weber explores the broad outcomes of social ordering based on these *three interrelated principles* that are constitutive of bureaucratic ordering: efficiency, objectivity, and rationality. *Efficiency* is a measurement of the appropriateness between the means and the ends as it relates to an organization's goals.[30] In other words, to be efficient is to choose the best technique to achieve a desired result. Weber argues that particularly in modernity, bureaucratic structures are designed around this logic and

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23. *Id.* at 956–1005.

24. We are abridging Weber's six key characteristics of "modern bureaucracy." *Id.* at 956–58. Furthermore, we are largely referring here to Weber's "ideal type" of bureaucracy, something he says can "seldom if ever" be found in the real world. *Id.* at 20–21. Nevertheless, we follow Weber's suggestion that compelling analytical value can be realized by exploring the essential characteristics of the bureaucratic form particularly in attempting to conceptualize what we see as a broad historical shift toward digitalism and the related contradictions of "data" obsessed governance. Simply stated, the ideal type is a starting point for a more concrete analysis of the bureaucratic qualities of digitalism. For a discussion of the analytical benefits and drawbacks of employing the ideal type of bureaucracy see MOUZELIS, *supra* note 16, at 38–54; HIBOU, *supra* note 5, at xiv–xv.

25. *See* WEBER, *supra* note 18, at 956–58.

26. *Id.*

27. *Id.* at 957.

28. *See* BERGER ET AL., *supra* note 10, at *passim*.

29. Weber writes, "Bureaucratic administration means fundamentally domination through knowledge. This is the feature of it which makes it specifically rational." WEBER, *supra* note 18, at 225. *See generally* JAMES R. BENIGER, THE CONTROL REVOLUTION: TECHNOLOGICAL AND ECONOMIC ORIGINS OF THE INFORMATION SOCIETY (1986) (identifying the "crisis of control" and the resulting "Control Revolution").

30. *See* MOUZELIS, *supra* note 16, at 8–10.

they become so good at routinizing the means of achieving their ends that they resemble well-oiled machines. He notes, "[t]he decisive reason for the advance of bureaucratic organization has always been its purely technical superiority over any other form of organization. The fully developed bureaucratic apparatus compares with other organizations exactly as does the machine with the non-mechanical modes of production."[31]

The second principle is the *objectivity* of bureaucratic operation, or autonomy from the influence of short-term political whims or human passions. However, as Weber observes, "[b]ureaucracy develops the more perfectly, the more it is 'dehumanized,' the more completely it succeeds in eliminating from official business love, hatred, and all purely personal, irrational, and emotional elements which escape calculation. This is appraised as its special virtue by capitalism."[32] In the public realm, this bureaucratic objectivity reflects the "procedural neutrality" of the state,[33] or the broader liberal principal of the rule of law, both of which are crucial for maintaining the legitimacy of bureaucratic rule. In the private realm, the objectivity of bureaucracy relates not to politics, or a lack thereof, but rather to the management of the enterprise based on techno-scientific principles.[34]

Weber's concept of *rationality* is notoriously difficult to define and is entangled with his broader arguments about modernity and cultural meaning. At its simplest, Weberian rationality is the socio-cultural manifestation of Western reason in the context of capitalism.[35] In relation to Weber's discussion of bureaucratic order, rationality mainly refers to the procedural efficacy of bureaucratic operations.[36] All decisions at every level of the bureaucratic hierarchy should be rational to the extent that they employ scientific knowledge to calculate the efficiency of the execution of tasks, all in a repetitive manner. As such, bureaucracies, according to Weber, leave little room for inefficiencies and eventually become machines for "rationalizing" work processes.

While this version of *formal* rationality dominates in bureaucratic capitalism, and appears as an imposed form of hierarchical domination, Weber's full conception of rationality is more nuanced. Kalberg divides Weber's rationality into four interrelated categories: practical,

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31. *See* WEBER, *supra* note 18, at 973.

32. *Id.* at 975.

33. Paul du Gay, *Bureaucracy and Liberty: State, Authority, and Freedom, in* THE VALUES OF BUREAUCRACY 41, 48–49 (Paul du Gay ed., 2005).

34. *See* HIBOU, *supra* note 5, at 16.

35. *See* Herbert Marcuse, *Industrialization and Capitalism*, I/30 NEW LEFT R., 3,5 (1965).

36. *See* WEBER, *supra* note 18, at 973–75.

theoretical, substantive, and formal.[37] In this article we are mainly concerned with the latter two, but the former two are also important. *Practical* or pragmatic rationality is the set of egoistic interests through which individuals evaluate mundane day-to-day decisions.[38] At a basic level it is this rationality that guides routine means-ends actions. *Theoretical* or "intellectual" rationality refers to the conceptual or metaphysical framework that most humans find necessary to make meaning out of mundane daily life.[39] This sort of rationality is not directly implicated in actions, but rather in thought and contemplation. *Substantive* rationality is the value-laden framework that helps individuals negotiate "reality's flow of unending empirical events."[40] This type of rationality does not determine means-ends decisions in the same way that practical rationality does. Rather, it is a broader, albeit individualized, ethical framework or set of "value postulates"[41] through which humans determine action in particular situations. Substantive rationality is always in relation to a broader theoretical rationality, but it is based on an individual perspective and may vary across situations. *Formal* rationality is the depersonalized, even dehumanized, set of codified rules, laws, and regulations. This sort of rationality is based on scientific and economic calculation, is historically predominant in capitalistic societies, and is most closely associated with bureaucratic order.

In these three bureaucratic principles, Weber imagined—in the ideal—a level of perfection[42] in social administration. As a result, he believed that historically bureaucratic administration would emerge as the primary form of social organization and wipe away others based on inheritance, myth, or charisma. But, for Weber, the adherence to rational social ordering by bureaucratic rationality also produced an "iron cage," where substantive rationality was significantly constrained across social institutions, with nonconforming action inside instrumental bureaucratic structures virtually impossible.[43] So while

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37. *See* Stephen Kalberg, *Max Weber's Types of Rationality: Cornerstones for the Analysis of Rationalization Processes in History*, 85 AM. J. SOC. 1145, 1145 (1980).

38. *Id.*

39. *Id.* at 1153.

40. *Id.* at 1155.

41. *Id.*

42. See generally Marcuse, *supra* note 35 for a lengthy discussion and critique of the normative and teleological implications of Weber's theory of rationality (and bureaucracy).

