Time and Time Again:

Exploring Standard Railway Time and its Effect on America

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HIST 499

Senior Thesis Seminar

Milligan University

19 April 2024

I. Introduction

The time zones we know in the United States today are a direct byproduct of an 1883 decision by American railroads to adopt a uniform timekeeping system called Standard Railway Time, or SRT. According to Ian R. Bartky, a federal scientist for the U.S. Naval Observatory and the National Bureau of Standards, the implementation of SRT in the United States represents a unique effort to unify the nation for both commercial and scientific purposes.[1] As much as it benefitted the public and the scientific community, it was ultimately designed to smooth railroad operations. It took several years for SRT to gain momentum as a practicable system, but once implemented it was adopted at an unprecedented rate by American citizens. The new de facto system was so effective that true governmental acquiescence did not occur until 1918, with the Daylight Saving Time Act. Sociologist Eviatar Zerubavel aptly states that, "Given the tremendous power of the railroad companies in the United States, it should come as no surprise that the movement toward standardizing time reckoning there also originated in the railroad world."[2] The process by which American railroad companies managed to manufacture and install a national system of standardized time demonstrates the incredible sway said companies held on the form and function of the country.

II. The Railroad in Historical Context

Any discussion of the American railroad warrants a description of its context in the nation's history. Far before the adoption of SRT, the railroad was making itself known as an agent of progress and authority. Henry David Thoreau pointedly writes, "We do not ride on the

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[1] Ian R. Bartky, "The Adoption of Standard Time." *Technology and Culture* 30, no. 1 (1989): 25. https://doi.org/10.2307/3105430.

[2] Eviatar Zerubavel, "The Standardization of Time: A Sociohistorical Perspective." *American Journal of Sociology* 88, no. 1 (1982): 8. http://www.jstor.org/stable/2779401.

railroad; it rides upon us."[3] This quotation, found in an 1854 entry to *Walden*, reveals what the author thought of the network of railways rapidly carving its way into the American landscape. Whether he liked it or not, the railroad's influence, even then, was becoming firmly rooted in the nation's historical context. Irving Bartlett writes of the 19th-century American mind in reference to Thoreau's strong statements, "[By 1854] The industrial revolution was just beginning… a generation of Americans was eager to be swept along with it."[4]

How, then, did the railroad sweep up the nation? Firstly, it made clear its widespread effects on labor and the economy. Economic historians to this day quarrel over the validity of that statement; some doubt the railroad's true role in these effects. Walter Licht provides a sidestep to that argument: "... the railroads *were* [sic] built and they had in fact an enormous economic, social, and political impact on American history."[5] Licht's point is sound. The reality that the railroads *were* constructed, resulting in consequences positive and negative, cannot be replaced with the fallacy that something else was responsible for upsets in the political and economic order. Schlereth speaks on the position of the railroad in the realm of labor, "The railroad industry, with its monopolies, stock manipulations, rate conspiracies, and government

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[3] Henry David Thoreau, *Walden* (New York: 1910), 117-121.

[4] Irving H. Bartlett, *The American Mind in the Mid-Nineteenth Century*, 2nd ed. of *The American History Series* (Arlington Heights, Ill.: H. Davidson, 1982), 44-45.

[5] To read some differing claims, see Albert Fishlow's *American Railroads and the Transformation of the Ante-Bellum Economy* (1965), which questions whether or not railroads themselves influenced economic growth; Paul H. Cootner's "The Role of the Railroads in United States Economic Growth" for the *Journal of Economic History* (1963), which argues that the railroad was built entirely in response to regional resource interests; Jeremy Atack, et. al's "Did Railroads Induce or Follow Economic Growth?..." for *Social Science History* (2010), which employs new economic analysis tools to refute Fishlow's argument; Floyd W. Mundy's "Railroad Bonds as Investment Securities" for the *Annals of the American Academy of Political and Social Science* (1907), which posits that the railroad was significantly responsible for increasing commerce… The literature and debate on the question of the American railroad in regards to the American economy is vast.
Walter Licht, *Working for the Railroad: The Organization of Work in the Nineteenth Century* (Princeton, N.J.: Princeton University Press, 1983), 3.

subsidies, also represented the new business order and its unprecedented corporate power."[6] Ward furthers that even by the 1850s, "railways were assuming the mantle of preeminent economic powers; this quickly translated, in the rather fluid democratic system of the period, into political power."[7] As time passed, this political and economic capital became entrenched.

The labor sphere was strongly shaped by the rails in the mid-late 1800s. It is widely known that railroad companies employed large numbers of immigrant laborers, which undoubtedly created shifts in the treatment of workers. Strikes, often as a result of some poor conduct on the railroad's part, upset the dynamic between boss and worker. For example, Dubofsky states in reference to the nationwide string of railroad strikes in 1877: "Financially strained railroads… cut workers' wages sharply and also increased workloads. Such an open attack on railroad laborers' security stimulated mass anger and a movement to organize railwaymen in one big union…" Dubofsky later writes, "Between 1877 and the next sharp outbreak of working-class violence in 1886, the balance of power between workers and their employers had tipped in favor of the industrialists. Businessmen were proving more adept than laborers at either organizing themselves into associations that had power to influence the marketplace or smashing and swallowing their business competitors."[8] Here, he indicates that railroad labor became increasingly focused on the will of the industrialists, not the laborers themselves. This is a negative tilt, to be sure, but still shows that the railroad was a powerful entity in this era of American history. Strikes and worker unrest led to operational issues,

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[6] Thomas J. Schlereth, *Victorian America: Transformations in Everyday Life, 1876-1915*, 1st ed. of *The Everyday Life in America Series* (New York, NY: Harper-Perennial, 1992), 22.

[7] James Arthur Ward, "Railroads in the American Context." *Railroad History*, no. 171 (1994): 4. http://www.jstor.org/stable/43521751.

