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Ships, clocks and stars: the quest for longitude

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Fine Art Reviews



Ships, Clocks and Stars: The Quest for Longitude

Location: National Maritime Museum, Greenwich

Event Date: August 2014

Review Date: 21st August 2014

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Reviewed By: Paul Stock, International History Department, London School of Economics and Political Science

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Review:

Ships, Clocks and Stars: The Quest for Longitude, an exhibition at the National Maritime Museum in Greenwich, tells the story of the ‘longitude problem’: the mathematical and navigational challenge of calculating east-west position and direction. Without the ability to determine east-west co-ordinates, long-distance sea travel was imprecise and treacherous, and the problem had, as the exhibition display reminds us, ‘frustrated the greatest minds since the late 1400s.’ The exhibition concentrates on the eighteenth century, during which the challenge gained further immediacy thanks to the expansion of mercantile and imperial sea traffic and, crucially, the financial rewards offered by the 1714 Longitude Act for a solution. In some respects, therefore, the exhibition re-presents a familiar tale – widely-known in recent years from Dava Sobel’s highly-successful *Longitude: The True Story of a Lone Genius Who Solved the Greatest Scientific Problem of His Time* (1995). Sobel’s account focused on the clockmaker John Harrison, whose series of sea-clocks between 1735 and 1770 allowed time, and hence longitude, to be calculated more precisely than had previously been possible. *Ships, Clocks and Stars*, however, takes a very different approach: it is far more interested in the sociability and competitiveness of eighteenth-century scientific practice, rather than the themes of personal struggle and individual genius which preoccupy Sobel’s account.

The challenge for this exhibition – perhaps for any history of science and technology – is how to avoid complacently Whiggish narrative. Accounts which celebrate the forward march of progress all too often present history itself as an inexorable parade towards the ultimate goal of (Western) modernity. As a consequence, they cut out much of the complexity and alien richness of the past, instead organising their narratives as a gradual ascent to the achievements of the present. And yet, flawed as it is, this perspective cannot entirely be dispensed with: ideas about ‘progress’ and ‘improvement’ are so deeply a part of Western scientific discourses that to write a history of science without these concepts is to wilfully ignore one of its key articles of self-definition. Navigating this problem is therefore a major dilemma in histories of science: how can

one acknowledge the centrality of 'progress' and its cognate concepts in Western science without becoming entirely bound by (or complicit with) their assumptions and categories? At first glance, *Ships, Clocks and Stars* might seem to fall headlong into a standard Whiggish mode: its introductory and concluding display captions describe a search for 'better', more 'accurate' forms of measuring longitude; a 'quest' which ushered in the achievements of the modern world: 'Britain's territorial expansion, improved trade and communication, and enhanced [...] knowledge and understanding of the world.' In fact, however, the exhibition is far more subtle than these framing comments suggest. It uses several strategies to evade triumphal complacency, and to emphasise instead the controversies and frustrations which are so important to scientific methodology.

The exhibition's first important move is to understand the longitude problem as a scene of competition and dispute, rather than as a linear display of inevitable progress. Having explained what the problem was and why it was important, the exhibition then expounds the various methods proposed for its solution. These were much more wide-ranging than Harrison's celebrated clock method. One proposed solution traced patterns in the Earth's magnetic fields; another used rockets fired simultaneously from known locations; others still calculated longitude from the position of the moon or Jupiter. The exhibition heads into technically demanding territory here, but the principle of each solution is explained concisely in a series of two-minute videos on touchscreens, a highly effective way to communicate complex detail to a general audience. By giving space to disparate theories, and abortive experiments, *Ships, Clocks and Stars* highlights the fractious, incremental, and competitive nature of scientific enquiry; it resists the temptation to construct a smooth and triumphant narrative from the rough edges of scientific labour. One room shows how different methods developed in parallel as rivals for prestige and funding: Half of the room displays Harrison's extraordinary and beautiful timepieces; the other discusses the lunar distance method with its redesigned astronomical instruments and elaborate tables of lunar observations. The next room – entitled 'Longitude on Trial' – reconstructs eighteenth-century debates about the merits of these different approaches, both of which continued to be pursued throughout and beyond the century. Indeed, the exhibition studiously avoids suggesting that the longitude problem was 'solved', a term which might imply finality and mastery. Despite the achievements of Harrison and his rivals, navigators still relied on earlier methods and as the exhibition emphasises, 'the quest for further longitude solutions continued.' The final room shows how these attempts developed further in the nineteenth century: among other topics, it discusses 'improved' sea-clocks, dividing engines used to automate instrument production, and machines intended to calculate astronomical tables.