43. MAX WEBER, THE PROTESTANT ETHIC AND THE SPIRIT OF CAPITALISM 123 (1978). The "iron cage" is an infamously controversial translation by Talcot Parsons from the German *stahlhartes gehäuse* that we will not attempt to adjudicate here, other than to say it could instead be translated to something akin to a "shell as hard as steel." *See* Peter Baehr, *The "Iron Cage" and the "Shell as Hard as Steel": Parsons, Weber, and the*

the authority of procedure, and the science and hierarchy of decision making together produce a separation from whim and passion, the trade-off is a level of "disenchantment" that takes its toll on human creativity and will, if not liberty.[44]

Consequently, bureaucratic social ordering is a means of domination in both its hierarchical form but also as a result of its capacity to engender in individuals a substantive ethic—or a value system—based upon calculation and techno-scientific reason. In other words, capitalism is historically remarkable for its capacity to produce an affinity toward, or a unity of, ordering across the four categories of rationality, and increasingly beyond the formally economic or scientific fields toward— particularly in neoliberal capitalism—virtually every facet of social life.

III. IN-FORMING ORDER

For much of the twentieth century, the strengths of bureaucratic organization were "functionally indispensable to the operation of the modern capitalist state and enterprise,"[45] not least because of what Weber called the "increasing complexity of civilization."[46] The modern bureaucratic state, formed from legal-rational principles and designed to cope with this complexity, also created a separation from both the interests of private capital, on the one side, and the whims of public politics, on the other. In other words, the modern bureaucratic state claimed its legitimacy through serving a public function—or the collective interest—by being blind to the influence of individuals.

Beniger argues that it was not civilization, per se, but the increasing complexity of economic production, distribution, and consumption in the Second Industrial Revolution, beginning in the late nineteenth century, that created the conditions for the functional centrality of the bureaucracy.[47] Following advances in telecommunications, which caused a "crisis of control" for the socio-economy, the only reasonable solution was rationalization through bureaucratic management. For Beniger, Weberian rationalization was a practice of "preprocessing" of information,[48] or the "destruction or ignoring of information in order to

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Stahlhartes Gehäuse Metaphor in the Protestant Ethic and the Spirit of Capitalism, 40 HIST. & THEORY 153, 153–69 (2001).

44. *See* Michael Reed, *Beyond the Iron Cage? Bureaucracy and Democracy in the Knowledge Economy and Society*, *in* THE VALUES OF BUREAUCRACY 120 (Paul du Gay ed. 2005).

45. *Id.* at 119.

46. WEBER, *supra* note 18, at 972.

47. *See generally* BENIGER *supra* note 29.

48. *See* BENIGER *supra* note 29, at 390–425. Beniger's fascinating, book-length argument is impossible to succinctly summarize, but his description of the "control

facilitate its processing."[49] In this sense, the essence of contemporary bureaucracy is its capacity to create abstractions through devices like formalized codes, categories, and rules based upon, not actual lived experiences but the imperative to govern life through market-like mechanisms.[50] In other words, the technological transformation of the economic system, beginning in the late nineteenth century and continuing today, which included an intensifying spatial division of labor and the vast circulation of raw and finished goods, necessitated a new system for sorting and sifting of immense amounts of information. The answer to this systemic need was the modern bureaucracy; it provided speed of administrative operation and unique efficiency for managing information. As a result, it became the model for both the corporation and the state, and thus private and public administration.

The important question for us is how—and through what kinds of processes and logics, and with what kinds of outcomes—have digital information technologies changed bureaucratic structures? The scholarly literature on digital technologies, as they relate to transformations in the socio-economy, is too extensive to attempt to summarize here.[51] There is a long history of theorizing the information society and economy.[52] This history goes back at least as far as Bell's 1973 argument that post-industrial society would increasingly assume

revolution" of the second industrial revolution is concerned first with the invention of all sorts of new information-processing technologies (broadly defined) such as the modern typewriter (1873), the stock ticker (1870), and the "systematization of office record keeping" (early 1870s), but also things like the first university business, commerce, and administration schools (1880s), and the U.S. national professional organization of accountants (1886). *Id.* at 390–91. More importantly, Beniger is interested in various components of the "centralized, functionally departmentalized organizational structure in the mid-1890s," which was accompanied by a startling growth in bureaucratic workers. *Id.* at 391. Compared to overall 28% growth of the U.S. workforce between 1900-1910, he cites a 45% growth in managers and a 127% growth in clerical workers. His argument is that more than anything else, these new workers were *information processors*. *Id.* at 393.

49. BENIGER *supra* note 29, at 15.

50. *See* HIBOU, *supra* note 5, at 24–32.

51. *Cf.* CHRISTIAN FUCHS, DIGITAL LABOUR AND KARL MARX (2014); FRANK PASQUALE, THE BLACK BOX SOCIETY: THE SECRET ALGORITHMS THAT CONTROL MONEY AND INFORMATION (2015); Christian Fuchs, *Capitalism or Information Society? The Fundamental Question of the Present Structure of Society*, 16 EUR. J. SOC. THEORY, 413 (2012); Daniel Marcus Greene & Daniel Joseph, *The Digital Spatial Fix*, 13 TRIPLE C 223 (2015); Paul Langley & Andrew Leyshon, *Platform Capitalism: the Intermediation and Capitalisation of Digital Economic Circulation,* 3 FIN. & SOC. 11 (2017); Jim Thatcher et. al., *Data Colonialism Through Accumulation by Dispossession: New Metaphors for Daily Data*, 34 ENV'T & PLAN. D: SOC'Y & SPACE 990 (2016).

52. *See* Christian Fuchs, *supra* note 51, at 413 (2012); ARMAND MATTELART, THE INFORMATION SOCIETY (2003); FRANK WEBSTER, THEORIES OF THE INFORMATION SOCIETY (3d ed. 2006).

technical characteristics particularly around the importance of codified knowledge.[53] More recently, Castells elaborates a "network society" where he attempts to grasp the informational flows that underpin interconnection and globalization, particularly in relation to the changing dynamics of production.[54] Benkler, who concentrates on shared computing software, extends Castells's work, focusing on the breakdown of centralized and hierarchical organization—or the flattening out of processes of production into what he calls "commons-based peer production" where information is no longer walled off inside organizational structures.[55] However, there have been far fewer attempts to interrogate common processes of social ordering that cut across institutional and organizational types.[56]

The importance of the bureaucracy as an organizing social structure, and its demise, is looming in the background in all of these studies. The imminent passing of bureaucratic ordering has been predicted since Weber theorized its emergence.[57] Not surprisingly, those who advocate ending the bureaucratic structuring of social life usually invoke some version of the *iron cage* that might be overcome through things such as information sharing, institutional transparency, open innovation systems, or just participation. Benkler in particular presents a utopian account of the breakdown of hierarchy, organizational rigidity, and the exclusively private ownership of the means of production, all of which lead to increasing freedom and autonomy for individuals.[58] In collaboration with others, individuals will build networks of information sharing and will, in turn, liberate themselves from a reliance on the strictures of formalized and procedural bureaus and their incipient forms of information management. A similar set of ideas fuel the enthusiasm for cryptocurrencies like Bitcoin, the celebrants of which argue that decentralized digital networks will mitigate both the purported tyranny of state-sponsored central banks and excessive surveillance by corporate banks.[59]

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53. DANIEL BELL, THE COMING OF POST-INDUSTRIAL SOCIETY 77–79 (1999).