[8] Melvyn Dubofsky, *Industrialism and the American Worker, 1865-1920*, 2nd ed. of *The American History Series*. (Arlington Heights, Ill.: H. Davidson, 1985), 44-45.

warranting a calculated move on the part of railroad officials. Licht says, "The installation of bureaucratic administrative procedures progressed in stages… an attempt by this nation's pioneer railroad executives to systematize the operations of the growing complex, large-scale organizations over which they presided."[9] His words here shed light on the railroads as bureaucratically managed, corporately owned bodies. Glenn Porter rides the same train of thought, stating, "railroads brought new methods of management, new forms of corporate finance, different dimensions in labor relations… and a new relationship between business and government."[10] The numerous strikes of 1877 necessitated widespread changes to the structure of railroad operations. Gabriel Kolko reinforces this fact, stating that "[By 1877] general federal supervision of the railroads was receiving greater consideration in railroad circles…"[11] All of these claims demonstrate that throughout the 1870s the railroad was adapting to its new size and economic clout. Doubtless, this demonstration of virtual dominance created in the minds of Americans a startling sense of hierarchical authority, but it was not perceived negatively in all facets.

Even as an idea, the railroad made promises to Americans. Historian James A. Ward writes about this popular perception, "railways… would provide a highly visible national prosperity and mobility… [they] also promised a moral, intellectual, class, and most of all political intimacy that many Americans feared could not be achieved through any other

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[9] Licht, *Working for the Railroad*, 19.

[10] Porter points to the railroad strikes of 1877 and onward as the impetus of modern unions.
Glenn Porter, *The Rise of Big Business, 1860-1910*, *The American History Series* (Arlington Heights, Ill.: H. Davidson, 1986), 32.

[11] Gabriel Kolko, *Railroads and Regulations, 1877-1916* (Princeton University Press, 1965), 14. http://www.jstor.org/stable/j.ctt183pzg8.

means."[12] On the growing rail network, citizens believed they could enjoy creature comforts, like receiving domestic imports from vast distances and traveling both quickly and easily between far stations. Beyond that, the rails could provide life to the Midwest, expanding settlements into vibrant cities. Leland H. Jenks shares, "... the early railway promoter was not only a potential economic agent; he embodied the dream of developing communities, regions, the continent."[13] Citizens hoped that dream would be realized. While that gospel of prosperity has plenty of historical evidence, Ward writes, "Endemic in America's economic development… was a popular belief that railways promoted some ill-defined notion of progress that inexorably led to higher living standards and increased national unity."[14] No matter how accurate the sermons of railroad promoters were, or how effectual new tracks could be in developing the frontier, the railroad left intellectual marks. The words of railroaders went far among those who believed in its affinity for positive change.

Another important layer in the railroad's context is its cooperation, sometimes collusion, with the federal government. Popular historian Stephen E. Ambrose lists several instances of cooperative legislation. He points to the 1862 and 1864 Pacific Railroad Acts, which greenlit funding for the construction of the Transcontinental Railroad backed by government bonds. The 1862 Morrill College Land Grant Act allocated federal lands to states, which often was reallocated to railroad companies building in a given state – meaning that the government was essentially handing railroads small chunks of land, masked by larger donations of land for other

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[12] James Arthur Ward, *Railroads and the Character of America, 1820-1887*, 1st ed. (Knoxville: University of Tennessee Press, 1986), 14.

[13] Leland H. Jenks, "Railroads as an Economic Force in American Development." *The Journal of Economic History* 4, no. 1 (1944): 3. http://www.jstor.org/stable/2113700.

[14] Ward, "Railroads in the American Context", 5.

purposes, such as the titular land-grant colleges.[15] The eventual 1887 Interstate Commerce Act symbolizes a soft approach to railroad regulation, when a larger action (or actions) may have been warranted.[16] It seems that the government was intentionally raising the railroad as a powerful institution, stimulating its growth by feeding it federal money and land. In fact, Kolko writes, "... despite this massive government investment, the extent of governmental management within the various railroads was very slight indeed – railroads found they could work with the government largely on their own terms, and to their own profit."[17] Once they found they had wiggle room, the railroad companies utilized it.

The aforementioned corporate and economic powers wielded handily by the railroad could be misused, as seen with the 1873 Crédit Mobilier scandal, which significantly damaged the economic superpower status railroad officials enjoyed. In this case, the silver-tongued words of the railroaders led to an exposé of financial corruption. Richard White details the ramifications of this scandal: "In order to curry congressional favor, the men running the Union Pacific (UP) had sold stock in Crédit Mobilier to leading representatives, senators, and the vice president of the United States below market prices…" He continues, mocking the defense of the Union Pacific lawyers, "the distribution of stock in the Crédit Mobilier was about friendship and reciprocity."[18] Friendship, indeed – this scheme represents an attempt to bring the federal

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[15] Stephen E. Ambrose, *Nothing Like It in the World: The Men Who Built the Transcontinental Railroad, 1863-1869*. (New York: Simon & Schuster Paperbacks, 2005), 79-84.

[16] See Section V. below for further qualifications.
Kolko, *Railroads and Regulations*, 238.

[17] The investment he refers to is the combined state/federal effort to dump upwards of $350 million in funds and land grants into canal and railroad systems until 1873.
Ibid, 15.

[18] Richard White, *Railroaded: The Transcontinentals and the Making of Modern America* (New York: W.W. Norton, 2012), 64-65.

government deeper into cahoots with the railroad, beyond what already had occurred. Years later, the missteps of the Central Pacific (CP) and the UP, a matter for a larger discussion, led Congress to investigate the companies. Ambrose concludes, "Congress felt it had the right, the responsibility, and the power to go after the UP and the CP, because the companies would not exist had the Congress not loaned them government bonds and given them land grants."[19] Nonetheless, the railroad bounced back from this setback, a nearly infallible infrastructure, both figurative and literal. By 1873, it had become integral to the national structure.

Floyd Mundy, an economic historian of the railroad, sums up, "The railroads have proved themselves necessary to the development of the nation and are directly related to public necessity and convenience."[20] The railroads did, after all, provide services to the public. They also played a part in accelerating the industrialization of the nation, even if that acceleration manifested itself in corporate structure, economic movement, government cooperation, and labor upsets. Together with Mundy, Ward ties it up nicely, "United States History is inextricably intertwined with the railroads' rise… [railroads] did capture and ennoble the American spirit."[21] Therein lies the power of the railroad: it became impressed on the American people as an imminently capable institution, one that could provide remedies to any number of problems. With that power, it allowed itself to shape the capacities of the nation, including its keeping of time.

