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"NOTHING IS THE WAY IT SHOULD BE": GLOBAL TRANSFORMATIONS OF THE TIME REGIME IN THE NINETEENTH CENTURY*

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When European clocks first arrived in seventeenth-century Japan they generated a commotion. The highly complex but also very precise instruments had been brought to Nagasaki by the Dutch East India Company that monopolized the sparse and highly regulated trade between Japan and Europe for more than two centuries. As an expression of the technological sophistication achieved in early modern Europe, mechanical clocks were hi-tech products of their time. They operated with a spring to store the energy, and their making required highly developed skills in casting and metalwork. The new technology made it possible to emancipate the measurement of time from sunshine and to achieve an evenness of temporal rhythms, not only during the day, but also at night.

In Japan, these European products met with high demand, even if, just as in Europe, they remained a luxury good. Only the feudal lords (*daimyô*) could afford them. They became known as *daimyô tokei*, ruler clocks, and served primarily as objects of prestige. And yet, even when the clocks survived the long journey fully intact and undamaged, they were put to markedly different use than their designers had intended. Tokugawa Japan followed a flexible time system: day and night were equally divided into six-hour units. An "hour" corresponded to one-sixth of the daytime—with the day beginning at sunrise (the Hour of the Rabbit) and ending at sunset (the Hour of the Rooster). As such, the actual length of the individual units of time varied with the time of the year (ranging between a hundred and 158 minutes), resulting in the daylight "hours" being significantly longer in summer than in winter.

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The introduction of the mechanical clock, with all its precision and regularity, did not have any marked effects on customary ways of timekeeping. Quite to the contrary: instead of adapting cosmology, Japanese craftsmen began to modify the technology. Through a complex process, the balance wheel—used to keep the clock's measurement consistent—was adorned with adjustable weights and was additionally recalibrated twice a day, in order to maintain the varying differences between the daytime and nighttime hours. Moreover, season-specific clock faces adjusted the clock to the local time regime. In this way, the Japanese went out of their way to reverse the emancipation from the cycles of nature that the clock seemed to promise.[1]

Two hundred years later, the situation had changed dramatically. When, in the late nineteenth century, pressure from the United States forced Japan to open to trade and implement extensive reforms, the rhetoric of changing times was no longer just a metaphor. The Meiji Restoration symbolized the starting point of a societal adaption to "modern times." From now on, the clock came to symbolize modernity—adorning parliament buildings, courtrooms, factory gates, and schools. Each year, the Japanese emperor presented the University of Tokyo's top graduate with a silver pocket watch. By the end of the Meiji era, there were more than twenty factories throughout Japan turning out about 3.8 million timepieces annually. The reordering of time did not stop with the adoption of clocks. Some of the earliest measures of the young Meiji government included the abolishment of the lunisolar system and the adoption of the Gregorian calendar in 1873.[2] The calendar did not only alter the identification of the year and the number of leap days, but also had a wide-reaching influence upon daily life, as it severed time from cosmology and thus turned formerly auspicious and inauspicious moments into a series of neutral days. Clocks, schedules, calendars, and fixed working hours served as crucial ingredients for the "metronomic society" that developed both in Japan and elsewhere around the world at the end of the nineteenth century.[3]

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1 Tsunoyama Sakai, *Tokei no shakaishi* (Tokyo, 1984); Sawada Taira, *Wadokei: Edo no haiteku gijutsu* (Tokyo, 1996). For time keeping during the Tokugawa periods see also Yulia Frumer, "Translating Time: Habits of Western-Style Timekeeping in Late Edo Japan," *Technology and Culture* 55/4 (2014), 785–820.

2 Okada Yoshirō, *Meiji kaireki: "Toki" no bunmei kaika* (Tokyo, 1994); Stefan Tanaka, *New Times in Modern Japan* (Princeton, 2004); Florian Coulmas, *Japanische Zeiten: Eine Ethnographie der Vergänglichkeit* (Reinbek, 2000); Nishimoto Ikuko, "The 'Civilization' of Time: Japan and the Adoption of the Western Time System," *Time and Society* 6 (1997): 237–59; Tsunoyama Sakae, *Jikan kakumei* (Tokyo, 1998).

3 Tanaka, *New Times*. See also Hashimoto Takehiko and Kuriyama Shigehisa, eds., *Chikoku no tanjō: Kindai Nihon ni okeru jikan ishiki no keisei* (Tokyo, 2001); Nishimoto Ikuko, *Jikan ishiki no kindai: "Toki wa kane nari" no shakaishi* (Tokyo, 2006); Narita Ryūichi, "Jikan no

How can we explain the vastly different outcomes of these two episodes? In the eighteenth century, European technology was adjusted to fit local cosmologies. At the end of the nineteenth century, it was the reverse: the importation of watches and calendars triggered a radical adjustment of the temporal order. Why did the Japanese use of time change, and why did it do so only from the 1870s onwards? How was this change related to the appropriation of Western clocks and temporalities? Probing these questions will enable us to better understand the logic that drove the emergence of a global time regime in the nineteenth century. Put more broadly, it may help us to make sense of cultural change in a global context. In this essay, I will provide an overview of the time revolution in the nineteenth century, building on a spate of recent scholarship on various parts of the world. At the same time, my aim is to challenge the culturalism prevalent in current trends of writing global intellectual histories.[4]

So far, global historians have not always been the best guides to questions of the kind raised by the introductory example. This is because all too often in current historiography, the global is effectively equated with "connectivity."[5] In their quest to set themselves apart from the macro-comparisons of an older tradition of world history, new global historians have relied on connections as the new magic formula.[6] "The particular concern of the global historian is, or should be, with the history of 'connectedness'," writes John Darwin, summarizing a widely held credo.[7] Such formulations, however, are misleading. They suggest

kindai: Kokumin kokka no jikan," in Ōtsuka Shinichi, ed., *Kindai chi no seiritsu: Kindai Nihon no bunkashi*, vol. 3 (Tokyo, 2002), 1–51. I borrow the term "metronomic society" from Michael Young, *The Metronomic Society: Natural Rhythms and Human Timetables* (Cambridge, MA, 1988).

4 This is similar in spirit to Samuel Moyn, "Imaginary Intellectual History," in Darrin M. McMahon and Samuel Moyn, eds., *Rethinking Modern European Intellectual History* (Oxford, 2014), 112–30.

5 For recent stocktaking of the global-history approach see Jerry H. Bentley, ed., *The Oxford Handbook of World History* (Oxford, 2011); Douglas Northrop, ed., *A Companion to World History* (Oxford, 2012); Sebastian Conrad, *Globalgeschichte: Eine Einführung* (Munich, 2013); Lynn Hunt, *Writing History in the Global Era* (New York, 2014); Diego Olstein, *Thinking History Globally* (New York, 2014).

6 For various approaches that emphasize the role of connections see Michel Espagne, "Sur les limites du comparatisme en histoire culturelle," *Genèses: Sciences sociales et histoire* 17 (1994), 112–21; Michael Werner and Bénédicte Zimmermann, "Beyond Comparison: Histoire Croisée and the Challenge of Reflexivity," *History & Theory* 45 (2006), 30–50; Pierre-Yves Saunier, *Transnational History* (Basingstoke, 2013); Sanjay Subrahmanyam, "Connected Histories: Toward a Reconfiguration of Early Modern Eurasia," in Victor B. Lieberman, ed., *Beyond Binary Histories: Reimagining Eurasia to c.1830* (Ann Arbor, 1997), 289–315.

7 John Darwin, "Globe and Empire," in Maxine Berg, ed., *Writing the History of the Global: Challenges for the 21st Century* (Oxford, 2013), 197–200, at 198.

that transfers and connections are the main drivers of global integration—but as the examples above have illustrated, similar transfers could have vastly different outcomes that cannot be sufficiently explained by simply pointing to the connections.

The preoccupation with connectivity is particularly salient in cultural and intellectual histories with a global agenda. In this field, cultural change is predominantly understood as the result of cultural transfers. At first sight, this may seem a plausible assumption: after all, we expect cultural and intellectual historians to be interested in texts and ideas that travel across borders, impact different societies, and are appropriated by local actors. But what this approach neglects is that cultural change is rarely the result of cultural interactions alone. As I will argue, the history of transfers must itself be embedded in larger political and social contexts. Frequently, connections are above all an indicator that historical actors experienced similar challenges, and responded to them in related ways. The "global," then, needs to be located less in the transfers and cultural interactions than in the conditions and power structures that made these transfers possible in the first place.[8]

Indeed, as long as they explain cultural and intellectual change through cultural transfers, historians remain prone to constructing narratives that retain a diffusionist bias. Diffusionism, in other words, is an effect of seeing cultural transfer as the primary cause of cultural change. Many works continue to trace the impact of important thinkers, of big ideas, and of seminal texts. In a much-acclaimed study, for example, David Armitage has described the global career of the American Declaration of Independence as the "outbreak of a contagion of sovereignty," as a veritable "pandemic" that radiated outward, triggering and influencing dozens of similar declarations around the world.[9] Even historians who are much less sanguine about the effects of such transfers, and stress instead the potential displacement of cultural values and norms, essentially operate within such a diffusionist framework.[10] Translation studies, for their part, have focused on the modifications that ideas and concepts underwent in the transfer process. But what all these approaches ultimately

[8] For an approach to global history that privileges the concept of integration over the concern with connections see Sebastian Conrad, *What Is Global History?* (Princeton, 2016), 62–114.