54. *See* MANUEL CASTELLS, THE RISE OF THE NETWORK SOCIETY (1996).

55. BENKLER, *supra* note 1, at 60.

56. *But see* Jannis Kallinikos, *Bureaucracy Under Siege: On Information, Collaboration, and Networks*, *in* MANAGING MODERNITY: BEYOND BUREAUCRACY? 130 (Stewart Clegg, Martin Harris & Harro Hopfl eds., 2011).

57. *See* Martin Harris et al., *Introduction: Managing Modernity: Beyond Bureaucracy?*, *in* MANAGING MODERNITY: BEYOND BUREAUCRACY? 1, 3 (Stewart Clegg et al. eds., 2011).

58. *See generally* BENKLER, *supra* note 1.

59. *See generally* DAVID GOLUMBIA, THE POLITICS OF BITCOIN: SOFTWARE AS RIGHT-WING EXTREMISM (2016) (analyzing the political ideas and motivations behind Bitcoin and the cryptocurrency movement); Bill Maurer et. al., *"When Perhaps the Real Problem is Money Itself!": The Practical Materiality of Bitcoin*, 23 SOC. SEMIOTICS 261 (2013)

Embedded in the critique of bureaucracy is a desire to separate the economic and the social, or at least to produce the conditions whereby social life and its reproduction need not be dominated by the calculative rationality of capitalist bureaucracy.[60] Particularly in the late 1960s and 1970s, the bureaucratic structures that became the basis of social organization in the early to mid-twentieth century came to be seen as a tool of domination by 'the establishment.' In the case of corporate bureaucratic apparatuses, they achieved domination by keeping wages low. But, both corporate and state bureaucracies preserved what were seen as outdated social values including racial and gender discrimination, and modes of secrecy that obscured tendencies toward imperialism and war.[61] At the same time, overly formal social organization in general was criticized as an impediment to individual development, and this contributed to diminished legitimacy for bureaucracies as a means of social administration.[62]

If the new communications technologies of the 1980s and 1990s were part of the nascent reorganization of the social and likewise engendered new forms of consciousness, the digital technologies of today constitute a fully-fledged digital way of life. Over the last twenty-five years, digital logics, machines, and techniques have moved from the background to the foreground of both capitalist production as well as capitalist social relations. This is closely related to the growing importance of information and knowledge to the production of economic value. While the importance of discursive phenomena like the "information society" or the "knowledge economy"[63] have been hotly debated in economics and sociology, there is little question that (1) there is simply more data, information, and codified knowledge available, and (2) as a result, its management has become considerably more complicated.[64]

(comparing the unsettled qualities of Bitcoin to those of various money forms through history).

60. *See* Kallinikos, *supra* note 56, at 145–46.

61. *See* LUC BOLTANSKI & ÈVE CHIAPELLO, THE NEW SPIRIT OF CAPITALISM 167–215 (Gregory Elliot trans., 2005).

62. *Id.*

63. Bob Jessop, *A Cultural Political Economy of Competitiveness and Its Implications for Higher Education, in* EDUCATION AND THE KNOWLEDGE-BASED ECONOMY IN EUROPE 14 (Bob Jessop et al. eds., 2008).

64. *See generally* ROB KITCHIN, THE DATA REVOLUTION (2014) (presenting an analysis of the "Data Revolution" based on an extensive engagement with literature from across humanities, social sciences and the sciences, and from popular culture, journalism, and industry publications, and on first-hand experience of working on large-scale data archiving/infrastructure and data analytics projects).

In the digital economy, consolidating control over information is no longer a secondary process in support of some other production process. Rather, the management and manipulation of data and information is itself increasingly the object of value creation.[65] Graeber observes "the algorithms and mathematical formulae by which the world comes to be assessed become, ultimately, not just measures of value, but the source of value itself."[66] But in this reaction to the new *control crisis*, where information management has seemingly switched from the cost of doing business, to the actual object of value production, what are the consequences for the principles of bureaucracy? Put differently, is it possible that the visible manifestations of the bureaucracy as we once knew it have been transformed in this rapidly digitized and data-filled word, though its organizing logics remain?

A. *Intelligent Efficiency*

One of the fundamental justifications for the massive expansion of digital information technologies has been their purported efficiency.[67] Of all the reasons efficiency is important for capitalist social relations in the twenty-first century, perhaps the two most powerful are financial and environmental. Not surprisingly, these are also the two most crisis-prone spheres of socio-economic life over the last decade.[68]

While improving efficiency in these spheres is not unique to the digital age, it has taken on greater importance with the advancement of information technologies. For much of the political class in the United States, and even more so in the United Kingdom and Europe, the financial crisis of 2008 has translated into drastic budget cuts or "austerity,"[69] in what the former U.K. Prime Minister David Cameron was fond of calling "doing more with less."[70] Cameron specifically addressed "making government digital" in a September 2015 speech when he labeled "efficiency" as one of his three principles for "delivering

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65. *See* Thatcher et. al., *supra* note 51. *See generally* DEBORAH COWEN, THE DEADLY LIFE OF LOGISTICS (2014) (exploring how the art and science of logistics transform our political relations to our world and ourselves).

66. GRAEBER, *supra* note 4, at 41.

67. *See* KITCHIN, *supra* note 64, at 113–27.

68. *See generally* Nancy Fraser, *A Triple Movement?*, 81 NEW LEFT REV. 119 (2013) (positing a "triple-movement" of marketization, social protection, and emancipation as a framework from which to think from).

69. *See generally* MARK BLYTH, AUSTERITY: THE HISTORY OF A DANGEROUS IDEA (2013) (discussing austerity and its effects on the world).

70. *See* Nicholas Watt, *David Cameron Makes Leaner State a Permanent Goal*, THE GUARDIAN (Nov. 12, 2017), https://www.theguardian.com/politics/2013/nov/11/david-cameron-policy-shift-leaner-efficient-state.

a smarter state."[71] With regard to the environment, reducing the carbon footprint of pretty much everything has become a socio-economic imperative in the face of human-induced climate change. Attempts to more efficiently produce and use energy are heavily dependent on information technologies. Just one example is the management of the electricity infrastructure through "smart grid" technology, which in turn is dependent on an interconnected system of sensors and meters that collect information about energy production and consumption.[72] Households can, for example, monitor their usage via dedicated digital tools aimed at teaching them the value of switching off lights in unused rooms, or appreciate the costs of having digitally-based equipment "on standby." More broadly, while not actually proven to improve efficiency, saving time and resources is one of the key driving forces behind the "internet of things,"[73] or better yet, the "internet of everything"[74] where all kinds of everyday objects and devices, from the mundane to the sophisticated, are connected to wireless networks in hope of saving time and energy.