III. Emergence and Adoption of the Idea

[19] Ambrose, *Nothing Like It*, 375.

[20] Floyd W. Mundy, "Railroad Bonds as an Investment Security." *The Annals of the American Academy of Political and Social Science* 30 (1907): 120. http://www.jstor.org/stable/1010882.

[21] Ward, "Railroads in the American Context", 1.

There are four names central to the introduction of SRT in the United States: Charles F. Dowd, William F. Allen, Cleveland Abbe, and Sandford Fleming. These men were primarily responsible for garnering popular support for the idea of uniform time standards. Their work would catch the attention of railway coalitions like the General Time Convention (GTC) and the Southern Railway Time Convention (SRTC).[22] With the lengthy reports of Dowd and Allen, Abbe and Fleming, followed by countless committees, these railroad organizations slowly became convinced of the benefits a system like SRT could bring them. Slowly is the key word here. It must be noted that Dowd's works were not published until the early 1870s, at which point they were deemed "ahead of their time." Allen's reports were not published until the 1880s, parallel to the works of Abbe and Fleming, which saw growing popular interest. Both the emergence of SRT and its later adoption were gradual processes. Examining these shows how strong the railroad's hold was on the United States.

There were some efforts to standardize time in New England by the late 1840s, as forward-thinking managers could see a potential problem in the way that time was kept. In 1848, a committee appointed by the Worcester and Nashua Railroad attempted to gather data supporting a regional time zone. Following the instruction of one William C. Bond, a clockmaker, the railroad firms of Boston implemented a rudimentary time zone system. Unfortunately, it necessitated daily manual transfers, or synchronizations, across stations according to a master clock in Boston. Schwantes posits that the system did not see widespread proliferation for many years because of the lack of telegraph connectivity between railroad

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[22] In 1886, these organizations were consolidated. The GTC moniker stuck until 1891, when the name was again changed to the American Railway Association (ARA).
American Railway Association and Cornell University Library, *American Railway Association. Historical Statement. Present Activities. August 15, 1921*, *Internet Archive* (New York, 1921), 7. https://archive.org/details/cu31924030124485/page/n9/mode/2up.

stations; the process of synchronization was too tedious.[23] Individualistic railway lines found it unnecessary to collaborate so closely at that point. However, by 1853, several deadly train collisions had occurred due to trains running on simultaneous routes and schedules. One such crash took the lives of fourteen passengers, because the clocks were too slow to match reality. This particular wreck did inspire New England rail companies to regulate themselves by a singular schedule.[24] Similar accidents, as much a liability as a tragedy, were one kind of driving force behind the push for time standardization, but it was by no means a widespread movement at that point.

While the American railroad system does have a unique role in the story of the nation's growth, as Ward writes, the railroads captivated the imagination of the British as well.[25] It was on the tracks of the British Isles that a true standardized time system was first installed. In 1847, following a series of discussions on the implementation of a standard, Great Britain's Railway Clearing House adopted Greenwich Mean Time (GMT) for railway use. GMT was utilized by nearly all British railways, with the meridian passing through the city of Greenwich, the primary point of reference. The system stuck fast, and served as the chief inspiration for America's SRT.

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[23] Benjamin Michael Sidney Schwantes, *The Train and the Telegraph: A Revisionist History*, Hagley Library Studies in Business, Technology, and Politics (Baltimore: Johns Hopkins University Press, 2019), 28-29. https://search.ebscohost.com/login.aspx?direct=true&db=nlebk&AN=2091619&site=eds-live&scope=site.m/login.aspx?direct=true&db=nlebk&AN=2091619&site=eds-live&scope=site.

[24] Melinda Machado and Valeska Hilbig. "NMAH | 'On Time' Opens at Smithsonian's National Museum of American History." web.archive.org. (The Smithsonian National Museum of American History, November 18, 1999). https://web.archive.org/web/20110630183026/http://www.americanhistory.si.edu/news/pressrelease.cfm?key=29&newskey=97.

[25] Wolfgang Schivelbusch, *The Railway Journey: The Industrialization of Time and Space in the Nineteenth Century* (University of California Press, 2014), 44.

One can imagine the effectiveness of a single meridian on the British island, but the United States's railroads spanned 2,000 miles across the width of the country with the first Transcontinental, not to mention the countless lines and networks sprawling elsewhere. It follows that the problem of standardization in the United States would be "far greater… where distances of 3,000 rather than 300 miles had to be managed."[26]

Due to its scale, America required a more robust procedure for establishing a new national system. Railroads spanning vast distances brought together people, cities, and towns not previously in contact with one another. One could hop on a train in Pennsylvania and arrive shortly thereafter in Massachusetts. Consequently, the space between people and places evaporated. It took less time to travel more distance than ever before. Moreover, Zerubavel writes, American citizens were becoming "more aware of the fact that the local times of other communities were both different from, and uncoordinate with, their own."[27] Several historians notice the same absurdity in local time variances and railroad travel of the mid-1800s. Schwantes explains, "Many rail lines passed through communities that observed different civil time standards. Railroad officials had to ignore these local time zones and select a single time standard for the entire rail line in order to maintain operational consistency."[28] This chosen time may not have any relevance for passengers or any of the stops along the way. Towns peppered across the young nation used different points of reference to determine their respective "local time"; some by the sun, some according to arbitrary mathematical calculations. There was often

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[26] Christian Wolmar, *Blood, Iron, & Gold: How the Railroads Transformed the World*, 1st ed (New York: PublicAffairs, 2010), 236.

[27] Zerubavel, "The Standardization of Time", 6.