[9] David Armitage, *The Declaration of Independence: A Global History* (Cambridge, MA, 2007), 103. For an early refutation of diffusionist approaches see J. M. Blaut, *The Colonizer's Model of the World: Geographic Diffusionism and Eurocentric History* (New York, 1993).

[10] The most influential interpretations along such lines have been formulated in the context of postcolonial studies. See, for example, Bernard Cohn, *Colonialism and Its Forms of Knowledge* (Princeton, 1996); Nicholas Dirks, *Castes of Mind: Colonialism and the Making of Modern India* (Princeton, 2001).

share is the preoccupation with the sender, in the parlance of communications theory.[11]

The reduction of cultural change to effects of cultural transfer has also been dominant in studies on the notion of time. For the most part, historians have interpreted the ascendancy of the global time regime as the dissemination of empty, "disenchanted," precise, and progressive time, replacing locally specific frameworks and cosmologies. This process has been lauded as the liberation of social practices from superstitious beliefs, as the introduction of more precise and reliable forms of timekeeping, and ultimately as a sign of the cultural "openness" of a society.[12] It has also been lambasted as an imposition, and an effect of cultural imperialism, obliterating traditional modes of measuring and experiencing time.[13] Either way, the prevalent paradigm has attributed cultural transformation to cultural entanglements.

In what follows, by contrast, the focus will be on global contexts, and on the strategies of local actors responding to them. In the case of Japan, by the 1870s, the sparse contacts that had allowed the Dutch East India Company to tap into regional trade circuits had given way to a capitalist and increasingly integrated world market. European imperialism began to leave its trace in East Asia, and Japanese elites felt international pressures much more urgently. In this context, processes of industrialization and nation building fundamentally transformed both the workplace and social practices more generally. It was the changing social reality of the Meiji period that created the widespread demand for "new times."[14]

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[11] For recent advances in translation studies see Tejaswini Niranjana, *Siting Translation: History, Post-structuralism, and the Colonial Context* (Berkeley, 1992); Lydia Liu, *Translingual Practice* (Stanford, 1995); Michael Cronin, *Translation and Globalization* (London, 2003); Doris Bachmann-Medick, "The Translational Turn," *Translation Studies* 2 (2009), 2–16.

[12] For such standard interpretation see David Landes, *Revolution in Time: Clocks and the Making of the Modern World* (Cambridge, MA, 1983). For a critical reading of the notion of "opening" see Sho Konishi, "Reopening the 'Opening of Japan': A Russian–Japanese Revolutionary Encounter and the Vision of Anarchist Progress," *American Historical Review* 112 (2007), 101–30.

[13] Tanaka, *New Times*; Prasenjit Duara, *Rescuing History from the Nation: Questioning Narratives of Modern China* (Chicago, 1995); Vinay Lal, *The History of History: Politics and Scholarship in Modern India* (New Delhi, 2003); Giordano Nanni, *The Colonisation of Time: Ritual, Routine and Resistance in the British Empire* (Manchester, 2012).

[14] For recent assessments of the Meiji period see Helen Hardacre and Adam Lewis Kern, eds., *New Directions in the Study of Meiji Japan* (Leiden, 1997); Andrew Gordon, *A Modern History of Japan* (Oxford, 2002); Janine T. Sawada, *Practical Pursuits: Religion, Politics, and Personal Cultivation in Nineteenth-Century Japan* (Honolulu, 2004); Richard M. Reitan, *Making a Moral Society: Ethics and the State in Meiji Japan* (Honolulu, 2009).

The adoption of clocks and calendars, then, was the work of historical actors for whom thinking in terms of empty, precise, and progressive time increasingly held purchase. Change was driven by social groups, ranging from imperialist bureaucrats to workers on the factory floor, who used the emerging new notion of time to stake their particular claims. As we will see, a focus on actors also explains why the victory of the new temporal regime was never absolute. While unified, linear time soon emerged as the currency with the broadest appeal, other temporal registers remained available, not as leftovers from the past, but as resources that could be employed strategically.[15]

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In the final years of the nineteenth century, observers and commentators began to portray their age as a century of time. Throughout the works of the great authors and thinkers of the period, the preoccupation with time was ubiquitous. The Chinese philosopher and political reformer Kang Youwei developed a new calendar beginning with the year 1900 that was intended to herald the commencement of a unified world empire.[16] From Kierkegaard and Nietzsche to the works of Einstein or Proust's *In Search of Lost Time*, engagement with temporal dynamics was quickly becoming an obsession.[17]

In what emerged as a standard interpretation, the modern time regime had both severed the link between time and nature, and liberated time from the

[15] Such an approach draws on recent work in the global history of culture and ideas, such as Samuel Moyn and Andrew Sartori, "Approaches to Global Intellectual History," in Moyn and Sartori, eds., *Global Intellectual History* (New York, 2013), 3–30. See also Rebecca E. Karl, *Staging the World: Chinese Nationalism at the Turn of the Twentieth Century* (Durham, NC, 2002); Christopher L. Hill, *National History and the World of Nations: Capital, State, and the Rhetoric of History in Japan, France, and the United States* (Durham, NC, 2008); Andrew Sartori, *Bengal in Global Concept History: Culturalism in the Age of Capital* (Chicago, 2008); Sugata Bose and Kris Manjapra, eds., *Cosmopolitan Thought Zones: South Asia and the Global Circulation of Ideas* (New York, 2010); Andrew Zimmerman, *Alabama in Africa: Booker T. Washington, the German Empire, and the Globalization of the New South* (Princeton, 2010); Sebastian Conrad, "Enlightenment in Global History: A Historiographical Critique," *American Historical Review* 117 (2012), 999–1027.

[16] Jürgen Osterhammel and Niels P. Petersson, "Ostasiens Jahrhundertwende: Unterwerfung und Erneuerung in west-östlichen Sichtweisen," in Ute Frevert, ed., *Das Neue Jahrhundert: Europäische Zeitdiagnosen und Zukunftsentwürfe um 1900* (Göttingen, 2000), 265–306. See also Kung-chuan Hsiao, *A Modern China and a New World: K'ang Yu-wei, Reformer and Utopian, 1858–1927* (Seattle, 1975).

[17] On high modernity's obsession with time see Peter Galison, *Einstein's Clocks, Poincaré's Maps: Empires of Time* (New York, 2004). See also Peter Osborne, *The Politics of Time: Modernity and Avant-Garde* (London, 1995).

cosmological fetters of different forms of religious order. The uneven length of an hour based on the season; the measuring of time based on the location of the sun and the moon; the faith in historic continuity, in which all things new were understood as the mere resumption of the past; and the integration of time into local, often religious, cultural contexts—these were all challenged by the new conception of time.[18] Not all of this was new, of course, as some developments looked back to a longer history. Nevertheless, what struck many observers as particularly novel was the notion of time as empty and uniform. In this way, they conceived of time as an arrow moving irreversibly towards the future, in linear fashion, thus effectively filling time's alleged emptiness with expectations of progress. This had immediate repercussions for the notions of past and future. While historic events were no longer interpreted as repeatable or as a mirror providing instructions for future challenges, the future was perceived as inherently different from the past.[19] This temporal regime came to be dominant through the nineteenth and twentieth centuries. Only recently, with the rise of commemorative culture and the boom of the cultural-heritage industry, has this fixation on the future once more been brought into question.[20]

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We can look at this temporal revolution on four different levels: standardization, global synchronicity, progressive time, and deep time. In existing scholarship, these levels have tended to be cordoned off into four separate literatures, with little emphasis on their entanglements. Typically, historians

[18] For long-term histories of time see Anthony Aveni, *Empires of Time: Calendars, Clocks, and Cultures* (New York, 1989); William Gallois, *Time, Religion and History* (London, 2007). See also D. Owen Hughes and Thomas R. Trautmann, eds., *Time: Histories and Ethnologies* (Ann Arbor, 1995); Eviatar Zerubavel, *Time Maps: Collective Memory and the Social Shape of the Past* (Chicago, 2004); David Wilcox, *The Measure of Times Past: Pre-Newtonian Chronologies and the Rhetoric of Relative Time* (Chicago, 1987); Chun-chieh Huang and Erik Zürcher, eds., *Time and Space in Chinese Culture* (Leiden, 1995); Barbara Stowasser, *Time Sticks: How Islam and Other Cultures Have Measured Time* (Washington, DC, 2011); Stephen P. Blake, *Time in Early Modern Islam: Calendar, Ceremony, and Chronology in the Safavid, Mughal, and Ottoman Empires* (Cambridge, 2013).