These two discourses of financial austerity and sustainable environments intersect in the smart city discourse.[75] In promises of more efficiently delivering city services, as well as reducing the carbon footprint of urban dwellers and institutions, the data-driven smart city represents the vanguard of digital bureaucratic efficiency. Smart city boosters, the most influential of whom are private corporations like IBM, Cisco, and Siemens, all promise to employ information and communication technologies to make more efficient the provision of water and electricity, trash and sewer administration, traffic management, and policing and public safety.[76] Driven by "big data," it is argued that real-time visualizations in centralized control rooms and web-based data dashboards allow both city administrators and residents to quickly make decisions about broad spheres of governance and urban

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71. Prime Minister: My Vision for a Smarter State (Sept. 11, 2015), https://www.gov.uk/government/speeches/prime-minister-my-vision-for-a-smarter-state.

72. *See* Pedro S. Moura et al., *The Role of Smart Grids to Foster Energy Efficiency*, 6 ENERGY EFFICIENCY 621, 626 (2013).

73. Luigi Atziori, Antonio Iera & Giacomo Morabito, *The Internet of Things: A Survey*, 54 COMPUTER NETWORKS 2787, 2787 (2010).

74. John Chambers & Wim Elfrink, *The Internet of Everything Will Change How We Live*, FOREIGN AFF. (October 31, 2014), https://www.foreignaffairs.com/articles/2014-10-31/future-cities.

75. *See generally* Taylor Shelton et al., *The 'Actually Existing Smart City'*, 8 CAMBRIDGE J. REGIONS, ECON. & SOC'Y 13 (2014) (demonstrating the material effects these policies have on actual cities around the world).

76. *See generally* Rob Kitchin, *The Real-Time City? Big Data and Smart Urbanism*, 79 GEOJOURNAL 1 (2014) (detailing how cities are being instrumented with digital devices and infrastructure that produce "big data").

life.[77] And while the surveillance of the city through data collection, processing, and visualization represents the frontier of a new realm of urban competition[78] and modulated social control,[79] this is often justified through appeals to improving efficiency.

Here, the acceleration of information collection, its filtering, and new forms of provision at the pace of "real time" is one of the key drivers of efficiency. However, just because information is available at rapid speed does not mean decisions become easier. On the contrary, instead of dealing with "batches" of information that may have arrived on a weekly, daily, or hourly basis, information now flows through the bureaucracy almost constantly.[80] While this real-time flow may make some decisions easier (or just hidden through automation), it also raises expectations for hasty bureaucratic information management, making some decision-making more difficult, if not prone to dysfunction and crisis.[81] But this acceleration is only possible because the process of data collection, processing, and presentation has been automated as to remove the necessity (or possibility) of human decisions, or at least filtered through a system of abstract categories to present humans with a limited number of options. This is Weberian efficiency writ large.

B. Sizing Up Objectivity

Similarly, the bureaucratic principle of objectivity is changing in relation to digitization, though it has become no less important. Where the modern or industrial bureaucratic apparatus once achieved its political legitimacy through its separation of the whims and passions of politics through professionalization[82] on the one hand, and its commitment to procedural neutrality, on the other, the digital bureaucracy would appear to achieve its legitimacy through apparent data and algorithmic neutrality. This is best exemplified through the

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77. *See generally* Rob Kitchin et al., *Knowing and Governing Cities Through Urban Indicators, City Benchmarking and Real-Time Dashboards*, 2 REGIONAL STUD., REGIONAL SCI. 6 (2015) (discussing various indicator projects to measure and monitor aspects of cities).

78. *See* Shelton et al., *supra* note 75, at 15–21.

79. *See* Jathan Sadowski & Frank Pasquale, *The Spectrum of Control: A Social Theory of the Smart City*, 20 FIRST MONDAY 67, 71 (2015).

80. *See* KITCHIN, *supra* note 64, *passim*.

81. *See generally* Adrian Mackenzie & Theo Vurdubakis, *Codes and Codings in Crisis: Signification, Performativity and Excess*, 28 THEORY, CULTURE & SOC'Y 3 (2011) (highlighting and exploring some of the underlying themes connecting codes and codings and the production and apprehension of "crisis").

82. *See* Eva Hartmann, *Transnational Private Authority in the Sphere of Education*, 25 IND. J. GLOBAL LEGAL STUD. 217 (2018).

discourse of "big data" where "big" implies not so much a large size, but that data is unfiltered, unadulterated, and semi-autonomous—as if it can speak for itself, or for "all of us." These ontological assumptions about data help justify the realist conception that people, institutions, and technical sensors simply collect data about a world that *already exists*.

There is a broadening assumption that the substance of the world is *data*, what Hand refers to as the "Dataverse."[83] Similarly, Kitchin refers to the "big" dataset as "n=all."[84] These assumptions lead to the view that data is now everything that matters, and conversely everything that matters is now data.[85] Even for the boosters of data-led governance, this may be an exaggeration, but discourses like "evidence-based policy" and "data-driven governance" continue to nurture these views. At the same time there is a growing realization that the human brain cannot actually process and identify patterns out of big data without the assistance of machines; indeed, this has become part of the definition.[86] For its own part, "small" data is considered flawed because it cannot be sufficiently separated from direct human experience and subjectivity.[87]

In the dataverse it is no longer professional autonomy and control of the bureaucratic "files" that constitute objective decision making. Rather the "post-bureaucratic organization"[88] must make sense of *data in motion*. Through sophisticated processes of data capture (e.g., digital sensors, internet surveillance, relentless feedback surveys) governance systems have gained access to much more data, though in Beniger's terms of a *crisis of control*, the fundamental problem has not changed. While gaining access to data and information continues to be a challenge for every institution, the crucial issue is turning data and information into useful, meaningful, or actionable knowledge. Simply stated, the problem is not a lack of data, it is keeping up with too much data moving at speed.

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83. MARTIN HAND, *From Cyberspace to the Dataverse: Trajectories in Digital Social Research*, *in* 13 BIG DATA? QUALITATIVE APPROACHES TO DIGITAL RESEARCH 1–27 (Martin Hand & Sam Hillyard eds., 2014).

84. KITCHIN, *supra* note 64, at 72.

85. *See* Danah Boyd & Kate Crawford, *Critical Questions for Big Data*, 15 INFO., COMM. & SOC'Y 662, 662–79 (2012).

86. At the same time, powerful computers are now widely available across society meaning that non-institutionalized or non-bureaucratized actors can now analyse large data sets. This is changing the nature of, among other things, expertise and research both in- and outside the academy. *See* HAND, *supra* note 83; Mike Savage & Roger Burrows, *The Coming Crisis of Empirical Sociology*, 41 SOC. 885 (2007).

87. *See* KITCHIN, *supra* note 64, at 27–37.

