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Map of a Nation: A Biography of the Ordnance Survey. Rachel Hewitt. London: Granta Books, 2010. xxvii and 436 pp., maps, diags., photos, notes, and index. £25.00 cloth (ISBN 978 1 84708 098 1).

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Today's Ordnance Survey of Great Britain is a large, self-financing mapping organization with an annual budget of around \$200 million, led by geographer Vanessa Lawrence, and employing the most advanced digital technologies to produce a wide range of geographic information products. If one wasn't familiar with the British penchant for preserving the past, at least in titles, one might be excused, therefore, from wondering why such a modern civilian organization, undoubtedly one of the world's leading national mapping agencies, still operates under such an anachronistic name. Rachel Hewitt's excellent book ends with the completion of the first national coverage, the First Series, in 1870, and so might disappoint enthusiasts of the latest technology, but it nevertheless provides a fascinating mirror on the past from which we can still gain important and relevant insights.

Why do people need maps? The Ordnance Survey's own version of its origins stresses the anxiety in Britain that resulted from the rise of France in the late 18th Century, and the need to defend the southeastern coast against invasion. But Hewitt notes that at the time of foundation, 1791, relationships with France were comparatively benign by historic

standards; a host of map-makers and organizations already existed in Britain; and the French Revolution merely “served to bring these to a head” (p113). What the Ordnance Survey offered was a national enterprise of much improved accuracy over existing practice. But why accuracy? All the average map user needed at that time, a sense of the relative locations of points of interest, hardly required the precision of the trigonometric survey with its massive and heavy instruments that had to be painstakingly installed on precarious locations such as the dome of St Paul’s Cathedral in London.

As Hewitt makes clear, much more subtle and yet powerful forces and ideas were at work. Enlightenment concepts propounded by Diderot, Voltaire, and others motivated the creation of “an accurate image of the natural world” (p113). The development of telescopes and theodolites made accurate measurement possible, and invited the same kind of motivation that in another age drove Michael Jones and others to develop the precursor of Google Earth. Accurate mapping also gave a sense of power and dominion, a motivation that Brian Harley (2001) and others have shown to be a major force in colonial expansion. Thus Hewitt begins her account not with the threat of French invasion but with the Hanoverian push to exert dominion over the Scottish Highlands following the final defeat of the 1745 Jacobite rebellion at the Battle of Culloden; and much of the effort of the Ordnance Survey in the early 19th Century was devoted to mapping the lands of the habitually unruly Irish.

Science was also a major impetus to accurate mapping, especially through early interest in geophysics. Newton had predicted that the Earth would bulge at the Equator, but much

French thinking derived from Descartes, and predicted that it would bulge at the Poles. Somewhat counter-intuitively perhaps, the Newtonian view requires that lines of latitude grow further apart away from the Equator, while the Cartesian view would have them converge. The fascinating consequences of this Anglo/French dispute and its resolution, which required the dispatching of teams of surveyors to Finland and Peru in the 1730s to measure the separation of lines of latitude with great accuracy, are admirably recounted by Whitaker (2004). Another empirical test of Newton's ideas required the accurate mapping of the mass of Schiehallion, a Scottish mountain of roughly conical shape, in order to measure the deflection of a plumbline at its base and thus to estimate the density of the Earth. It is perhaps not surprising, therefore, that many of the key figures in the early history of the Ordnance Survey were eminent scientists and members of the Royal Society, and that many of the reports of its progress were made in that forum.

The needs of science, colonial dominion, or defense give us little clue, however, as to the interests of the general public in the early work of the Ordnance Survey, and why they would need maps. When the first sheets of the First Series, covering the county of Kent, were offered for sale in 1801 the price was £3 3s per county, at that time 20 days wages for a craftsman, and thus equivalent to several thousand dollars today. Map-reading skills were largely absent from the general population, so apart from the military it seems that the market for these early products was limited to the wealthiest and most educated. Moreover the scale of one inch to one mile (1:63,360) was of little use for managing estates: it seems that these early maps "served instead as rhetorical images of power and

ownership” (p167), and, just as historic maps do today, as collectors’ items and wall decorations.

Time, however, has largely been kind to the Ordnance Survey, and maps for the very few have become maps for everyone. The accuracy and scale of the First Series turned out to be of great value in the canal-building mania of the early 19th Century, with its need for detailed knowledge of topographic elevation, and later for the railway-building boom of the second half of the century. Today it is hard to imagine how it was possible for the railway surveyors of North America, such as the Canadian Pacific Railway’s Major A.B. Rogers, to choose the best routes across the largely unmapped Mountain West; in Rogers’ case, the chosen route is still open to question. The kinds of accurate artillery that evolved in the 19th Century require accurate topographic mapping, as does the targeting of ballistic missiles today.

The one-inch scale of the First Series turned out to be ideal for the Romantics and their new fascination with landscape. Wordsworth, exploring the Lake District using the new maps, declared the view from Black Combe a “display of man’s inheritance, of Britain’s calm felicity and power” (quoted on p202). Yet others were much less amused. William Blake was an outspoken critic of the Enlightenment and its impact on cartography, seeing it as reason enslaving the imagination. In a fascinating precursor to the nomothetic/idiographic debates in the discipline of geography of a century later, “To Particularize is the Alone Distinction of Merit -- General Knowledges are those Knowledges that Idiots possess” (quoted on p207).

The ultimate re-orientation of the Ordnance Survey away from science and the military to the consumer society came much later, in the 20th Century's expansion of the British pastime of rambling, supported by the new 1:25,000 scale, and with the growth of urban planning and its need for much more detailed scales. Today, the Ordnance Survey provides mapping of much of Great Britain at 1:2,500, and guarantees its currency to a few months. The recent popularization of on-line maps, GPS (the Global Positioning System), and in-vehicle navigation systems have finally demonstrated the importance of map accuracy, since without it GPS would merely provide pairs of useless coordinates.

In the UK, where the Ordnance Survey still enjoys an enviable reputation, Hewitt's book has reviewed very well. To geographers, she shows how many of the issues we encounter today -- the tension between military and civilian interests in geography, the power of maps and maps as power, space versus place, geography as science versus geography as description, spatial thinking as intuitive or learned -- have all played their part in the history of an organization that now extends over more than two centuries. Hewitt has done an admirable job of drawing these themes from a complex but compelling history, and has woven a highly readable account.

Keywords: Cartography, Ordnance Survey of Great Britain, Enlightenment

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