[19] Reinhart Koselleck, *Vergangene Zukunft: Zur Semantik geschichtlicher Zeiten* (Frankfurt, 1979); Koselleck, *Zeitschichten: Studien zur Historik* (Frankfurt, 2000); Koselleck, *The Practice of Conceptual History: Timing History, Spacing Concepts* (Stanford, CA, 2002); Chris Lorenz and Berber Bevernage, eds., *Breaking up Time: Negotiating the Borders between Present, Past and Future* (Göttingen, 2013).

[20] François Hartog, *Régimes d'historicité: Présentisme et expériences du temps* (Paris, 2003); Aleida Assmann, *Ist die Zeit aus den Fugen? Aufstieg und Fall des Zeitregimes der Moderne* (Munich, 2013), 281–307.

of nation-states have looked at the standardization of time measuring as an instrument of nation building, global historians have recently begun to develop an interest in the emergence of universal time, progressive time has been a central theme in studies of colonialism, and discussion of deep time has been limited to the disciplinary history of geology. As we will see, however, it was in their interplay that these four developments did their transformative work and transcended the boundaries of familiar temporalities. I will take up the four dimensions in turn, before then arguing that they need to be read together in order to fully capture the transformation of time as a global revolution.

First, many states began to initiate encompassing projects of standardization. In paradigmatic modern institutions, the rhythm of time was closely monitored and deeply integrated into daily routines. Factory work, schools, and military maneuvers shaped social norms, and imprinted the new regime onto individual lives and bodies. The proliferation of individual means of measuring time accompanied this process. By 1800, approximately 400,000 pocket watches were being produced each year, with this number jumping to more than 2.5 million by 1875.[21]

The most important driving force behind the standardization of time, however, was the railway. Through the end of the nineteenth century, cities generally operated on local time. Traveling from Washington, DC to San Francisco in 1870 meant readjusting a pocket watch two hundred times. In most regions of turn-of-the-century China, time continued to be measured with reference to the sun; in India, hundreds of local times competed with one another; also in Russia, time varied from city to city. Beginning in the 1880s, railway companies began unifying time. Efforts towards homogenization were frequently tied to national motives and the interest of individual regimes, as they sought to consolidate national time within national space.[22]

Increasingly, standardization was connected to emerging global reference points. The second feature of the emergence of the new temporal regime was the invention of global synchronicity. The new degree of global interconnectedness, made possible by the infrastructural advances of the period, resulted in an alignment of temporal regimes that transcended both national borders and continents. In 1889, Lord Salisbury triumphed that the telegraph "combined together almost at one moment the opinions of the whole intelligent world

21 Landes, *Revolution in Time*; Aveni, *Empires of Time*.

22 Stephen Kern, *The Culture of Time and Space 1880–1918* (Cambridge, MA, 1983), 12–14; Wolfgang Schivelbusch, *Die Geschichte der Eisenbahnreise: Zur Industrialisierung von Raum und Zeit im 19. Jahrhundert* (Frankfurt am Main, 1984); Todd S. Presner, *Mobile Modernity: Germans, Jews, Trains* (New York, 2007).

with respect to everything that is passing at that time upon the face of the globe."[23]

Even more than the telegraph and the press, the gradual implementation of the Gregorian calendar contributed to the synchronization of the world. Imperial armies brought the calendar with them and enforced its use; and even countries outside the direct ambit of empire—such as Japan (1873), Egypt (1875), Siam (1888), Korea (1896), China (1911), Albania (1912), Bulgaria (1916), Russia (1918), and Turkey (1918)—implemented the calendar, often in spite of local resistance. In certain instances, officials went as far as to outlaw competing, local calendars—a measure that could result in massive protest.[24]

Aside from the calendar, the introduction of worldwide standard time was the most important symbol of this process. In public debate, temporal standardization was proclaimed as a guarantor for world peace. In 1884 the Prime Meridian Conference in Washington established individual time zones together with a prime meridian. The meridian's location in Greenwich, London resulted in additional political resistance to the standardization efforts in various regions. In France, anti-British sentiments postponed implementation of universal time until 1911, and without reference to Greenwich; carefully preserving a sense of French particularity, the new standard was defined as "Paris time minus nine minutes and twenty-one seconds."[25] The introduction of universal time marked an important turning point not only for the development of economic transactions and the capital market, but also politically and militarily. It also testified to the globalization of the imagination and a hope for worldwide convergence that would transcend national and cultural boundaries.[26]

Third, the emergence of a progressive and evolutionist notion of time was a characteristic feature of the nineteenth-century world. The valorization of

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[23] Cited in Kern, *The Culture of Time and Space*, 68. For the communication revolution that allowed a linking of public spheres see Peter J. Hugill, *Global Communications since 1844: Geopolitics and Technology* (Baltimore, 1999); Daniel R. Headrick, *The Invisible Weapon: Telecommunications and International Politics, 1851–1945* (Oxford, 1991).

[24] See, for example, Florian Coulmas, *Japanische Zeiten: Eine Ethnografie der Vergänglichkeit* (Reinbek, 2000). On the history of the calendar see Duncan Steel, *Marking Time: The Epic Quest to Invent the Perfect Calendar* (New York, 2000).

[25] Quoted in Vanessa Ogle, "Whose Time Is It? The Pluralization of Time and the Global Condition, 1870s–1940s," *American Historical Review* 118 (2013), 1376–1402.

[26] See Kern, *The Culture of Time and Space*, 10–14. The best book on these issues is Vanessa Ogle, *The Global Transformation of Time 1870–1950* (Cambridge, MA, 2015). See also Jürgen Osterhammel, *The Transformation of the World: A Global History of the Nineteenth Century* (Princeton, 2014), 67–76. Specifically on the introduction of worldwide standard time see also Derek Howse, *Greenwich Time and the Discovery of the Longitude* (Oxford, 1980); Ian R. Bartky, *One Time Fits All: The Campaigns for Global Uniformity* (Stanford, 2007).

newness was based in the swift societal and cultural transformations carried out by the urban middle class and made possible by the striking technological innovations of the period. A "feud between the ancient and the modern," as was carried out in Paris in the 1690s with regard to the relative value of antiquity in comparison to the present, was no longer comprehensible in the age of railroads and fossil fuels. "One must be absolutely modern," wrote French author Rimbaud in 1873.[27]

This notion of developmental time was not just an important aspect of the self-conception of modern societies, but also used to position societies in the world—epitomized in Hegel's dictum that "Europe is clearly the endpoint of world history, Asia the starting point."[28] There is no doubt that this conception of time—making it possible to render differences as temporal gap, and to translate diversity into a language of progress and backwardness—would come to form an ideological basis of colonialism.[29] Colonized societies were relegated to the "waiting room of history," as colonial rulers from Belgium's King Leopold to US president Wilson incessantly deferred the promise to grant equality and independence.[30] However, it would be shortsighted to reduce the notion of progress to a European invention. On the contrary, it directly corresponded with changing geopolitical power imbalances and should be seen as a global reaction to the widening gap in the ability to deploy economic, bureaucratic, and military power. Once societies were exposed to the global order dominated by Western Europe, the idea of progress had immediate purchase for reformist elites from Syria to Korea.[31] To these groups, the new conception of time was not foreign, but self-evident, given the pressures of imperial structures and expanding markets; it was a useful concept as it helped to legitimize reforms in many places around the world. The evolutionary notion of time must therefore be understood as the result of global hierarchies and of asymmetrical geopolitical structures.

The fourth dimension of the nineteenth-century time revolution was the discovery of *deep history*. This aspect is hardly mentioned in standard accounts and therefore merits special attention. The advance of the modern sciences—from archaeology to geology and theories of evolution—ever more rigorously

27 Arthur Rimbaud, *Une saison en enfer* (Paris, 1999; first published 1973), 204.

28 Georg Wilhelm Friedrich Hegel, *Werke in zwanzig Bänden*, vol. 12, *Vorlesungen über die Philosophie der Geschichte* (Frankfurt, 1970; first published 1840), 134.

29 Johannes Fabian, *Time and the Other: How Anthropology Makes Its Object* (New York, 1983).

30 Dipesh Chakrabarty, *Provincializing Europe: Postcolonial Thought and Historical Difference* (Princeton, 2000), 9.

31 Albert Hourani, *Arabic Thought in the Liberal Age, 1798–1939* (Cambridge, 1983); Luke S. K. Kwong, "The Rise of the Linear Perspective on History and Time in Late Qing China, *c.*1860–1911," *Past & Present* 173 (2001), 157–90.

challenged customary time regimes based on ideas of a sacred order. In many local communities faith in cosmological time, including beliefs regarding the age of the world, the beginning of time, and the relationship between past and present, began to weaken. The challenge of deep history was not limited to embattled communities at the colonial peripheries, but just as noticeable in the imperial centers. In fact, the extension of the timescale proved most provocative to those societies shaped by revealed religions—by Judaism, Christianity, and Islam—where it often came as a shock. Deep time sucked the cosmological meaning out of sacred time, and it opened up vast swaths of the past that had hitherto been declared off-limits. As a direct outcome of the increasing entanglements of the nineteenth-century world, these revolutionary changes were the product of a global conjuncture. They had far-reaching implications, as they undermined time-hallowed certainties, and led to a repositioning of cultures and societies in world history.