88. REED, *supra* note 44, *passim*.

Here the algorithm is enrolled as the perfectly objective procedural processor; a recursive data filtering mechanism designed to eliminate subjective and inefficient human decision-making. This helps explain why algorithms are entangled in every socio-economic process that has a digital component. Through its capacity as a routinized filtering device, the coded algorithm brings single data points with little value or meaning into a relation with countless other data points in a process which produces a "smoother, more predictable surface for capitalist consumption."[89] At the same time, while algorithms are designed by people and social institutions and thus value-laden,[90] once they begin their routinized operation they tend to recede into relative obscurity.

This rise of algorithms begs us to reconsider one of the key tensions in Weber's theory of bureaucracy. On the one hand, there is the faceless, repetitive procedure, resistant to appeals to view individuals as anything other than members of an operational category to be processed.[91] On the other hand, the cold, objective algorithm is relatively autonomous from human influence, and thus resists corruption by economic or political power. And yet, just like more conventional bureaucratic structures, under this surface tension is a deeper underlying logic. That is the way the algorithm has become a seamless carrier of modernization for the interests of both the political classes and capitalist enterprise.[92] Put differently, the practical rationality of the algorithm quite easily translates into the formal calculative rationality that dominates most modern capitalist organizational structures, leaving little room for alternative or substantive rationalities.

Finally, in the realm of bureaucratic objectivity, we emphasize the importance of quantification, or what Weber called the "romanticism of numbers."[93] What began in the emergence of statistics and modernity as an "avalanche of numbers"[94] has intensified in the digital age. While statistical modeling was crucial to the development of the modern bureaucratic state, today it seems that almost everything is evaluated according to numerical indicators, benchmarks, ratings, and rankings. Porter referred to this as the growth of "mechanical objectivity," where numbers are considered more trustworthy than the modified templates or contextualized accounts offered by elite, professional, decision-

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89. Thatcher et al., *supra* note 51.
90. PASQUALE, *supra* note 51, at 61
91. *See* BERGER ET AL., *supra* note 10, at 49.
92. *See* PASQUALE, *supra* note 51, at 19–58.
93. WEBER, *supra* note 43, at 71.
94. IAN HACKING, THE TAMING OF CHANCE 45 (1990).

makers.[95] This notion of objectivity is not, however, limited to facts about the external world. On the contrary, the mechanical objectivity of numbers is powerful because it tends to reorganize bureaucracies around rule-based decision making, where numbers and mathematics are better suited to the objectivity of rules—the purest manifestation of which is the algorithm. As Porter says, "quantification is a way of making decisions without seeming to decide."[96] Indeed there is seemingly less room for substantive human decision-making, but only because the algorithms have been designed to limit that capacity to begin with. In conclusion, we suggest that quantification and numbers, with their distinct air of *relative disinterest*, produce legitimacy for the governance mechanisms of neoliberal market society, something that relative autonomy did for the Weberian bureaucracy and its political institutions.

C. Remotely Rational

To put it in Weber's terms, the celebrants of the digital information revolution argue that digitalism has weakened domination by formal rationality by flattening and opening up the structures of socio-economic administration. Not least as a result of access to more knowledge and information, individuals have more opportunities to cultivate their own substantive rationalities, if not influence others by easily distributing knowledge. On the surface it certainly appears that formal rationality, which became most legible in the bureaucracies of modernity, has come under increasing pressure as widely available information and knowledge have empowered individual creativity, encouraged entrepreneurship, widened opportunities for social networking, and engendered social difference.

Indeed, there is little doubt individuals are now more easily able to disseminate information. However, whether individuals are any more empowered to actually create new knowledge, and/or whether this knowledge has more impact on the structuring of society, is an entirely different inquiry. It is quite possible that individual "creativity" or entrepreneurship is rather more like a survival mechanism for those individuals (the vast majority) who have become disenfranchised from the benefits of Fordist bureaucratic structures[97] such as the welfare

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95. THEODORE M. PORTER, TRUST IN NUMBERS: THE PURSUIT OF OBJECTIVITY IN SCIENCE AND PUBLIC LIFE 4 (1995).

96. *Id.* at 8.

97. *See* DU GAY, *supra* note 33, at 48–49.

state, organized labor, or just relatively stable employment in a large corporation.[98]

Our argument is that whilst the bureaucratic skeleton that emerged in modernity may be under pressure, its ordering DNA—techno-scientific rationality—is not.[99] It is alternatively, manifesting itself in a new, digitized form. Rather than a centralized hierarchy dominated by professionals and managed by experts, digital information technologies and an intensified division of labor have dispersed bureaucratic logics making them less legible, but no less consequential. This is bureaucracy at a *relative distance*. To again invoke Beniger, the digital revolution has caused a new "control crisis," the solution to which includes formal bureaucratic rationality, but operating at scattered locations across a hybrid of geographic scales.[100]

For Hibou, the defining characteristic of bureaucracy is its capacity to formalize diverse and contingent social relationships into abstract categories that more easily align with calculation and rule-based systems.[101] In the Weberian bureaucracy of modernity, much of this process was driven by the codification of text inscribed on "papers in motion" through the bureaucratic structure, and their archiving in "the files."[102] Today this formalization and abstraction happens through the categorization processes of digital code, which engenders both an atomized level of detail as well as increased mobility of information; the ultimate goal being the instantaneous diffusion of tightly categorized information across space in "real time."

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98. *See generally* BAUMAN, *supra* note 7; RICHARD SENNETT, THE CULTURE OF THE NEW CAPITALISM (2006); URSULA HUWS, LABOR IN THE GLOBAL DIGITAL ECONOMY (2014) (showing how society searches for the "ideal man or woman").

99. On this topic, Bauman's interpretation of Weber is insightful. *See* ZYGMUNT BAUMAN, HERMENEUTICS AND SOCIAL SCIENCE: APPROACHES TO UNDERSTANDING 77 (1978) ("One could almost say that in such conditions, which become dominant with the advent of the capitalist market, value-judgements merge with objective interpretations. This, however, relates only to those value-judgements which are value-relevant, i.e. accept the dominant ultimate values of the era and, therefore, limit themselves to purely instrumental questions, and take the means as their sole object. Here lies the secret of the unsurpassed achievement of the civilization which, by securing an unchallenged domination of instrumentally rational conduct, took the sting of relativism out of evaluation. It is in this way that the practical utility of social science has become possible for the first time *without* sacrificing the principle of non-partisanship and value-neutrality of science. To be more precise, the one battle science can fight legitimately (i.e. whilst remaining true to its nature) is the one aimed at facilitating and prompting the tendency of our civilization towards reason, efficiency, instrumental perfection, and rationality.").