[28] Schwantes, *The Train and the Telegraph*, 27-28.

no rhyme or reason for discrepancies between the times in towns and cities, no matter how near or far apart they were. Christian Wolmar, a historian of the worldwide railroad, includes an interesting example: "in Pittsburgh, a big railroad center, there were no fewer than six clocks showing different times, and transcontinental travelers might have to change their watches twenty times during their journey… the complexities and confusion for both railway timetablers and passengers were legion…"[29] Alan Trachtenberg, an eminent American historian, reiterates the same point, "...stubborn local standards persisted, and overlappings of regional times set by the larger cities and local times in the hinterlands formed a crazy-quilt pattern across the nation."[30]

The concordance of differing local times in an ever interrelated society necessitated change. Trachtenberg claims that after the Golden Spike was driven at Promontory Point the necessity of regulating time became evident. He writes, "...the situation seemed increasingly eccentric, to the point of danger and economic loss."[31] While the issue was not brought to the forefront of railroad operation quite yet, the increasing connectivity of the institution exacerbated certain weaknesses – it was hard to keep up with rapid changes in local time recognition(s).

Charles F. Dowd takes up this key issue in the early 1870s – the problem of the traveler. A train ride on the railway in Buffalo, New York cemented his opinion. According to Ian R. Bartky, a federal scientist and historian of standard time, "The traveler's watch was to [Dowd]

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[29] Wolmar, *Blood, Iron, and Gold*, 236.

[30] Alan Trachtenberg, *The Incorporation of America: Culture and Society in the Gilded Age*, 2nd ed. (New York: Hill and Wang, 2007), 59.

[31] It was at Promontory Point, Utah, in 1869, that the first American Transcontinental railroad was completed, a joint construction process of the Central Pacific and Union Pacific railroad companies.
Ibid, 60.

but a delusion; clocks at stations staring each other in the face defiant of harmony… wildly at variance…" His experiences navigating the rails convinced him there was room for a more organized time, one that "reduced the confusions and annoyances" present in the practice of railroad timekeeping.[32] He aimed to unify time discrepancies just as the railroad itself was "unifying" distant locales. In 1870, he published his first recognizable proposal for something resembling SRT, which he termed Railway Time. His 1872 report on standard time zones, an expansion of the first, leaned heavily on the British system of GMT, which had established great precedence on the matter of standardized time in the realm of time recognition. Dowd shared this report with various committees, but was shot down by the GTC in 1873 for the alleged reason that "[his] ideas were not needed when he presented them to the railroads… he was addressing a traveler's problem, not an operations one."[33] He never gave up his cry for Railway Time, but his voice was lost in the fray.

The first "Time-Table Convention", a meeting for railroad officials to discuss the complicated issue of running trains and companies on an accurate schedule, was held in 1872, in Louisville, Kentucky. Here, we see the beginning of the conversation that would eventually bring standardized time zones to America. However, officials were not yet thinking nationally. Rather, they met to discuss more regional issues of scheduling, like "summer and winter schedules for passenger trains," as one American Railway Association (ARA) statement reads.[34] In 1875, an American Meteorological Society (AMS) meeting proposed the concept of a uniform time, but

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[32] Bartky, Ian R. "The Invention of Railroad Time." *Railroad History*, no. 148 (1983): 14. http://www.jstor.org/stable/43523865.

[33] Bartky, "Invention of Railroad Time", 20.

[34] American Railway Association, *Historical Statement*, 7.

did not settle the avenue for its adoption.[35] These conventions gave way to larger and larger conversations, pulling in scientists, industrialists, and statisticians as well as railroad managers, engineers, and operators already involved.[36] It was the combination of claims and opinions, namely from Dowd, Abbe, and Allen – and the relationship of the railroad with America – that made possible discussions of a national time standard.

Cleveland Abbe was a meteorologist working with the U.S. Signal Service, and later the U.S. Naval Observatory. In 1874, he concluded that scientific and meteorologic observations were impossible to compare under the timekeeping standards of 1870s America. This spurred him to begin thinking about a national standard, one that could allow for the synchronous examination of environmental phenomena, no matter the physical distance between observers. In 1879, he authored a *Report on Standard Time*, approved by the AMS at a meeting later that year.[37] Thinking like Dowd, this report and the hypothetical zones it described were tied to the use of the Greenwich Meridian. Then, as in 1875, the method for securing adoption was unclear. Abbe was responsible for nominating men with friends in high places to aid the process. His story is important because he directly connects the railroad to the growing conversation of a national time system.

William F. Allen came along a few years after Abbe's work, picking up the issue of SRT in 1881. He was an interesting man with valuable positions, leaving him in a unique place to influence both the railroad's opinion of and the adoption of a standardized time system. As a

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[35] Bartky, "Adoption of Standard Time", 37.

[36] Internet Archive, *Proceedings of the American Society of Civil Engineers January-December 1883: Vol 9*, *Internet Archive* (American Society of Civil Engineers, 1883), 113. https://archive.org/details/sim_american-society-of-civil-engineers-proceedings_january-december-1883_9/page/n1/mode/2up?q=report+on+the+adoption+of+standard+time.

[37] Bartky, "Adoption", 36-37.

member of both the GTC and the SRTC, Bartky writes, "He was a key member of the only railway groups in existence able to consider time reform."[38] For this reason, he was specifically requested to help entertain support for a standard time system. In addition, he was a chief editor of the *Traveler's Guide* and a member in the AMS. Allen was not notified of his position in the AMS until Abbe brought it to his attention in 1881, the result of an invitation never sent.[39] The combination of these offices allowed Allen to speak with confidence and to be heard by other influential railroaders. His reports were grand, colorful, and deeply intricate, laying out not only the logic behind zoning decisions and new crossings but also the requirements of individual companies regarding adoption.[40] His voice was unifying, and he created no alternative to SRT in the minds of railroaders.

Sandford Fleming's role is equally important, though his actions lie somewhat outside the scope of this examination. He was a Canadian railroad engineer responsible for drumming up international time conferences between 1881 and 1884, ultimately resulting in world time reforms. Corresponding with Abbe, he helped pass several resolutions to Congress regarding the issue of SRT, which for the federal government became conflated with a worldwide time standard.[41] Zerubavel elaborates:

> ...the U.S. Congress authorized President Chester Arthur to organize an international congress for the purpose of establishing a universal standard-time system within the domains of both science and commerce. [Arthur] proceeded to invite all governments that held diplomatic relations with the United States to participate in the International Meridian Conference, which was to be… held… in Washington, D.C., during October 1884.[42]

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[38] Ibid, 43.