In the Islamic world, the archaeological finds of modern Egyptology fundamentally undermined the religiously charged conception of temporality. Traditionally, ancient Egyptian ruins had played a central role in Islamic self-conceptions, acting as a warning to societies that failed to answer to the call of the gods. A large rift existed between the pagan society of the pharaohs, now considered a mere curiosity, and contemporary society with its roots in Muslim doctrine. By 1822 at the latest, however, this dichotomy began to dissolve. Following Jean-François Champollion's deciphering of the Egyptian hieroglyphics, writers such as Rifa'a Rafi' al-Tahtawi and 'Ali Mubarak began examining the relationship between contemporary Islamic society and the pre-Islamic past differently. Increasingly, Egyptian antiquity was reconfigured as the prehistory of the modern nation. For Tahtawi, the very bodies of the contemporary Egyptians were "exactly that of the peoples of times past, and their disposition is one and the same."[32] Beginning in the 1870s, ancient Egypt began to make its way into national textbooks, turning the past into a resource for the present and supporting national dreams of a powerful empire. "The Egyptians formed an important expansionist nation, proceeding in its empire along the most modern lines of European colonialism today," journalist Ahmad Lufti al-Sayyid revealed at the turn of the century.[33] Moreover, the privileged place granted to religion under the pharaoh—"It is known that the Egyptians were advanced in the matter of divinity to the utmost"—now seemed to anticipate

[32] Quoted in Hourani, *Arabic Thought in the Liberal Age*, 79.

[33] Quoted in Elliott Colla, *Conflicted Antiquities: Egyptology, Egyptomania, Egyptian Modernity* (Durham, NC, 2007), 148.

the coming of Islam.[34] The rift between the heathen past and the holy history of Islam was now replaced by a sense of long continuity.

Also in Christian Europe, the discovery of deep history marked a decisive break. Ever since antiquity, the biblical account of creation and the deluge had constituted the framework in which history was endowed with meaning. The Great Flood, which Vico calculated to have occurred in 1656 BC, marked the beginning of history. It had wrought utter destruction, severing all connections to the pre-Flood history, and thus essentially reset the historical clock to zero. For European historians working within the framework of the Old Testament, history prior to the diluvial catastrophe was seen as inaccessible.[35]

The biblical chronology was influential through the nineteenth century.[36] On its basis, Europeans discredited older historical chronologies of India, ancient Egypt, and China as mythical tales and pure fabrications. The four epochs (*yugas*) presented in the Hindu *Laws of Manu* spanned 12,000 divine years into the past, which would have amounted to 4.3 million human years—not far enough from a present-day perspective, but an absurd hypothesis for Europeans at the time. "Rude nations seem to derive a peculiar gratification from pretensions to a remote antiquity", wrote James Mill in *History of British India* in 1818. "As a boastful and turgid vanity distinguishes remarkably the oriental nations, they have in most instances carried their claims extravagantly high."[37] Mill's words may appear as expressions of Western colonial superiority, and of the conceits of Christian tradition. More generally, however, they were emblematic for the short-term cosmology shared by the so-called People of the Book. In this sense, Mill was but a latter-day al Biruni, the eleventh-century Iranian scholar who was among the first critics of Hindu deep history (and of its lack of an explanation for creation).[38]

In Europe, doubts about the dominant historical approach first surfaced in the seventeenth century. This skepticism was a direct response to knowledge

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34 Abu al-Su'ud, quoted in Colla, *Conflicted Antiquities*, 129. See also Wendy M. K. Shaw, *Possessors and Possessed: Objects, Museums, and the Visualization of History in the Late Ottoman Empire* (Berkeley, 2003).

35 See Paolo Rossi, *The Dark Abyss of Time: The History of the Earth and the History of Nations from Hooke to Vico* (Chicago, 1984); Daniel Lord Smail, "In the Grip of Sacred History," *American Historical Review* 110 (2005), 1336–61.

36 See Daniel Rosenberg and Anthony Grafton, *Cartographies of Time: A History of the Timeline* (New York, 2010).

37 Quoted in Thomas R. Trautmann, "Indian Time, European Time," in Trautmann, *The Clash of Chronologies: Ancient India in the Modern World* (New Delhi, 2009), 25–52, at 32. On Mill see Javed Majeed, *Ungoverned Imaginings: James Mill's "The History of British India" and Orientalism* (Oxford, 1992); Lynn Zastoupil, *John Stuart Mill and India* (Stanford, 1994).

38 Trautmann, "Indian Time, European Time."

gathered about other societies, and as such was a by-product of the increasing density of global networks. One important impetus was the reports of Jesuit missionaries indicating that Chinese annals documented events that took place up to six hundred years prior to the Great Flood.[39] Similarly, the growing knowledge of both the Sumerian and Egyptian civilizations nourished doubts. In addition, geologists, archeologists, and evolutionists began launching an attack on the traditional historical perception. The year 1859 turned into a foundational moment of the new time regime. Excavations in the English town of Brixham proved that humans had lived in the Stone Age, and Charles Darwin's *On the Origin of Species* traced human history back through early history and prehistory. Asserting that evolution took place over a 300-million-year timespan, Darwin's work spanned further back in time than did even Hindu mythology. With this, the traditional historical interpretation was fundamentally cast aside. Stephen Jay Gould identified the discovery of geological time as a cosmological revolution, comparable in scope to the Copernican revolution.[40]

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The global transformation of the time regime resulted from the intersection of these four dimensions. At first sight, they may come across as unrelated phenomena: clocks and empty time on the one hand, and progress and history on the other. In fact, we might be led to believe that they were governed by different logics altogether. The concern with clocks, punctuality, temporal discipline, and the standardization of calendars and time zones all worked towards the synchronization of the world. By contrast, the discovery of history and the notion of progressive time undid such synchronicity, and introduced temporal difference in the form of advanced and backward societies.

Such binary opposition, however, remains necessarily schematic as it cancels out the considerable overlap between both temporalities. Synchronicity enabled—and in many ways compelled—individuals and societies to compare themselves with each other. The preferred strategy was the scaling of societies along stages of development. Synchronicity was thus structured in hierarchical ways, closely mirroring the power asymmetries of the age that it in turn sustained ideologically.

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39 See Edwin van Kley, "Europe's 'Discovery' of China and the Writing of World History," *American Historical Review* 76 (1971), 358–85.

40 Stephen Jay Gould, *Time's Arrow, Time's Cycle: Myth and Metaphor in the Discovery of Geological Time* (Cambridge, MA, 1987); Martin J. S. Rudwick, *Worlds before Adam: The Reconstruction of Geohistory in the Age of Reform* (Chicago, 2008).

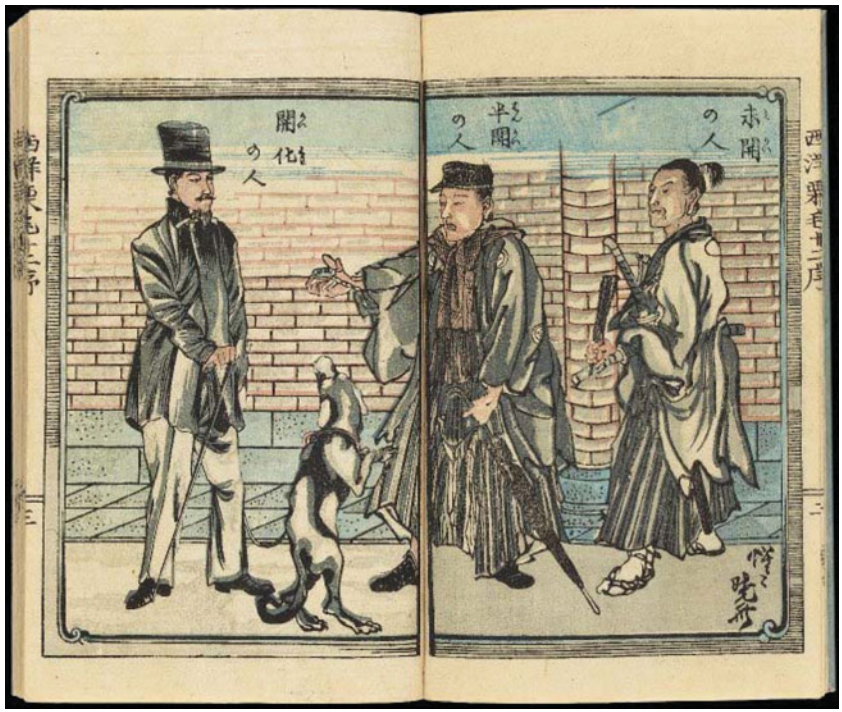

Fig. 1. (Colour online) Woodblock print by Kawanabe Kyōsai, ©Trustees of the British Museum