100. BENIGER, *supra* note 29, at 225.

101. HIBOU, *supra* note 5, at 15.

102. BERGER ET AL., *supra* note 10, at 47.

The ability to "know" and thus manage operations at a granular level, all within the language of digital code, contributes to an environment where different kinds of information and information systems across various fields become interoperable.[103] And it is in this sense that there is an emergence of new socio-informational infrastructures[104] where human bodies, industrial production, climate-controlled buildings, and surveillance and policing systems are increasingly integrated and assembled into what Kallinikos refers to as the common "institutional matrix" of the "modern social arrangement."[105] Crucially, however, the interoperability between these systems is not driven only by the common language of digital code, but an automated rule-based rationality.

These innovations in digital technologies and their "rationalizations" have contributed to an acceleration of the spatio-temporal dynamics of life. Weber presciently described communications infrastructures, as the "pacemakers of bureaucratization"[106] and suggests that the speed at which public information is circulated "exerts a steady and sharp pressure in the direction of speeding up the tempo of administrative reaction towards various situations."[107] In the same way as paper files, telegraphs, and radio signals in Weber's time, the "real time" and automatic feedback loops[108] of digitalism produce both an individual and an institutional reorientation toward speed and reactivity,[109] which as Virilio has pointed out, increasingly resemble military style logistical management.[110] This constant and instantaneous surveillance, measurement, and assessment further necessitate bureaucratic alignment with algorithmic governance.

Where once information and rules, or files and procedures, were separated by time and space, real-time algorithmic control has collapsed them into *governance in motion*. Governing in motion sets the tempo, in tune with both the cognitive orientation of the neoliberal market society, and the rhythm of the digital bureaucracy. Innovation and adaptation in this often chaotic environment becomes not only an

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103. Kallinikos, *supra* note 56, at 136.

104. *See generally* KELLER EASTERLING, EXTRASTATECRAFT: THE POWER OF INFRASTRUCTURE SPACE (2014); KITCHIN, *supra* note 64.

105. *See* Kallinikos, *supra* note 56, at 130–149.

106. *See* WEBER, *supra* note 18, at 973.

107. Max Weber, *Bureaucracy, in* FROM MAX WEBER: ESSAYS IN SOCIOLOGY 211, 215 (H. H. Gerth & C. Wright Mills eds., 1948).

108. *See* CASTELLS, *supra* note 54.

109. *See* Kitchin, *supra* note 76.

110. *See* PAUL VIRILIO, SPEED AND POLITICS 12 (2006); COWEN, *supra* note 65.

entrepreneurial strategy but a survival skill.[111] Individuals and institutions that are unable or unwilling to keep pace are simply left behind.

This new temporal logic of instant feedback and real-time innovation is not limited to formal institutions and organizations. It is also integrated into the thoughts and bodies of workers and consumers through constant processes of valuation and measurement.[112] For instance, personal identity is increasingly entangled with social media[113] as people spend significant time managing their online life, including the ways their identity and real-time locations are marketized in the "like economy."[114]

It is through such valuations that a different kind of future is now imagined and produced, in turn constituting this new organizational form. Gone is the Weberian bureaucracy's assumed possibility of upward progression through large hierarchical organizations or the "internal labor market."[115] Experience and loyalty, once valued by large organizations,[116] are now traded for the ubiquitous demeanor of "talent," which is itself parsed as the quality of adaptability to novel and often chaotic conditions. Permanent disruption and innovation replace relative stability and security, whilst the ad hoc project team replaces Weber's bureaucratic experts.[117] Furthermore, the routinization that Weber identified and compared with machines has been intensified where seemingly almost any repetitive process can now be mechanized through digital algorithms leaving behind a growing reserve army of labor that puts downward pressure on wages.[118]

There is little question that digital information technologies have reframed bureaucratic rationality. But instead of opening it up to alternative values they have, instead, intensified its techno-scientific character. While, on the surface, digital information technologies allow for the reproduction of existing, and cultivation of new, substantive

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111. *See* Eran Fisher, *"Upgrading" Market Legitimation: Revisiting Habermas's 'Technology as Ideology' in Neoliberal Times*, 2 FAST CAPITALISM (2007), https://www.uta.edu/huma/agger/fastcapitalism/2_2/fisher.html.

112. *See* Simon Lilley & Dimitris Papadopoulos, *Material Returns: Cultures of Valuation, Biofinancialization and the Autonomy of Politics*, 48 SOC. 972, 974 (2014).

113. *See generally* John Cheney-Lippold, *A New Algorithmic Identity: Soft Biopolitics and the Modulation of Control*, 28 THEORY CULTURE & SOC'Y 164 (2011) (discussing the ways in which computer algorithms have worked as modes of control).

114. *See* Agnieszka Leszczynski, *Spatial Big Data and Anxieties of Control*, 33 ENV'T & PLAN. D: SOC'Y & SPACE 965, 970–71 (2015).

115. *See* HUWS, *supra* note 98, at 37–38; SENNETT, *supra* note 98, at 29.

116. *See* SENNETT, *supra* note 98, at 66–69.

117. *See* Stewart Clegg & Carmen Baumeler, *Essai: From Iron Cages to Liquid Modernity in Organization Analysis*, 31 ORG. STUD. 1713, 1728 (2010).

118. *See* HUWS, *supra* note 98, at 139.

rationalities, the dominant techno-scientific rationality of modernity is enhanced, not diluted by digitalism. Put differently, while the conventional bureaucratic structure appears to be disintegrated and dispersed, the social order engendered by information technologies transports the logic of bureaucracy more deeply into society. The effect is something like Bauman's "fluid modernity," where the market becomes the perfectly adaptable (price) mechanism through which to order society, and explains why as Hibou argues, "we are all neoliberal bureaucrats."[119]

This does not mean that hierarchical organization has disappeared. It is simply located in a different place—the digital platform, where the filtering and enclosure of information is more important than the explicit discipline and enclosure of laboring bodies on the factory floor or in the corporate cubical.[120]

One example that has recently attracted attention is the Chinese state's pilot "social credit system" where every citizen and company will be assigned a trustworthiness score.[121] The plan is for the score to automatically update based on innumerable digitally traceable social interactions from minor traffic violations to using the Internet to falsely accuse others, to whether one has provided suitable care for aging parents.[122] Similar to credit scoring in the United States, though on a colossal scale, the system will be fueled by big data and driven by an algorithmic logic that both disciplines society as well as capital. A particular concern is fraudulent corporations that have, for instance, marketed tainted baby formula and all in an effort to improve the functioning of China's growing market economy. As a digital footprint, the score would determine the possibility of travelling abroad, placing children in particular schools, or even getting a seat in a top restaurant. This is a fascinating example of the transformation of more conventional state bureaucracy into a digitized social order; one where the formal rationality of quantification and calculation now give new form to efficiency, objectivity, and rationality. Not unlike a conventional bureaucracy, there is little room here for substantive interpretation, exceptions, or alternatives, and while the authority of the state may be less visible, there is little question it is operating in the shadow of the platform.

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119. *See* HIBOU, *supra* note 5, at xvi.