[39] Ibid, 42.

[40] Bartky, "Adoption", 46-48.

[41] Ibid, 39-41.

[42] Zerubavel, 12.

Congress and the issue of SRT came close to a tussle here, but it seems that the House and Senate quickly looked past SRT and toward securing an international place in the web of meridians, striking while the iron was hot. Fleming agreed with Congress – the railroad was a fine tool for national timekeeping, but had lesser purpose internationally. Since the railroad companies seemed to have a handle on securing a national standard, they were largely left to their own devices.

By 1882, GTC and SRTC meetings consistently came back to the same dilemma. Timekeeping was nearly impossible in its current state – what could ostensibly be done? Consensus was close. William F. Allen spoke up. As Schwantes writes:

> Allen… took the initiative in promoting the benefits of standard time zones to member railroads… [by 1882] the GTC was in a much more powerful position to implement new standard timekeeping practices than early regional railroad associations… its membership included railroads from across the nation that could institute standard time zones along thousands of miles of rail lines without consulting civil authorities, creating de facto national time zones.[43]

Abbe had done right to nominate Allen, a man with all the right connections. In April 1883, members viewing his maps, reading his reports, and listening to his words realized the multitudinous benefits of SRT. It would be easy and advantageous to implement for the companies. Bartky demonstrates Allen's persuasion with a brief explanation of his complex maps, "The visual contrast was enormous; the touching and crossing points [of time variance] had been reduced from nearly three hundred to approximately forty."[44] Of course, more was at play than mere destruction of variance. His proposed meridians were exactly one hour apart, making the system applicable to an international standard, and the regional divides were

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[43] Schwantes, *The Train and the Telegraph*, 111-112.

[44] Bartky, "Adoption", 46-47.

agreeable.[45] More than anything, it made sense, and it solved problems. Thus, it was at that meeting in St. Louis that the system of SRT was truly made effective in the eyes of the officials present at the convention. Allen's proposal was accepted without opposition.

And so finally, with significant support from member railroads, a resolution was found. Obeying both Allen's *Report on the Adoption of Standard Time* and the GTC's motion to observe the new standards, railroad companies nationwide arranged to operate in recognition of the new standards by November 18, later that year.[46] Writers of that era often referred to the 18th as "the day with two noons", because in most cities the clocks read noon twice, once on the old time, and again on the new.[47] Cities across the nation quickly followed suit.

To illustrate the nearly ubiquitous nature of this standardization of time, it is helpful to examine what was being written in local newspapers of the day at various points across the country. Preceding the adoption, a line from the *Science* journal's October 1883 issue reads, "The next question will be, whether the cities will adopt the railway system for their use. Of this there can be little doubt; and, in cases where two standards differing by an hour come together, it will be necessary to adopt one of the two for the city standard."[48] As early as October, a good month and a half before the official adoption of SRT, it seemed obvious to some that America would happily accept SRT. From the big city of Indianapolis, Indiana on November 17, 1883, readers see that the choice had been made, "Very wisely the local time… will change to-morrow at noon to conform to the standard railway time. To have done otherwise would have been to

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[45] Ibid, 47.
[46] Schwantes, 113.

[47] Fleming wrote of a "noiseless revolution… effected through the United States and Canada," upon the day of two noons.
Bartky, "Adoption", 49.

[48] "Standard Railway Time." *Science* 2, no. 36 (1883): 494–96. http://www.jstor.org/stable/1758657.

involve the city in endless confusion."[49] Press from the small town of Watertown, Wisconsin informs its readers that by November 21, 1883, "it will necessarily be a short time before all clocks and watches will be set to conform to the new railway time, for as the railway clocks are run, so must those of the public be run."[50] A publication from Corvallis, Oregon, in April 1889 provides a nice update on the number of cities then abiding by SRT. It reads, "The adoption of the so-called standard railway time, has been so universal in the United States and Canada that out of 288 cities of over ten thousand inhabitants, less than twenty-five still retain local time."[51] In each of these instances, notice the use of rhetoric applied by the journalists. Words like "wisely", "necessarily", and "conform" are employed to reflect how the majority of the public felt about SRT. Since the railroad had become such an integral part of their reality, the decision to adopt the railroad's method of keeping time seemed wise and necessary. Zerubavel reminds us, "...many communities adopted the time of their railroad station as their only valid standard of time… the railroad station was clearly dethroning the church and the town hall as the nerve center of a standard temporal reference framework."[52] "Dethroning" is a fitting word here; when neighboring cities began to adopt SRT, many cities followed suit, leaving behind what had been age-old forms of telling time like the clock tower at the center of town.

IV. Reception and Reaction

[49] *The Indianapolis Journal* (Indianapolis Ind.), Nov. 17, 1883, *Chronicling America: Historic American Newspapers*, Lib. of Congress. https://chroniclingamerica.loc.gov/lccn/sn82015679/1883-11-17/ed-1/seq-4/

[50] *Watertown Republican* 24, no. 6 (Watertown, Wis.), Nov. 21, 1883, *Chronicling America: Historic American Newspapers*, Lib. of Congress. https://chroniclingamerica.loc.gov/lccn/sn85033295/1883-11-21/ed-1/seq-5/

[51] *The Corvallis Gazette* 26, no. 13 (Corvallis, Or.), April 19, 1889, *Chronicling America: Historic American Newspapers*, Lib. of Congress. https://chroniclingamerica.loc.gov/lccn/sn84022650/1889-04-19/ed-1/seq-4/

[52] Zerubavel, 8.

Acquiring a reasonable plan for SRT and implementing it across the nation did not go with complete ease, as is partially described above. The problem of time variance(s) had no simple solution, so men like Charles Dowd and William Allen set to work inspiring unity with their intricate plans. Railroad companies wanted the majority of the public to receive and accept the system, but first, the companies and officials themselves would have to agree. As such, they took great care in deciding what exactly the terms of this new time standard would be. The institution of the American railroad, though notably influential, had to overcome numerous challenges in order to defend its authority as a decision-making body for the country and establish SRT. Varying reactions to its establishment provide a look at why SRT's legacy unfolded as it did.