In the global system of civilizational hierarchies, punctuality and history were two sides of the same coin. To be in time, to work by the clock, and not to waste temporal resources was equated with civilization, and the agents of colonialism turned into missionaries of the clock. "You must know that today we have unpacked our clock and we seem a little more civilized," Emily Moffat, daughter-in-law of the well-known British missionary Robert Moffat, proudly reported in 1861 from Matabeleland in what is today Zimbabwe: "For some months we have lived without a time-piece. John's chronometer and my watch have failed, and we have left time and been launched onto eternity. However, it is very pleasing to hear 'tic tic tic' and 'ding ding'."[41]

A woodblock print by the Japanese artist Kawanabe Kyōsai from the 1870s nicely illustrates the interplay between clock time, progressive time, and deep time (Fig. 1). The print shows three types of early Meiji Japan: on the right, a

[41] Cited in Nanni, *The Colonisation of Time*, 25. See also Jean Comaroff, "Missionaries and Mechanical Clocks: An Essay on Religion and History in South Africa," *Journal of Religion* 71 (1991), 1–17.

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Samurai in traditional garb; in the middle, a man sporting several elements of Western dress, such as umbrella, cap, and shoes; on the left, the prototype of the enlightened gentleman, all with top hat, cane, and dog. What may appear as a description of a chance encounter must in fact be read as the representation of the hierarchies of time in the late nineteenth century. The three men—incarnations of the typology of the civilized, semideveloped, and primitive made famous by Kawanabe's contemporary, the philosopher Fukuzawa Yukichi—represent the logic of developmental history. The crucial figure here is the man in the middle. He holds a fob watch in his hand, ready to tell the time in this age of punctuality. The watch—a powerful symbol of the fear that Japan may already be too late—elicits the particular interest of the dog. In its erect pose, the dog stands for the Darwinian narrative of evolution, and the continuity between deep time and the present. Should Japan modernize too late, the image suggests, it may well regress to an animal-like state. The clock, progress, and deep time linking human to natural history here all come together in this allegory of modern temporality. Time thus emerged into a language that linked the individual to the nation and to the world at large, and made it possible to position individuals and societies globally.[42]

* * *

Standardization, global synchronization, progress, and deep time: the transformation of temporal regimes was a response to, and product of, an unprecedented degree of global integration. Where did this development originate? Many contemporaries were convinced that this was essentially a process of Europeanization, and historians have generally followed them in this assessment. Oswald Spengler, for example, interpreted the clock as a unique symbol of European culture: "Day and night, from thousands of towers the strokes of the bells can be heard across the land ... It is impossible to imagine Occidental man ... without the most precise measuring of time."[43] Also outside Europe, the changing notions of time were frequently perceived not as "new," but as "Western." In the Ottoman Empire, for example, measuring the hours without reference to the sun was designated not as modern, but as European, or *alafranga*.

[42] I discovered the woodblock print in Christian Uhl, "Translation and Time: A Memento of the Curvature of the Poststructuralist Plane," *Frontiers of Literary Studies in China* 6 (2012), 449–50; my reading of the print, too, follows Uhl's interpretation.

[43] Oswald Spengler, *Der Untergang des Abendlandes: Umrisse einer Morphologie der Weltgeschichte* (Munich, 1998), 175.

Seen this way, the new times have frequently been interpreted as the displacement of an existing cosmological order. The new temporalities then appear as the import of a foreign culture incompatible with one's own, if not as outright "cultural genocide."[44] However, already a cursory glance at the social experience of time reveals that a simple Westernization thesis is untenable. The novelty of the new time regime was felt in Europe and the United States in very similar ways. The sense of rupture was not so different in Paris and Philadelphia from what it was in Batavia or Isfahan. It would thus be misleading to speak of a Western time regime that by necessity was experienced as foreign elsewhere. In fact, odd and strange it was in the West as well. In both the United States and across Europe, conceptions of time tied to daylight survived into the nineteenth century. When the renowned clockmaker Eli Terry constructed a clock for the city hall of New Haven in 1825, his regular timepiece, liberated from the rhythms of the sun, met with an outburst of public protest. "To have a clock in a town to tell the public what the time is *not* is certainly a novel scheme," an infuriated reader of New Haven's *Connecticut Journal* exclaimed. "A public clock, which tells the truth four times only in a year, is something very much like public nuisance." The popular preference for a "natural" conception of time was still very much alive.[45]

The idea of progressive history, too, posed a major cognitive challenge—just as the discovery of deep time, as we have already seen. Around the world, people commented on their sense of confusion, and on the feeling of being catapulted into a new age that had cut all ties with the past. The Bengali writer Bankim Chatterji (1838–94) observed that whatever he and his fellow novelists wrote "would have been incomprehensible to earlier generations, however one might try and translate it."[46] Again, we can see similar reactions in Europe. "It is most disagreeable," Goethe had exclaim Eduard, the protagonist of his novel *Elective Affinities* (1809), "that one cannot now-a-days learn a thing once for all, and have done with it. Our forefathers could keep to what they were taught when they were young; but we have, every five years, to make revolutions with them, if we do not wish to drop altogether out of fashion."[47]

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44 This term is used by Vinay Lal to refer to the arrival of "Western" historical thinking in South Asia. See Vinay Lal, "Provincializing the West: World History from the Perspective of Indian History," in Eckhardt Fuchs and Benedikt Stuchtey, eds., *Writing World History 1800–2000* (Oxford, 2003), 271–89, at 289.

45 Michael O'Malley, *Keeping Watch: A History of American Time* (New York, 1990), 4. I am grateful to Norbert Finzsch for directing me to this episode.

46 Quoted in Tapan Raychaudhuri, *Perceptions, Emotions, Sensibilities: Essays on India's Colonial and Post-colonial Experiences* (New Delhi, 1999), 26.

47 Johann Wolfgang von Goethe, *Die Wahlverwandtschaften*, in *Werke*, vol. 6, ed. Erich Trunz (Munich, 1982), 270. For the English version see Johann Wolfgang von Goethe, *Elective Affinities* (Boston, 1872), 37.

From a long transitional period, countless testimonies have survived that bespeak a painful process of replacement. The French writer François-René de Chateaubriand, for instance, confessed in his memoirs in the late 1840s that he found himself "between two centuries, as if at the meeting of two rivers, regretfully leaving behind the shore on which I was born, and swimming with hope toward an unknown shore."[48] The shock of the new was as palpable in Europe or the United States as it was elsewhere. If there was a difference, it was that in many non-Western locations, the process arrived in precipitated form, radically abridging the transitional period. While Europeans experienced the arrival of the new time regime as a gradual development, in many non-Western societies change came all of a sudden.

* * *

The time revolution was situated at the confluence of large structural transformations that affected societies around the world.[49] Among them was the technological revolution that facilitated precision of time measuring and the synchronizing of the world. The new time regime was thus also a response to the opportunities that the modern infrastructure provided: the railway, the telegraph, the steamship. For example, new means of travel and communication drove home the regime of punctuality and acceleration. Travelling on steamships was not only more comfortable, faster, and less expensive; it also provided a vivid idea of the new temporalities at work. The ritual Muslim trip to Mecca, undertaken by more than 100,000 people annually, is a case in point. "Theologically, the hajj journey was the expression in space of sacred Islamic time ... Practically, this sacred calendar was now relativized as the journey was made through the consultation of ship and train timetables."[50] Mass travel also enabled a practice of comparison, framed in a matrix of progress and backwardness that many travelers brought

48 Quoted in Göran Blix, "Charting the 'Transitional Period': The Emergence of Modern Time in the Nineteenth Century," *History and Theory* 45 (2006), 51–71, at 58–9.

49 For interpretations of simultaneous global integration and the production of difference in the nineteenth century see Michael Geyer and Charles Bright, "World History in a Global Age," *American Historical Review* 100/4 (1995): 1034–60; Charles S. Maier, "Consigning the Twentieth Century to History: Alternative Narratives for the Modern Era," *American Historical Review* 105 (2000), 807–31; C. A. Bayly, *The Birth of the Modern World 1780–1914* (Oxford, 2004); Arif Dirlik, *Global Modernity: Modernity in the Age of Global Capitalism* (Boulder, 2007); Jürgen Osterhammel and Niels P. Petersson, *Globalization: A Short History* (Princeton, 2009); Osterhammel, *The Transformation of the World*; Emily S. Rosenberg, ed., *A World Connecting, 1870–1945* (Cambridge, MA, 2012).