120. *See* Greene & Joseph, *supra* note 51, at 224; Thatcher et al., *supra* note 51.

121. *See* Simon Denyer, *China's Plan to Organize Its Society Relies on 'Big Data' to Rate Everyone*, WASHINGTON POST (October 22, 2016).

122. *Id.*

Figure 1

Weberian bureaucratic concept	Digital bureaucratic concept
Knowledge	Data
The Public	Big Data
Bureau/Office	Platform
Professional/Expert	Data scientist
Charismatic Leader	"Talented" Innovator/Disruptor
Rule	Code
Procedure	Algorithm
Files & Archive	Digital Footprint
Iron Cage	Silicon Web

Figure 2

Bureaucratic Principle	Political Economic Discourse	Means of Digital Manifestation/Transformation
Efficiency (of means to ends)	Austerity, Sustainability, Logistics, Competition	Routinization, Financialization, Accountability, Smart City
Objectivity (procedural neutrality, autonomy from "politics")	Big Data, Transparency, Accountability, Evidence-based Policy	Big Data, Openness, Crowdsourcing, Algorithm, Quantification
Rationality	Techno-Scientific Innovation, Digital 'Disruption,' Neoliberalism	Formalization, Ranking, Machine Logic, Acceleration, Automated Trading, Logistical Management

IV. DIGITAL NEOLIBERALISM MEANS (AND ENDS)

Our 21st Century communication network, regarded by its early adherents with a religious fervor, has been turned into a surveillance and advertising mechanism. The World Wide Web is just that—a web that ensnares everyone who uses it.

–T Bone Burnett, September, 2016[123]

What, then, of the politics surrounding these digital transformations? Does society, or the public, retain any power to decide how—if at all—these technologies should be employed to achieve particular ends? In other words, might one assume that these technologies are ultimately subject to both individual human will and/or democratic institutions? At least in the current political environment, our answers to these questions are relatively pessimistic. In this section, we outline our main reasons for this pessimism. They are all related to the erosion of the boundary between the social and the economic that is one of the key characteristics of neoliberal order.[124] As mentioned above, erosion of this boundary is one of the qualities of a conventional bureaucratic structure where formal calculative rationality tends to dominate, but we see an intensification of this erosion in neoliberalism. As a result, the possibility of a social ethics—one where social ends might be agreed on or even just debated—is seriously diminished.

While Weber explains the efficiency of bureaucracies in the terms of appropriate means to achieve particular ends, he is not naïve about the possibility of the means becoming a driving force. In fact, one of the enduring criticisms of bureaucracy is that it becomes internally obsessed with its own reproduction and loses sight of its larger purpose. Weber explains at length how difficult it can be to dislodge a bureaucratic structure once it is firmly in place.[125] Castells, who is more explicitly critical of bureaucracy, actually defines the organizational type by the characteristic of a focus on means over ends.[126]

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123. *See* Stacy Chandler, *"Music Confounds the Machines,"* NO DEPRESSION (Sept. 22, 2016).

124. *See* WILLIAM DAVIES, THE LIMITS OF NEOLIBERALISM: AUTHORITY, SOVEREIGNTY AND THE LOGIC OF CAPITALISM 133 (2014).

125. *See* WEBER, *supra* note 18, at 991.

126. *See* CASTELLS, *supra* note 54, at 171. ("In a dynamic, evolutionary perspective there is a fundamental difference between two types of organizations: organizations for which the reproduction of their system of means becomes their main organizational goal; and organizations in which goals, and the change of goals, endlessly reshape the structure of means. I call the first type of organizations bureaucracies; the second type, enterprises.")

Nevertheless, during the post-World War II height of Fordism, embedded liberalism, or what Bauman called "solid modernity,"[127] the bureaucratic welfare states of Western Europe and the United States were largely successful in producing socially beneficial ends. Inequality was reduced, the social safety net protected the most vulnerable, speculative finance was tightly controlled, and supported by state institutions, capital and labor compromised to the benefit of the working and middle classes.

Furthermore, during the middle of the twentieth century there was a widespread assumption of a *socially* progressive telos. One of the key components of modernity was that modernization would deliver, over time, "development" for all nation-states, especially those in the Global South.[128] There was a widespread notion that intellectual knowledge or reason, operationalized through science and technology, and enabled to do public work through rationalized politics, would eventually improve the conditions for *everyone*. While this linear development model, envisioned by scholars such as Walt Rostow, was in many ways flawed (i.e., "written" from the Global North and largely built on racist, colonial, and imperial logics, as well as carried out through highly gendered and racist institutions), it was also based on the ethos that those individuals who "played by the rules," or abided by the dominant rationality, would be rewarded.[129] In other words, it was assumed that science and technology enacted through formal and relatively rigid social structures were the means to a broader end of social development.

The digital, as a basis of social organization, comes at a time when this imagined telos of modernity has largely disappeared, and been replaced with a neoliberal capitalist ethos, where *economic* development is both the means and the end of social development. After the "end of history," or the end of actually existing communism, it is much more difficult to theorize an outside to capitalism, or invoke social emancipation and development as a public good outside of the terms, motives, and means of private profit and economic growth.[130] This is not to suggest that modernity was somehow purely driven by emancipatory goals. The seeds of the post-modern obsession with creative destruction, ephemerality, and uber-flexibility were important parts of both

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127. *See* BAUMAN, *supra* note 7, at 120.

128. *See* JAMES FERGUSON, GLOBAL SHADOWS: AFRICA IN THE NEOLIBERAL WORLD ORDER 62 (2006).

129. *Id.*

130. *See* Boaventura de Sousa Santos, *The Fall of the Angelus Novus: Beyond the Modern Game of Roots and Options*, 46 CURRENT SOC. 81, 81–85 (1998); *see also* BAUMAN, *supra* note 7, at 16–18.

enlightenment thought and the social structures of modernity.[131] These qualities simply became more dominant in the socio-cultural structures of post-modernism, or what in political-economic terms we should call neoliberalism.

These conditions have worsened since the 1970s to the point where there is now hardly the political possibility of debating, let alone mandating, social ends via state means. As Davies points out, the more that the state relies on the calculative rationality of markets in an effort to appear objective and in turn regain legitimacy, the less authority it is able to retain.[132] The neoliberal state, having mostly given up on appealing to an external social referent, has lost the moral authority to act in most social contexts. Instead the state is dominated by economic and financial calculation. However, this logic hardly lends itself to widespread legitimacy to accomplish anything other than constant attempts to reproduce the conditions for economic growth, or to just reproduce the market itself. In the United States and the United Kingdom in particular, this has contributed to a delegitimization of most *public* administration, in many cases reducing state bureaucracy to its capacity to encourage competition between *private* actors.