The exhibition also places a very strong emphasis on the sociability of science. This manifests most obviously in the accounts of debate and competition which punctuate its version of the longitude story. But we are also told about the social and professional composition of the Board of Longitude who distributed the prize money, as well as the dissemination of the problem in newspapers, pamphlets and satirical prints. The displays are replete with the popular culture of longitude, showing that the coffee house was as much a venue for reflection and analysis as the observatory or the clockmaker's workshop. This is a crucial point. In some respects, the Longitude Act can be seen as a model of *laissez-faire* government; a scheme to solve a national problem by means of sub-contracting to private enterprise. While not entirely unpersuasive, this perspective is also a little misleading: it belies the crucial role of government as a funder, and also obscures the fusion of state and private objectives in commercial expansion and empire building. Instead therefore, *Ships, Clocks and Stars* presents the longitude problem as an expansive societal concern; an issue which was shaped by, and impacted upon, broad sections of society – from senior military figures to the coffee-drinking satirist. Longitude is understood as cultural phenomenon as well as an expression of state and mercantile interests.

In deference to these wider implications, the exhibition also gestures towards the longitude problem's later role in empire building. We are told that one of Captain Cook's key objectives was to test new sea-clocks and lunar tables; and also that a Harrison-derived timekeeper was present during the mutiny of the *Bounty*. Here the exhibition displays assorted Cook paraphernalia – navigational instruments, charts, Maori artefacts, paintings by William Hodges. This inclusion is understandable given the National Maritime Museum's collection strengths, but the recourse to a very well-known topic feels a little under-justified in the context of the assured discussions which precede it. Fortunately, however, the accompanying book – *Finding Longitude* by Richard Dunn and Rebekah Higgitt – provides fascinating chapters on longitude and European exploration in Australasia, Africa and the Arctic. This material advances the exhibition's agenda further, showing longitude's involvement in the development of the cultural and economic conditions we now call modernity – a culmination which a narrowly Whiggish history would simply celebrate or take for granted.

I also wish to emphasise one especially notable feature of *Ships, Clocks and Stars*: the highly immersive and imaginative design of the displays. The first room is especially wonderful: low lighting, powerful sound, and a huge screen showing rolling waves combine to envelop the viewer in the immensity and danger of long-distance sea travel. Similar effects continue throughout the rooms. The next room explains the longitude problem in terms of a grid spread over the earth's surface, and this is illustrated with a giant sphere through which visitors must walk in order to examine measuring instruments. The section on popular culture and longitude contains floor-to-ceiling hangings which depict coffee-house scenes, as well as tables and chairs containing reproductions of contemporary pamphlets. On the wall is a large map of eighteenth-century London showing 'spaces of debate' – the Royal Society, the Admiralty, famous coffee houses – in which longitude would have been discussed. Best of all, the room called 'Longitude on Trial' contains a massive boardroom table onto which are projected images of papers and books. As one enters the room, a pre-recorded debate begins – supposedly by the Board of Longitude – with different voices corresponding to a different

chair around the table. As the discussion continues, and different opinions are ventured, the books and papers move, meaning that visitors can pore over the documents as their contents are discussed and argued over. When I viewed the exhibition, some visitors were mesmerised by this display, listening to the debate several times and moving round the table to study material projected onto different corners.

This imaginative staging is one of the exhibition's most impressive features and also denotes a wider communicative achievement: *Ships, Clocks and Stars* operates effectively on several levels of engagement. During my visit, several visitors were concentrating on the large summarising captions and the interactive elements like the touchscreens and the boardroom table in order to obtain an overview without wading through technical or specialist detail. For those who want it, however, those details are plentiful: if a viewer wants to know the difference between a sextant and an octant, or how to calculate longitude by observing Jupiter's moons, the answers are easy to find. This is a difficult balance to achieve, especially in an exhibition with a high technical content: too much detail would risk prescriptive staidness; too little and the displays would patronise their viewers. *Ships, Clocks and Stars*, however, reaches out to its many potential audiences, and succeeds in engaging with all of them.

Ships, Clocks and Stars: The Quest for Longitude is at the *National Maritime Museum, Greenwich*, from 11 July 2014 to 4 January 2015.

The exhibition is accompanied by the publication *Finding Longitude* by Richard Dunn and Rebekah Higgitt (Collins / Royal Museums Greenwich, London, 2014).

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