50 Nile Green, "The Hajj as Its Own Undoing: Infrastructure and Integration on the Muslim Journey to Mecca," *Past & Present* 226 (2015), 193–226, at 221.

home with them. At the end of the century, versions of the term "progress" began to appear in many local idioms, thus converting the reconfiguration of space–time into political vocabulary.[51]

But the time revolution was not the work of technology alone. Technological innovation interacted with several large-scale processes that deeply impacted on societies around the world. Chief among them were the capitalist transformation of production, the emergence of the international system of states, and the imperialist reordering of the geopolitical landscape. These processes changed the social conditions under which social actors in places like Senegal, the Ottoman Empire, and Indonesia could perceive the regime of clocks, punctuality, and progress as plausible, helpful, even inevitable.

Before taking up these three factors in turn, it is important to underline that they did not necessarily work as homogenizing forces. For one, they were in themselves highly heterogeneous, and changed over time. The scope and the technologies of rule in the era of high imperialism, for instance, were not identical with the structures of empire in the 1830s. Second, all three factors discussed below also had differentiating effects. The reordering of production experienced in the African hinterlands, for example, worked differently from capitalism in port cities in East Asia. The state system, capitalism, and empire helped synchronize the world according to similar standards; at the same time, they contributed to new forms of fragmentation and difference. Finally, the three processes did not necessarily operate in unison. For all their substantial overlap, each also followed a specific logic, and thus produced partly different time regimes that cannot be completely mapped onto each other.[52]

First, the new time regime was fundamentally the result of the capitalist reorganization of the workspace and of the world economic order. The exigencies of factory production—in important ways prefigured by the plantation complex—inculcated a form of temporal discipline that at its extreme allowed

[51] Nile Green, "Spacetime and the Muslim Journey West: Industrial Communications in the Making of the 'Muslim World'," *American Historical Review* 118 (2013), 401–29. See also Michael Adas, *Machines as the Measure of Men: Science, Technology, and Ideologies of Western Dominance* (Ithaca, 1989); Valeska Huber, *Channelling Mobilities: Migration and Globalisation in the Suez Canal Region and Beyond, 1869–1914* (Cambridge, 2013). On the notion of progress see, for example, Serif Mardin, *The Genesis of Young Ottoman Thought: A Study in the Modernization of Turkish Political Ideas* (New York, 1962), 350–52; Avner Wishnitzer, *Reading Clocks, alla Turca: Time and Society in the Late Ottoman Empire* (Chicago, 2015), 155–66.

[52] For a historical perspective on such different logics see Jacques Le Goff, "Merchant's Time and Church's Time in the Middle Ages," in Le Goff , *Time, Work, and Culture in the Middle Ages* (Chicago, 1980), 29–42. For a contemporary example see Elena Esposito, *The Future of Futures: The Time of Money in Financing and Society* (Cheltenham, 2011).

employers to calculate wages according not to output, but to working time.[53] Gradually, the mechanisms of commodification extended beyond the marketplace, and social relations in other spheres began to be oriented to the measure of time as well. Karl Marx predicted "that men are effaced by their labour; that the pendulum of the clock has become as accurate a measure of the relative activity of two workers as it is of the speed of two locomotives ... Time is everything, man is nothing; he is at the most, time's carcass."[54] More and more, time emerged as a form of currency that made the diversity of social actions comparable, and compatible. Standardization and capitalist refashioning turned time into a mediator that helped to negotiate between different sites of social experience. In this way, the spread of clocks and habits of punctuality was closely tied to the expansion of capitalist markets, the requirements of industrial production, and the incorporation into the emerging world market.[55]

Second, strong state intervention was crucial in bringing about changes in the lived experience and meaning of time. In countries with traditions of strong centralized government like China, Japan, and Russia, the modernizing state and its bureaucracy operated as a chief driving force behind temporal reform. In China, the scholar and politician Zhang Jian turned early twentieth-century Nantong into a model city, a theater of modernity where all the institutions that characterized modern urbanity were on public display: a museum, a theater, a cinema, sports fields, parks, and factories with their rigid schedule of alternating shifts. In 1899 the first clock tower was erected in Nantong, a massive stone structure with a Roman dial, a powerful symbol of the new time regime.[56] In Japan, the government initiated social improvement campaigns, in particular in the countryside, to reform popular uses of time. The "Time Exhibition" in 1920 aimed at "forming the beautiful customs of valorizing time (*jikan sonchō*) and punctuality (*teiji reikō*) in the population, and encouraging them to observe a more disciplined lifestyle." Concomitantly, the government created a holiday commemorating the "Anniversary of Time," still observed today.[57]

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53 Richard Biernacki, *The Fabrication of Labor: Germany and Britain, 1640–1941* (Berkeley, 1995).

54 Karl Marx, *The Poverty of Philosophy* (London, 1936), 47.

55 Moishe Postone, *Time, Labor, and Social Domination: A Reinterpretation of Marx's Critical Theory* (Cambridge, 1996), 186–260.

56 Qin Shao, *Culturing Modernity: The Nantong Model, 1890–1930* (Stanford, 2003). For the adoption of clocks and linearity see Kwong, "The Rise of the Linear Perspective." For Soviet Russia see Stephen Hanson, *Time and Revolution: Marxism and the Design of Soviet Institutions* (Chapel Hill, 1997).

57 Quoted in Katja Schmidtpott, "Die Propagierung moderner Zeitdisziplin in Japan, 1906–1931," in Alexander C. T. Geppert and Till Kössler, eds., *Obsession der Gegenwart: Zeit im 20. Jahrhundert* (Göttingen, 2015), 123–55. See also Hirade Yūko, "'Toki no kinenbi'

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Nowhere, however, was temporal change simply a matter of top-down imposition. It was also the work of a variety of historical actors who used temporal reform for their strategic purposes. The hegemony of abstract, empty time was driven by the new middle classes whose power and political clout were related to the new time regime. It was this milieu that generated the time activists who orchestrated the extensive project of inculcating the economic value of time and creating a diligent workforce. Such campaigns were part of a large program of social disciplining that social elites—whether in London, Buenos Aires, or Yogyakarta—used to railroad what they saw as the backward parts of the population into modern comportment and productivity. Virtually everywhere, temporal reform—in some places ideologically underscored by evangelical or millenarian movements—came in form of attacks on local "moral economies" and traditional customs that were now lambasted as idleness and indolence.[58]

Around the world, parts of the aspiring social strata embraced the temporal regime of precision, punctuality, and productivity. Many of the port cities in the Middle East and in Southeast and East Asia were virtual breeding grounds for the inculcation of the new times. In many locations that were not subjected to formal colonial rule, new elites rallied for a new time consciousness as defensive measure. The various movements of self-strengthening found political purchase in the notion of progress that promised a path out of current dependency. Likewise, social reformers embraced the values of modern clock time. They translated popular manifestos of modern time consciousness, such as Samuel Smiles's *Self-Help* and Benjamin Franklin's *The Way of Wealth*, in order to inculcate values of improvement, thrift, and temporal discipline: "Time is money." The fact that Smiles's book was translated into twenty-six languages before World War I, among them Arabic, Bengali, Chinese, Marathi, Ottoman Turkic, and Japanese, attests to the energies invested by the educated classes into the project of temporal pedagogy.[59] The Gregorian calendar, clock towers, and the fob turned

no setsuritsu," *Nihon rekishi* 725 (2008), 69–84. On the improvement campaigns see Sheldon Garon, *Molding Japanese Minds: The State in Everyday Life* (Princeton, 1997); Narita Ryūichi, "Kindai Nihon no 'toki' ishiki," in Satō Tsugitaka and Fukui Norihiko, eds., *Chiiki no sekaishi*, vol. 6, *Toki no chiikishi* (Tokyo, 1999), 352–85.

58 The most widely known treatment of such social disciplining is Edward P. Thompson, "Time, Work-Discipline, and Industrial Capitalism," *Past & Present* 38 (1967), 56–97. See also Thomas C. Smith, "Peasant Time and Factory Time in Japan," *Past and Present* 111 (1986), 165–97.

59 Benjamin Franklin, "Advice to a Young Tradesman, Written by an Old One," in *The Papers of Benjamin Franklin*, ed. Leonard W. Labaree, William B. Willcox, Barbara Oberg, and Ellen R. Cohn, 41 vols. (New Haven, 1959–2014), 3: 306–8; Samuel Smiles, *Self-Help: With Illustrations of Character and Conduct* (London, 1859), 199–200. For Smiles's global career see Ogle, "Whose Time Is It?", 1396–7. On the diffusion of Franklin's text see Sophus A.

into insignia of modern life also in places like Damascus, Manila, and Yokohama. Beyond such outward appurtenances, also vocabularies, ways of thinking, and forms of organization began to change, as time turned into a commodity to be consumed, and accumulated. In the Arab world, local reformers eagerly disseminated invectives against "killing time" (*qatl al-waqt*), a new entry in the social vocabulary used to criticize their fellow countrymen for wasting this precious resource in cafés.[60] "Time is a fleeting treasure," the Egyptian newspaper Al-Hilal declared in 1895. "We all know time is costly, yet spend it deliberately . . . We value and save dirhams; unfortunately, we are too generous with our time."[61]

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The third major factor to be considered here was imperialism. The expansion of the European (and, soon, American and Japanese) empires, and the grafting of imperial structures onto colonized communities, confronted large groups of people with the new temporal norms. Imperialism, therefore, was a key driving force in bringing about the time revolution of the nineteenth century. Historical actors were not free in their choices, and the hierarchies of the imperialist age penetrated deep into local societies.

