

BOOK REVIEW

Scott Alan Johnston, *The Clocks Are Telling Lies: Science, Society, and the Construction of Time*

Montreal: McGill-Queen's University Press, 2022. Pp. 264. ISBN 978-0-2280-0843-9. CA\$49.95 (cloth).

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This book's flyleaf describes it as 'an exploration of why we tell time the way we do'. Its engagingly written opening offers readers unfamiliar with the field an argument about the social nature of timekeeping and introduces the Canadian railway engineer Sandford Fleming's campaign for standard time and the role of the 1884 International Meridian Conference (IMC). Many books cover similar ground, so it seems fair to ask what this one adds. Paul Glennie and Nigel Thrift's *Shaping the Day* (2009) told the story of technical, intellectual and social developments that shaped timekeeping over the *longue durée*. Derek Howse's *Greenwich Time and the Longitude* (1997) outlined how the Greenwich meridian and GMT became local, national and then international standards. Ian Bartky's *One Time Fits All* (2007) described Fleming's lobbying and how standard time was, slowly, implemented with the adoption of time zones. Most recently, Charles Withers revisited the politics and geographies of the prime meridian and the IMC in *Zero Degrees* (2017).

This book offers both less and more than the title suggests. It does not cover the history of 'the construction of time', paying no attention to the measurement of solar time or the creation of mean time, and little to the navigational, religious or social contexts that drove standardization before the railway and the telegraph. It does, however, add significant depth to the discussion in North America and Britain before, during and after the IMC. It makes good use of primary sources to find new things to say about a well-known story. Using correspondence and institutional archives, Johnston reveals the contingencies and varied interests that shaped discussions in 1884 and limited the IMC's impact on everyday timekeeping. He also provides context on the nature of the scientific community in the late nineteenth century and the range of concerns reflected in the adoption and reception of changes to timekeeping. These include professional gatekeeping, which excluded women's and a range of others' voices, and national, religious and social concerns that made agreement on standards elusive.

An important contribution is the reconstruction of internal discussion about Britain's delegation to the IMC. This reveals differing views within government and the overriding concern of the Science and Art Department that agreement on Greenwich should not precipitate acceptance of the metric system. Although Fleming's campaigning had motivated the conference, Johnston shows that his place at the table was far from guaranteed. He also presents useful material on time dissemination and education in North America, including fascinating examples of indigenous communities adopting standard time to demonstrate their capacity to run educational establishments. The sections on Britain seem less novel: newspaper humour about timekeeping changes, the status of

the Royal Observatory at Greenwich as a centre of time dissemination and the various means by which time was distributed or sold to institutions, individuals and businesses have previously been considered (see David Rooney's *Ruth Belville* (2008), which is cited, but also, for example, Rebekah Higgitt and Graham Dolan in *Endeavour* 34 (2010) and I.R. Morus in *BJHS* 33 (2000), which are not).

The book rightly argues that power and politics have always been closely entwined with claims to knowledge, including about time, and that the standardization of timekeeping has been 'messy, diverse, contested, and complex' (p. 184). However, Johnston oversimplifies by claiming that the IMC and its outcome can best be understood as a 'conflict between engineers and astronomers' (p. 74). In attempting to find a new interpretation of a much-analysed event, he downplays national differences (most famously the French delegation's arguments against Greenwich as prime meridian) and foregrounds professional ones. His analysis of the IMC shows that engineers like Fleming – who, prompted by the interests of transcontinental railways, advocated civilian standard time and the adoption of time zones – were outnumbered and overshadowed by astronomers and naval men chiefly interested in agreeing a prime meridian for navigation and astronomy.

However, although the introduction cautions against eureka moments and lone inventors, Fleming frequently appears as hero, pitted against an elite, 'insular' astronomical community. He is associated with time for the 'public good', whereas astronomers apparently regarded time only as an 'esoteric professional tool' (p. 184). The IMC was a failure insofar as it did not adopt Fleming's ideas, although neither it nor any other body had authority to force standard time on governments. Johnston glosses over the oddities and complexities of Fleming's pamphlets about universal, or cosmopolitan, time. Rejections of Fleming's scheme are presented as a response to his being an engineer and a colonial and as a rejection of standard time generally. Some, certainly, disliked the idea of governments forcing change on civilians, but most assumed that gradual adoption of standard time would occur as and when it became convenient.

This is, after all, what happened in the United Kingdom and what would happen elsewhere in following decades. A claim that British astronomers lacked interest in civil timekeeping, or engineering, does not stand up to scrutiny. Astronomer Royal George Airy, who A.J. Meadows aptly described as an 'engineer manqué', put huge efforts into supplying GMT to a range of users. Charles Piazzi Smyth, Astronomer Royal for Scotland, collaborated extensively with engineers, clockmakers and businessmen to distribute GMT to citizens of Edinburgh and beyond, with electrically triggered signals and clock circuits. Smyth features chiefly for his religiously and racially driven ideas about metrology and his rejection of Fleming's ideas. However, his view that 'local time would never be replaced' (p. 17) must be understood as a response to Fleming's universal plan rather than as a rejection of standard time. It is simply not the case that astronomers 'had little interest in regulating time for ordinary people' (p. 109) or in collaborating with engineers and railway companies.

Indeed, Johnston supplies examples of astronomers distributing standard time and even supporting time zones. If little urgency was felt in Britain, the matter was much more pressing to an American astronomer asked to distribute a wide range of local times across the nation. Understandably, sending one signal that would be meaningful across five standardized zones seemed a better solution. However, American astronomers in private observatories who could profit from offering their own time service took a different view (on zones, not standards), and developed different ideas of 'the public' and 'public good' as a result. Here and elsewhere, geography and local contexts of funding, use and distribution of time seem to outweigh the (undoubtedly present) issues of professional identity and status.

As well as appearing unsympathetic to astronomers, the author sometimes appears not to fully grasp the relationships between astronomy, time, navigation and standardization (for example, errors appear relating to longitude determination and transit-of-Venus observations). Nevertheless, the book adds to the literature on timekeeping with its use of untapped primary sources to illuminate the events surrounding the IMC. Some valuable sections cover attitudes toward time and its standardization from people well outside these core groups, which make clear the impact of differential access and the social and political importance of claims about time.