In the days of Dowd and Allen, there were deliberations over the most minute details of SRT's installation. How would it be installed? Would member railroads follow suit? How many time zones would there be? The answers to these questions, and more, were carefully deliberated over several years by GTC and SRTC member railroads. The process of finding a solution for the zoning question explains the process by which many of these issues were resolved. In 1872, Dowd proposed the establishment of four distinct time zones, within which all clocks would run on the same time.[53] As mentioned before, this was a response to the problem of the traveler. Allen published in 1882 the novel idea of *five* zones: Intercolonial, Eastern, Central, Mountain, and Pacific, using his vast resources to acquire supporting data. Surprisingly, Dowd and Allen did not work alongside one another. The relative similarity in the demarcations of their time zones can be attributed to natural features, such as the Appalachian mountain range and the Ohio

[53] Allen Pusey, "US Railroads Enact Standard Time Zones." *ABA Journal* 105, no. 8 (2019): 72. https://www.jstor.org/stable/26913547.

River.[54] The GTC and SRTC would later pick up the same issue of zoning, and Dowd's plan became a popular choice over the course of the next several meetings. This was less a debate and more an intellectual conversation to consider the efficacy and simplicity of each concept. Nonetheless, the jagged edges had to be smoothed. The zoning system adopted by 1883, a blend of Dowd and Allen's plans, remains in use today with only small additions, demonstrating one facet of the longevity of SRT.[55]

The wrinkles in the terms of SRT's adoption were soon ironed out. A historical statement from August 1921, pulled from the archives of the American Railroad Association, describes six "distinctive features" of SRT's efficacy as decided in 1883:

> –1. It provided for an elastic instead of a rigid boundary line between the hour sections.
> –2. It designated every point upon the boundary lines where the change from one hour section to the other was to be made.
> –3. It arranged a method of passing from the use of one hour standard to another without danger of interference or mistake.
> –4. It included definite information respecting the changes required in the schedule of every train on each railroad, in passing from the use of the old to the new standard, so as to preserve unbroken the relative time and connections with trains on other roads.
> –5. It suggested a common-sense adjustment between local and standard time by the statement: "In fact, local time would be practically abolished."
> –6. It proposed nothing that could not be adopted in practice.[56]

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[54] The two men did correspond in 1879, but the nature of this conversation seems largely unrelated to the issue of specific zoning questions.
Bartky, "Invention", 6.

[55] Alaska and Hawaii zones were adopted around the time the United States entered into World War I.
Patricia S. Hu and Rolf R. Schmitt, "History of Time Zones and Daylight Saving Time (DST) ," www.bts.gov (Bureau of Transportation Statistics, January 17, 2023), https://www.bts.gov/explore-topics-and-geography/geography/geospatial-portal/history-time-zones-and-daylight-saving.

[56] American Railway Association, *Historical Statement*, 7.

These statements not only constitute the various reasons the GTC and SRTC decided to accept the new system, but they simultaneously demonstrate the wariness the railroad companies employed. The plan needed to be as rational, efficient, and useful as possible. They pursued "exceptional unanimity" between representatives and hoped to accomplish "great general convenience," according to the June 1883 proceedings of the American Society of Civil Engineers.[57] They deliberated until the logistics and procedure for implementing SRT were foolproof; hardly a point of contention was allowed to remain.

It is important to stress that in 1883 the ultimate conclusion to standardize time itself was made *not* by the powers-that-were in America. Instead, the regulation of time was pushed by a coalition of railway managers and members of these standardization conventions "without act of Congress, President, or the courts."[58] Due to the rate at which America's economy had become dependent on railways for travel, transport, and scheduling, these coalitions *could* make and enforce a decision such as this; their collective voices were strong enough to take authority on the matter. Bartky parrots Allen's words to the GTC at an 1883 meeting:

> [This convention] should settle this question among ourselves, and not entrust it to the infinite wisdom of the ... State legislatures… Congressional action… is to be depreciated, as… there is little likelihood of any law being adopted in Washington, effecting [sic] railways, that would be as universally acceptable to the railway companies.[59]

Allen's thoughts here signify a distinguished attempt to skirt national bureaucracy because it was unnecessary to recognize in regards to the matter of SRT and, more importantly, counter to the wishes of the railroads. Washington, D.C. did actually accept SRT in 1884 by

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[57] Internet Archive, *Proceedings of the American Society of Civil Engineers*, 113.

[58] Trachtenberg, 61.

[59] Bartky, "Adoption", 44.

Congressional action, but the decision was not yet extended to any nationalized legislation. Railroad officials wanted deeply for the decision to sweep the nation. In fact, Stephen E. Ambrose writes, "[they] demanded it, for uniformity was critical for their operations."[60] They chased total *railroad* approval of the new time. Without uniform standardization and new regulations, their companies and rail lines would roll on with much the same problem they had set out to fix for themselves in the first place – a network fractured by physical distance and kept separate by differences in time reckoning. Officials did not need, or want, the influence of the federal government in what they perceived to be their jurisdiction. Bartky's words do a fine job of tying up loose ends. He writes that with the implementation of SRT, "the companies forestalled any federal intervention in civil time for over thirty years."[61] Controlling time with a steady hand ensured the further success of their organizations and the railroad companies they comprised. Federal red tape, in this instance, would only hinder their goals.

Of course, some American citizens would inevitably take issue with the new method of timekeeping imposed upon them, and their voices are worth mentioning. These citizens believed the railroad's time was antithetical to the values they held dear. According to Wolmar, once word of SRT reached the popular press, there were "protesters arguing that the "immutable laws of God" had been changed… there were fears that a disaster might be caused by the confusion over old and new time."[62] No such disaster occurred, but their worries may have been rightfully felt – American citizens who did not make the switch to the new railway time would get "left in the past", figuratively and literally, as they practiced now non-standard timekeeping practices.