Partly, the spread of a modern time consciousness was the result of direct interventions. The colonial powers introduced the Gregorian calendar and synchronized time measurements in some of their colonial territories. Under imperial rule, keeping Sunday free of work, observing Christian holidays, and shifting from local times to standardized world time was widespread. Historians of colonialism, therefore, have interpreted the impact of imperial rule as the result of a cultural transfer. The new time regime, in this reading, came in the form of a cosmological invasion, as a *clash of chronologies*. Linear, empty, and progressive time was imposed upon many societies around the world and triggered the disappearance of indigenous ways of relating to past, present, and future. The new time regime was seen as essentially foreign, as a cultural order largely incompatible with local worldviews.[62]

Take the case of history writing. The spread of modern historiography to Africa and Asia is usually seen as an effect of a cultural import, forced upon local societies by the colonial powers. As a result, the various local forms of record keeping and

Reinert, "The Way to Wealth around the World: Benjamin Franklin and the Globalization of American Capitalism," *American Historical Review* 120 (2015), 60–97.

60 Ogle, "Whose Time Is It?," 1398–9.

61 Quoted in On Barak, *On Time: Technology and Temporality in Modern Egypt* (Berkeley, 2013), 11.

62 Thomas R. Trautmann, *The Clash of Chronologies: Ancient India in the Modern World* (New Delhi, 2009); Nanni, *The Colonisation of Time*.

history writing were soon considered obsolete, and, even in Asian countries with a long historiographical tradition, aspiring young historians flocked to European and American universities to learn the new trade. Everywhere, according to this reading, the embrace of history came at the price of forsaking customary cosmologies.[63] More than anywhere else, this was the case in colonial India, where history writing as a genre had not emerged until the arrival of British rule. The colonizers, in their self-legitimation, thus essentially introduced historical time.[64]

Appealing as such a reading may be, however, it essentially reduces colonialism to the status of a medium of cultural transfers. The arrival of colonial rule is then equated with the import of a foreign and incompatible culture. Instead, we need to shift the analytical position that empire has occupied in this story for so long. What a reading of the recent literature suggests is that the emergence of the modern time regime was not primarily a result of transfers and of connections, and thus the outcome of cultural imperialism. Instead, the effects of empire were felt more indirectly. Imperialism was indeed crucial—but primarily because it helped rework societies globally, and thus trigger developments that eventually called for an adjustment of temporalities.

The adoption of modern history writing was thus less an issue of cultural conversion, of the influence and dissemination of a European model. Having a history was more than just a good idea. Rather, the quest for history in India was triggered by sweeping societal transformations. Members of an educated middle class began to call for social reforms, for political participation, and for economic development—a call that corresponded with a view of history that fused an evolutionary logic with a national subject. In this quest, they may have found it useful to quote British historians such as Macaulay, Buckle, and Mills. But these references must be understood primarily as an effect of structural change brought about by colonialism, and not as evidence of a colonization of the minds. Imperialism was less a medium that spread (unfamiliar) content than a powerful initiator of social transformations that then made a new culture of time attractive.[65]

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63 Stefan Tanaka, *Japan's Orient: Rendering Pasts into History* (Berkeley, 1993); Duara, *Rescuing History from the Nation*. For an overview of the global emergence of modern history writing see Daniel Woolf, *A Global History of History* (Cambridge, 2011).

64 See Sumit Guha, "Speaking Historically: The Changing Voices of Historical Narration in Western India, 1400–1900," *American Historical Review* 109 (2004), 1084–1103; Velcheru Narayana Rao, David Shulman, and Sanjay Subrahmanyam, *Textures of Time: Writing History in South India 1600–1800* (New Delhi, 2001); Kumkum Chatterjee, *The Cultures of History in Early Modern India: Persianization and Mughal Culture in Bengal* (Oxford, 2009).

65 Such an approach draws on leads by Christopher L. Hill, "Conceptual Universalization in the Transnational Nineteenth Century," in Moyn and Sartori, *Global Intellectual History*,

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To be sure, the time revolution was a project that did not go uncontested. The gospel had its missionaries, but not everybody benefited from the new orthodoxy. Opposition and protest followed largely similar patterns, whether in industrialized England or in rural Africa. Many quarrels at the workplace were essentially conflicts about the ordering of time. In South Africa, for example, local workers insisted on the cycle of the moon, whereas contracts were signed on a monthly basis. While white employers saw the demands for wages as untimely and premature, African workers claimed temporal fairness: "The moon is dead! Give us our money!" Diverging temporal norms were interpreted by both sides as deviation from a presupposed natural order. "They cannot understand there being more than 28 days in a month," one missionary commented. "It is impossible to make them believe there are 31."[66]

The imposition of time regimes generated forms of opposition virtually everywhere; the archives are full of evidence of the disinclination of large groups of the population to bow to the new norms. Among the strategies was demonstrative nonconformity with prescribed temporal norms: "laziness" in the eyes of ruling elites, or instead "the conscious sabotage of the colonial machine," as Frantz Fanon called it.[67] The story of temporal reform was also the story of refusal and denial.[68]

Here, too, however, we need to refrain from interpreting such conflicts primarily in cultural terms as the clash of incompatible chronotopes.[69] Social actors were not the puppets of a time regime that provided the script that they merely carried out. Conflicts were less the symptom of an underlying clash of (temporal) civilizations, than rather the outcome of struggles over hierarchy and social power.[70] "There is no reason why the more intelligent of the people should

134–58; Andrew Sartori, *Liberalism in Empire: An Alternative History* (Berkeley, 2014); Moyn and Sartori, "Approaches to Global Intellectual History."

66 Quotations from Keletso E. Atkins, "'Kafir Time': Preindustrial Temporal Concepts and Labour Discipline in Nineteenth-Century Colonial Natal," *Journal of African History* 29 (1988), 229–44, at 231.

67 Frantz Fanon, *The Wretched of the Earth* (New York, 1963), 239. See also Syed H. Alatas, *The Myth of the Lazy Native: A Study of the Image of the Malayas, Filipinos and Javanese from the 16th to the 20th Century and Its Function in the Ideology of Colonial Capitalism* (London, 1977).

68 For some telling examples see Jean and John Comaroff, *Of Revelation and Revolution*, 2 vols. (Chicago, 1991–7).

69 For such a reading in culturalist terms see William Gallois, "The War for Time in Early Colonial Algeria," in Lorenz and Bevernage, *Breaking Up Time*, 252–73.

70 For such emphasis on social struggles see Frederick Cooper, "Colonizing Time: Work Rhythms and Labor Conflict in Colonial Mombasa," in Nicholas B. Dirks, ed., *Colonialism*

not mark the hours as they fly," postulated John Tengo Jabavu, a Xhosa graduate of the Lovedale missionary school in the Cape Province, in 1885. "The first person to set the example in a village should be the school-teacher."[71] Historical actors, in Europe and beyond, resisted *and* adopted punctuality and progress, depending on the circumstances, for their own purposes.

What is more, resistance to the new time regime was not primarily an expression of nostalgia, of a yearning for bygone days and old customs. In important ways, the traditions to which the enemies of the new referred were themselves products of the new global conjuncture. The concept of an "Arabic time" in *fin de siècle* Cairo, for example, was a recent invention, intelligible only in distinction from Turkish and European times. On Barak has spoken of "countertempos," alternative measures of time that were as much the result of modern transformations as empty clock time, which they purported to rage against.[72]

More broadly speaking, the promulgation of "new times" corresponded with the concomitant "invention of traditions" and the discovery of "the past as a foreign country".[73] The idea that the past was different from the future created anxiety and the sensation of irretrievable loss. Concomitant with the rise of narratives of progress, contemporaries sought to salvage traditions and customs of bygone days: the fairy tales collected by Pushkin and the Brothers Grimm, Walter Scott's depictions of the Scottish Highlands, James Fennimore Cooper's Leatherstocking Tales, and many more. Acceleration and development created, as their counterpart, historical nostalgia and the yearning for what had vanished.

As the past was gradually severed from everyday practices, contemporaries began to record and collect its remnants for its own sake. The founding years of national museums—ranging from France (1791) and Sweden (1792) via Mexico (1825) and Chile (1830) to Russia, Japan (1872), and the Philippines (1901)—give a good indication of when the new time regime was safely installed (and found a nation-state to back it up). The museums were temples dedicated to the celebration of moments of cultural efflorescence, and, where needed, could be employed to counter the claims of the colonizer's temporalities. In Egypt, Rifa'ah Rafi' al-Tahtawi was instrumental in reviving the memory of ancient pharaonic Egypt.[74] In the Philippines, *ilustrados* like José Rizal embarked on the quest

and Culture (Ann Arbor, 1992), 209–46; Andreas Eckert, "Zeit, Arbeit und die Konstruktion von Differenz: Über die koloniale Ordnung in Afrika," *Comparativ* 10/3 (2000), 61–73.