These conditions are only worsened in an environment where both the state and private capital are increasingly adopting the general logic of mechanized technologies—or what Ellul calls "technique."[133] Carried by digital technologies, and emboldened by hegemonic discourses around the centrality of technical innovation, every social process now seems to be subject to the "disruptive" forces of, and potential within, the digital. Ellul's point, made in the 1950s, was that technical procedures and processes were no longer something that "man" put to use for particular ends, but that technique had become an end in itself.[134] He called it "the consciousness of the mechanized world" that "does in the domain of the abstract what the machine did in the domain of labor."[135] For Ellul, technique had become the very substance of society. This matters because digital code, the digital algorithm, and the digital platform are nothing if not dominated by the recursive logic of machines.[136] In this sense, the digital machines that drive social administration are examples of a perfectly calculative apparatus.

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131. *See* DAVID HARVEY, THE CONDITION OF POSTMODERNITY 11 (1989); *see also* BAUMAN, *supra* note 7, at 182–83.

132. *See* DAVIES, *supra* note 124, at ix–x.

133. *See* JACQUES ELLUL, THE TECHNOLOGICAL SOCIETY xxv–xxvi (1964).

134. *Id.*

135. *Id.* at 5.

136. *See* Paolo Totaro & Domenico Ninno, *The Concept of Algorithm as an Interpretative Key of Modern Rationality*, 31 THEORY CULTURE & SOC'Y 29, 32 (2014).

This also helps explain why there is an "elective affinity," between market "solutions" to political problems and the reformatted principles of bureaucracy in the digital age. Setting aside the contradictions of technological advance in capitalism, in the sphere of private enterprise it is relatively straightforward that capital would put digital means to work to achieve the ends of competing for profitability in the market. But in the sphere of public administration, the neoliberal evacuation of collective goals plug into the relative disinterest of digitized objectivity and the relative distance between state bureaucrats and the governed, separated by the formalization of the algorithm or the rationalization of the platform. For a neoliberal thinker, like Hayek, market mechanisms ought to replace centralized and relatively autonomous state bureaucracies exactly because they wrongly assume to grasp social ends.[137] In this sense, encouraging the marketization of the pre-processing of bureaucratic information through routinized filters aligns perfectly with neoliberal ideology by doubly removing the possibility of public interference—once through the private market and once through technique. After all, for many neoliberals, the market is assumed to take the place of human knowledge and judgment, if not turning ignorance of anything resembling society into a virtue.[138]

To summarize, the emergence of digital media has been concurrent with the emergence of a neoliberal political economy, which is consonant with a bureaucratic rationality where innovation, adaptability, and efficiency are the functional means, but without the progressive ends. In other words, innovation, adaptability, and efficiency are the means without purpose or intent—at least outside of the logics of wealth accumulation. They are the means *and the ends*. This is driven by what Davies,[139] gesturing to Weber, calls the "disenchantment of politics" where political discourse is delegitimized as ambiguous, subjective, and irrational.[140] In neoliberal politics there is little room for a discussion of public goods,[141] and discussions of society are almost exclusively framed by "financial realities."

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137. *See* DAVIES, *supra* note 124, at ix–34.

138. *See generally* PHILIP MIROWSKI, NEVER LET A SERIOUS CRISIS GO TO WASTE: HOW NEOLIBERALISM SURVIVED THE FINANCIAL MELTDOWN 78–83 (2013) (discussing peer production and sharing).

139. *See* Davies, *supra* note 124, at 1–34.

140. *Id.* at 4 ("But the central defining characteristic of all neoliberal critique is its hostility to the ambiguity of political discourse, and a commitment to the explicitness and transparency of quantitative, economic indicators, of which the market price system is the model. Neoliberalism is the *pursuit of the disenchantment of politics by economics*.") (emphasis in the original).

141. *See* WENDY BROWN, UNDOING THE DEMOS 39 (2015).

V. CONCLUDING THOUGHTS (IN MOTION)

> These pieces are written at that border between what one knows and what one thinks it might be possible to think, between what little one grasps and the great gulf of ignorance which that partial grasp reveals.

> –Nikolas Rose—*Powers of Freedom*[142]

In writing this paper, we have constantly found ourselves writing at the edge of our capacity to grasp, in part because our cognitive frames for understanding are anchored in a relatively distant world, and in part because information economies and the "data revolution" conceal so much of what could and should be revealed. Not only is it difficult to bring some of these processes into clear view, it is even harder to predict just what sort of society will emerge over the next generations as digital technologies become ever more prevalent in daily life. Where will the line fall between a world fully engrossed with data in motion, and a world where new, nondigital, possibilities emerge? Put another way, will data in motion over-determine, for example, the future shape of the globally-ranked university, as it becomes a recursive socio-technical machine for producing ranking data? Will the city cease to be a system of living and working communities, but rather become a recursive engine for producing smart city efficiencies? Will the logistical management of the socio-economy no longer be a coordinating undercurrent, but the productive object of value itself? If the answer to these sorts of questions is "yes," the silicon web may be more like Weber's iron cage than even our relatively gloomy account has suggested.

There is considerable risk that governing the social, already significantly de-legitimated by neoliberalism, is further undermined by digitalism. When relative autonomy is replaced by the projection of relative disinterest, and where Westphalian democratic orders are undermined by governing in motion, and governing through relative distance, shortfalls in legitimacy emerge and questions of rule are posed. In other words, if digital technologies are no longer just tools we employ to accomplish tasks but they become the task and the object itself, as well as an authority in neoliberal market societies, the ethics of public or democratic authority will continue to suffer. This is where we must consider the very possibility that the logic of the algorithm is more

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142. *See* NIKOLAS ROSE, POWERS OF FREEDOM: REFRAMING POLITICAL THOUGHT 13 (1999).

than that which drives the digital machine. Rather, we need to ask to what extent the logic of the algorithm is the new ordering and organizing device of social opportunities, identities, consciousness, and life itself? We ought to furthermore ask if there are limits to a mode of production that seems to produce profits by rationalizing social order itself.

Undoubtedly, social systems are unpredictable and difficult to enclose. Even recursive algorithms engaging in real time with the social world will occasionally produce the unexpected. Viewed in this way, it is likely that the diffusion of information and the forms of consciousness and socialities that are opened up might well prove too difficult to contain in a metaphoric silicon web. In this light, maybe "hacktivism" or online "culture jamming"[143] ought to be celebrated as crucial forms of resistance. Just as there was nothing inevitable about the advancement of modernity through the conventional bureaucracy, the growth of digitized bureaucratic administration is contingent and reversible. Nonetheless, as long as the private accumulation of capital is both the technique and the goal of socio-economic life, and the socio-economy continues to produce exponentially more data and information, the silicon web will only become more sticky, rigid, and difficult to dismantle.

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143. *See generally* Vince Carducci, *Culture Jamming: A Sociological Perspective*, 6 J. CONSUMER CULTURE 116 (2006) (analyzing "culture jamming" from a sociological perspective).