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[60] Ambrose, 349.

[61] Bartky, "Adoption", 25.

[62] Wolmar, 237.

Bartky shares, “Some clergy argued that the local time of their region was God’s time and that the new time was a falsehood – it was not based directly on the Earth’s rotation.”[63] One can imagine that some rural citizens may have felt their hands forced, the new time based on nothing except the operational standards of an institution they did not use. The future was knocking loudly at their doors. Zerubavel contends, “The abolition of local time-reckoning practices and the introduction of supralocal standards of time mark a most significant point in the history of man's relation to time, namely, the transition from a naturally based manner of time reckoning to a socially based one. Since we no longer set our clocks by the sun, the time they indicate is no longer derived directly from nature.”[64] This thought gives more credence to those who decried SRT. As a system, they might have felt that it violated their way of life, their understanding of a day, and their relation to elsewhere. However, White provides a valuable reminder, “The railroads promoted and enforced standard time to coordinate *their* schedules. Lives took shape around this [emphasis my own].”[65] America did not ride on the rails – the rails rode on America. Any subjective moral dilemma of imposing regulated time according to the railroad was pushed aside in the name of modernity.

These scattered voices of disdain sometimes banded together, their skepticism bolstered by association with one another. After 1883, Allen found no real difficulty in convincing railroad lines to adopt SRT. With those lines operating on SRT, major cities were generally happy to receive and practice the new time, too. While some cities and states were slow to adopt, others were simply resistant. For example, it took Maine four years to adopt SRT, and Ohio ten. A few

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[63] Bartky, “Adoption”, 51-52.

[64] Zerubavel, 19.

[65] White, *Railroaded*, 150.

other states, like Michigan and Arizona, harbored holdout cities until as late as 1918.[66] Where it appeared, skepticism of SRT was strong because of its novelty and a perceived lack of advantage. In Detroit, Michigan, the resistance can be attributed to a debate over which time zone to use – Eastern or Central. Press from the city on November 28, 1910, outlines the disagreement:

> We should have Eastern Standard time for many reasons. In the first place, it makes for better health for the people, simply because it will give them more time to work by daylight. It will be less severe on the eyes than Central Standard time, as much more artificial light is required in working on the latter time… Manufacturers will also make big gains with Eastern time because their light bills will decrease with the change in time…[67]

Debates like this took years to resolve with all parties in mind, and go far to explain why some cities held against SRT for so long. In some notable occasions, disagreements with the new time reached as high as state supreme courts. Thomas Schlereth provides this data on the subject of local instances of conflict beyond SRT's debut: "Between 1883 and 1915, standard time came to trial before the Supreme Courts of various states… at least fifteen times… ultimately the dissident voices were stilled. Standard Railway Time became federal law with the Standard Time Act of 1918."[68] The truth is that opposition was disconnected – denial was not entirely prevalent,

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[66] Maine took up SRT in 1887; Ohio in 1893. The Michiganian and Arizonian cities referenced above adopted SRT following the passage of the Standard Time Act – see next paragraph.
Bartky, "Adoption", 54.

[67] The speaker here is Dr. George L. Renaud, the president and founder of the More-Daylight Club. This organization sought to implement Eastern Standard time in Detroit over Central Standard time, for alleged health and financial benefits to residents. Renaud would have been supremely pleased to see the passage of DST in 1918. *The Detroit Times* 11, no. 50 (Detroit, Mich.), November 28, 1910, *Chronicling America: Historic American Newspapers*. Lib. of Congress. https://chroniclingamerica.loc.gov/lccn/sn83016689/1910-11-28/ed-1/seq-3/

[68] References to this legislation are often confused. It is variably known as the Calder Act, Daylight Saving Time Act, and the Standard Time Act – all of these names refer to the same body of documents.

but it did occur. The fact that SRT came to trial as often as it did exposes the unwillingness of only a small portion of Americans to adopt SRT. Local time(s) could be stubborn, but the efficiency and efficacy of the system in other states and cities ultimately won them out. It was a boon to the operation of businesses, transportation services, and shipping ventures. This kind of limited and local opposition was not enough to sway the federal government into action, but it is worth mentioning for its difference from the majority's reception of SRT.

When Congress passed the Daylight Saving Time Act (DST) in 1918, at long last the system of SRT became the law of the land. This date marked roughly thirty-five years since the November 18 decision by the GTC and its railroad constituents to recognize SRT nationally. For thirty-five years, then, Americans lived under de facto railroad time. The simple fact was, the system worked; it accomplished what it had set out to do. Poor reception of the system in relatively isolated instances was not the cause of DST, though its passage was productive in quelling the urge to neglect SRT. Rather, the ratification of the 1918 act symbolizes a further pursuit of uniformity, building upon a system that had already pronounced itself imminently useful to America. SRT was simpler and more convenient than navigating multitudes of time variances. It made sense to most, and it allowed for smoother railroad operations. It was also largely accepted by the public (stated with the above caveats in mind), which played a significant role in its invincibility as a nationally recognized system void of federal intervention. By and large, there was no reason for the decision to be undercut by any power other than the railroad, until 1918. It had successfully established itself as a chief decision-making body in America. As such, the adoption of SRT had a marked ripple effect on the legacy of the United States through the 20th century.

Schlereth, 31.

The nature of railroad legislation is necessarily affected by SRT's proliferation. The Daylight Saving Time Act not only recognized SRT at the national level, it also empowered the Interstate Commerce Commission (ICC) to oversee further railroad coordination and regulation. The ICC, established in 1887 as part of the Interstate Commerce Act (ICA), was formed in response to mounting negative perceptions of the railroad from merchants and manufacturers. The ICA would mostly curb disputes over shipping and cargo rates.[69] However, the threat of a regulatory commission presiding over the railroad seemed dire for a time; it might have meant a loss in profits or productivity. Though railroad officials had moved quickly to avoid government intervention in SRT, after its adoption they came to realize the perks of regulation. The strikes of 1877 caused a brief loss of control over operations. SRT proved that the government would bend to the railroads' will in some respects, which only begged the question: what benefits could the railroad acquire for itself? In other words, how could regulation efforts be twisted to aid them? In the case of the ICA/ICC, regulation worked carefully *around* railroad interests, as officials made clear what they wanted from the new legislation. Kolko points out, "... anything [the ICA] did not specify as unlawful was legal if it was so before the Act's passage."[70] Legality was grandfathered in, and the new legislation was cushioned. To illustrate how this cooperation worked, Bartky outlines one such solution to a dispute over how the ICC instructed individual train routes to recognize time in transit:

> Thoughtful and well-articulated criteria were developed by [the ICC] and used to define the boundaries. Since these new boundaries posed problems for the railroads, a system of "operating exceptions" was established: Roads were allowed to carry the time from the adjacent zone across the boundary to some

[69] Kolko, 31.