71 Quoted in Nanni, *The Colonisation of Time*, 194.

72 Barak, *On Time*, 5, 78.

73 David Lowenthal, *The Past Is a Foreign Country* (Cambridge, 1985).

74 Donald Reid, *Whose Pharaohs? Archaeology, Museums, and Egyptian National Identity from Napoleon to World War I* (Berkeley, 2002); Hourani, *Arabic Thought in the Liberal Age*, chap. 4.

for the golden age that pre-dated Spanish conquest.[75] In Bengal, Rajendra Lal Mitra, member and later president of the Asiatic Society, founded the Bibliotheca Indica in his attempt to recover Hindu culture before the arrival of Muslim and British rule. In Latin America, Creole elites began to appropriate the pre-Columbian past and declare it their own cultural heritage. National identity in Colombia harked back to the Muisca, while independent Peru was fashioned into a revival of the Inca state.[76] In all these cases, a past that had been safely stored away and was no longer alive was the precondition for any claims to its legacy.

* * *

As a result of the constant reproduction and mobilization of alternative temporalities, the hegemony of the modern time regime was never absolute. In the rural hinterlands in China, temple bells continued to sound, and time was measured using incense sticks as if nothing had changed. In many places, various forms of keeping and experiencing time coexisted, and most people were able to negotiate the demands of competing temporal frameworks. The seven seasons observed by some Aboriginal communities in Australia, the Chinese New Year, the sighting of the new moon that rang in the Ramadan, auspicious moments in the popular calendars in Europe—they all remained relevant in the age of standardization and synchronization. While public times tended to align with the new time regime, private times—typically also expressing gender orders, and the sequence of life stages—showed more resilience.

For individuals, such plurality posed challenges but at the same time opened up spaces for maneuver. In the Ottoman Empire, for example, the calendars of religious communities (*millet*) stood side by side—the Julian calendar of the Orthodox Church, the Muslim calendar based on the Hijra, the Hebrew calendar, as well as the Gregorian system of Levantines and Europeans. The Ottoman state observed two different calendars, the religious and the financial calendar. Hours were counted in Turkish or *alafranga*, while a confusing multitude of holidays punctured the year. In 1857, forty-nine Greek holidays coexisted with twenty-six Armenian, seven Jewish, seven Catholic, and four Protestant holidays; in addition, celebrations were held at the birthday of the Sultan, New Year, and Carnival—and,

75 Filomeno V. Aguilar Jr, "Tracing Origins: *Ilustrado* Nationalism and the Racial Science of Migration Waves," *Journal of Asian Studies* 64 (2005), 605–37.

76 Rebecca Earle, *The Return of the Native: Indians and Myth-Making in Spanish America, 1810–1930* (Durham, NC, 2007); Tim Brading, *The Origins of Mexican Nationalism* (Cambridge, 1985).

last but not least, on 14 July, in honor of the anniversary of the beginning of Queen Victoria's reign.[77]

These competing orders of time were not mere remnants of the past, but instead made and refurbished in the age of standardization and global synchronicity. The relationship between what were perceived as traditional and modern times was thus always partly strategic. In some cases, the old was fashioned into the harbinger of the new, as the indigenous germ of temporal modernity. Japanese historians detected the origins of Leopold von Ranke's historicism in Confucian traditions.[78] In Qing China, scholars referred to Song period Confucianism and the concept of the "propensity of times" that they saw as anticipating historicist notions of zeitgeist.[79] In Europe, the time revolution was naturalized as a mere extension of Judeo-Christian cosmologies, even if such claims to continuity ran counter to everyday experience. Representatives of Buddhism insisted that the idea of progressive time, and specifically the concept of evolution, had long been formulated as part of the Buddhist doctrine of rebirth. "Just as a clock moves by itself without any intervention of any external force," as the well-known Japanese Zen Buddhist monk Shaku Sōen summarized it, "so is the progress of the universe."[80]

In other cases, the indigenous orders of time were posited as the other of modern times. Beneath the layer of such stark opposition, however, also traditional times were reconfigured under the impact of technological and geopolitical change. In an age of newspapers and public clocks, traditions were no longer what they used to be. A good example is the popularization of the concept of *kaliyuga* among Bengali Hindus. In the cyclical imagination, the age of *kaliyuga* marked a period of turmoil, characterized by the presence of impure or foreign rulers, and by social disorder. At the end of the nineteenth century, Hindus began to interpret societal changes such as Brahmins' reliance on reason, and new gender roles in the public sphere, as evidence of the arrival of *kaliyuga*. As in this age individual enlightenment was seen as relatively easy to achieve, such beliefs

77 François Georgeon, "Changes of Time: An Aspect of Ottoman Modernization," *New Perspectives on Turkey* 44 (2011), 181–95. See also François Georgeon and Frédéric Hitzel, eds., *Les Ottomans et le temps* (Leiden, 2012); Elie Podeh, *The Politics of National Celebrations in the Arab Middle East* (Cambridge, 2014). A thorough analysis of the multiple layers of time in the Ottoman Empire can be found in Wishnitzer, *Reading Clocks*.

78 For a recent reformulation of such a view see Masayuki Sato, "A Social History of Japanese Historiography," in Jose Rabasa, Masayuki Sato, Edoardo Tortarolo, and Daniel Woolf, eds., *Oxford History of Historical Writing*, vol. 4 (Oxford, 2012), 80–102.

79 For recent reflections on the notion of "propensity of the times" see Wang Hui, *China from Empire to Nation State* (Cambridge, MA, 2014), chap. 3.

80 Quoted from David L. McMahan, "Modernity and the Early Discourse of Scientific Buddhism," *Journal of the American Academy of Religion* 72 (2004), 897–933, at 901.

found wide resonance, both among women and among employees of the colonial administration; for the latter, the revival of "traditional" temporalities held anti-British and patriotic promise. Above all, it was the printing press that secured *kaliyuga* a wider reach than ever before—precisely at a moment when Western calendars and the clock began to dominate public life and the workplace.[81]

* * *

The introduction of new times, then, did not automatically lead to the abolition of customary practices. Frequently, modern technological instruments and measuring devices even added to the popularity and longevity of traditional temporal orders, rather than making them obsolete. Local resistance and recourse to seemingly time-hallowed practices often interacted with the new regime, sometimes borrowing its language and its forms. The printing press furthered the dissemination and reach of horoscopes and handbooks with information about nature's rhythms and auspicious moments. Precision clocks and observatories enabled the measuring of time irrespective of season and daylight, thus facilitating the announcement of prayer hours and temple rites. Countless instructions and norms coexisted, and not only the urban elites were "fluent in different times."[82] Large parts of the population in the nineteenth century continued to live in a plurality of time regimes.

Such heterogeneity notwithstanding, the arrival of "new times" was one of the major social and cultural innovations of the nineteenth century: a sea change of Copernican proportions. More than that, it was a truly global event. Clocks, time zones, and calendars were standardized, and the notions of progressive time and the deep historical past were gradually appropriated around the world. This was a cultural revolution. Its global reach was not, however, the effect of cultural transfers alone. Rather, it must be understood as one of the ways in which historical actors responded to a series of fundamental social changes triggered by technological innovation and large-scale mobility, by projects of state building and empire, by capitalist production and global market integration. These changing conditions required time activists and the rest of the population to effectively invent the new times on their own, even if they occasionally looked for models elsewhere. The new times were the product of the global transformation

[81] According to the sacred texts, *kaliyuga* was to last for 432,000 years. See Sumit Sarkar, "Renaissance and Kaliyuga: Time, Myth and History in Colonial Bengal," in Sarkar, *Writing Social History* (New Delhi, 1997), 186–215.

[82] Ogle, "Whose Time Is It?", 1402. For a vivid account of how modern technology shaped debates about ritual time see the analysis of the impact of the telegraph on defining the beginning and end of the Ramadan in Ogle, *The Global Transformation of Time*, 149–76.

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of the political, social, and cultural conditions under which the new practices could look productive, effective, and indeed timely.

Standardized world time, the categories of progress and backwardness, and the discovery of deep historical time all catapulted societies out of their cosmological niches. They provided a language that made it possible to articulate synchronicity, and facilitated comparisons between individuals and societies, irrespective of cultural or geographical proximity. Time thus emerged as one of the systems that translated difference into a common currency, as labor, social relations, and the developmental gap between societies could all be expressed through the same language of time. While thus flattening social experience, the new time regime provided a set of practices, and a vocabulary, to position individuals, collectives, and whole civilizations on a global scale.