[70] Kolko, 231.

> convenient terminating point. In this manner, the traveler could use the time of the zone, but rail operations – a specialized need – would continue as before.[71]

Though a small example of favored regulation, this approach was taken often to give the railroads adequate breathing room. Therefore, the ICC, marketed as a regulatory agency, provided a framework for the cooperation between the government and railroad companies, enabling them to maintain dominance.

Presidential inaction surely plays a part in the fortunate nature of railroad regulation. According to Kolko, "Grover Cleveland was not the sort of figure to alarm railroad presidents… His interest in the problem of railroad regulation while President was minimal." In his career as a lawyer, he had become known as a "railway attorney", and therefore his opinions – or perhaps awareness of the fortune the railroad might continue to bring the government – extended to his two presidencies. Teddy Roosevelt, Taft, and Wilson also took a laissez-faire approach to railroad operations. Wilson allegedly "never used regulation to attack the essential interests of the railroad."[72] Much of this inaction is likely due to the air of progressivism in America at the time. The truth remains that from roughly 1900 to 1916, presidents averted their gaze and allowed the railroad to work its magic. Surely this is a reaction to the fruitfulness of the railroad as demonstrated by its confidence in the establishment of SRT.

The labor sphere also saw noticeable changes post-SRT. As the fever of industrialism continued to spread through the United States, a man named Frederick W. Taylor in the early 1900s became prominent in the setting of industrial work. With his time studies, inspired by the parallel fad for efficiency, he began a vicious track toward increased worker productivity.

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[71] Bartky, "Adoption", 55.

[72] Kolko, 237.

Trachtenberg writes, "With his stopwatch – a further encroachment of time on physical movement – Taylor proposed to systematize… the absolute subordination of "living labor" to the machine."[73] He tended to treat workers as if they were interchangeable parts. Taylorism, or scientific management, promised greater productivity, heightened profits, and lessened union activity. In reality, such management diminished the humanity of workers, provided no increase in material rewards, and damaged worker-boss relations. Dubosky claims that "Between 1877 and the next sharp outbreak of working-class violence in 1886, the balance of power between workers and their employers had tipped in favor of the industrialists… Businessmen were proving more adept than laborers…"[74] If that is true, by 1886 the consequences of Taylorism compounded this shrinkage of workers' authority over their own jobs. Thanks to these innovations, coupled with the adoption of SRT, "Americans had to learn to live within ever more rigid temporal constraints… factory time was created alongside railroad time… no American, no matter how remote his locale, was immune to these changes."[75] Remembering the words of Thoreau, the railroad exhibited its authority on citizens as the nation became obsessed with being "on time" at work and at home. Like the railway lines, Taylorism helped create waves of irreparable change to the concept of work and time in the American schema.

Potentially the strongest point in the legacy of the railroad and SRT is the introduction of the Uniform Time Act (UTA). This act was passed in 1966 in response to an intense affinity for transportation uniformities and coordination after the close of World War II. UTA mandated SRT, now simply "standard time," within the zones and set in motion a permanent system on the

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[73] Trachtenberg, 69.

[74] Dubofsky, *Industrialism and the American Worker*, 45.

[75] Ward, *Railroads and the Character of America*, 115.

shoulders of DST.[76] Likewise, the UTA created the Department of Transportation (DoT) to take over the responsibility of managing time zones for transportation purposes and began enforcing their national recognition. The same is true today – the DoT remains in control of America's time, effectuating all of the original zones (Alaska, Pacific, Mountain, Central, and Eastern) as well as Hawaii-Aleutian, Atlantic, Samoa, and Chamorro – all to extend American time to new territories it acquired between 1883 and the present day.[77] The extension of railroad power to the DoT is noteworthy because it reaffirms the strength of the railroad in national operation as a transportation focus until more modern alternatives presented themselves. This shift warranted an expansion of federal allowance to new forms of transportation, like aviation and the automobile. In much the same way that the railroad made promises to the American people and forced government cooperation, so did cars and planes. Their story in national history echoes that of the railroad.

V. Conclusion

Daniel Willard, a prominent president of the Boston & Ohio Railroad Company from 1910 to 1941, thought highly of the role of the railroad in American society. Ward shares his words: "[The railroad] is not a producer, but in a large way is rather the servant of others – the servant of the *Public* [sic]... without the public there would be no need for the railroad; without the railroad or some equally good substitute, there would be an entirely different public, as well as an entirely different state of civilization."[78] Though his words come well after the passage of SRT, they help to illustrate the unshaken power of the institution over the course of decades. He

[76] Hu and Schmitt, "History of Time Zones and Daylight Saving Time (DST)."

[77] Ibid.

[78] Ward, "Railroads in the American Context", 12-13.

is correct in stating that the railroad in absentia would result in a drastically different America, if only for the reason that it would then lack a standardized system of time. The public *would* be different without the railroad, and without SRT. The new organization of time transformed the way Americans traveled, worked, ran businesses, related to one another, and understood their place in a sprawling set of United States. Beyond that, SRT authorized the railroad to bully the federal government, which could not ignore the railroad's uniquely commanding presence. The railroad was integral to the nation's growth in the 19th and 20th centuries, and the long story of SRT's adoption further exemplifies the deeply entrenched quasi-state capacity the railroads held over the American people, and the operations of the nation as a whole.

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