

**‘That Experienced Surveyor, Colonel Mudge’:
Romantic Representations of the Ordnance Survey Mapmaker, 1791–1830**

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1. Surveying

In March 1798, Captain William Mudge was appointed ‘Superintendent [*sic*] and Director of the Trigonometrical Survey’, a body charged with conducting a nationwide triangulation that would underpin a new, pioneeringly accurate topographic map of the United Kingdom.¹ Triangulation, or ‘trigonometrical surveying’, was a relatively innovative surveying technique whereby the observation of angles between ‘trigonometrical stations’ or ‘trig points’ facilitated the creation of a lattice of accurate measurements between key landmarks across a large territory. The resulting matrix could be used for the numerical data it produced about the latitude and longitude of certain spatial positions. It could also provide the foundation for a detailed plotting or ‘interior survey’ of the topography of the landscape on which the triangulation was superimposed. Triangulation’s efficacy was vastly improved in the mid-eighteenth century owing to the development of instruments and lenses capable of measuring angles between sightlines to a greater degree of minute accuracy than ever before.

In June 1791, the ‘Trigonometrical Survey’ was formally established as an endeavour overseen by the Board of Ordnance, a military body among whose responsibilities map-making was a minor, but significant, component. Enthusiasm for launching a comprehensive, up-to-date map of the nation had been building in military and scientific communities throughout the second half of the eighteenth century. In the early 1790s, following the outbreak of the French Revolution, the project was catalysed by a renewed eagerness for surveying and improving Britain’s coastal fortifications against the threat of invasion. June 1791 marked eleven months since the death of the surveyor William Roy, who had played a crucial role in conducting a military survey of Scotland in the wake of the 1745 Jacobite rebellion. In the 1780s, Roy had

become convinced that ‘the honour of the nation’ depended on creating ‘a map of the British islands’ that was ‘greatly superior in point of accuracy to any that is now extant’ and he had made inroads into fulfilling that ambition, overseeing a triangulation between the Greenwich and Paris observatories.²

In June 1791, the Master-General of the Board of Ordnance, Charles Lennox, third duke of Richmond, built on Roy’s work and secured George III’s consent and funding to proceed ‘with the Trigonometrical Operation begun by the late Major General Roy’.³ Known in its early days as the ‘Duke of Richmond’s survey’, ‘General Survey’, ‘British Survey’ and most often as the ‘Trigonometrical Survey’, its surveyors were initially concerned with conducting a triangulation across the counties of East and West Sussex, Kent, Essex, Hampshire, Surrey, Dorset, Devon and Cornwall.⁴ The trigonometrical survey would eventually extend across the nation, all the way from Land’s End in Cornwall up to the Shetland Isles. In 1795, the project’s scope became more extensive. Interior surveyors were employed to flesh out the evolving skeleton framework and produce detailed topographic maps of each county, and from 1809–10 onwards – once the paper maps themselves had begun to appear – the undertaking gradually acquired the name ‘Ordnance Survey’, after the Board of Ordnance under whose aegis it operated.⁵ That designation persisted even after the military applications of the map-making project had, by the mid-nineteenth century, diminished in importance as a result of the increasingly civilian nature of the initiative. Today, the name ‘Ordnance Survey’ is retained despite the mapping project’s status as a public corporation controlled by central government, rather than a military endeavour. The twenty-first-century Ordnance Survey is Britain’s national mapping agency, the foremost provider of paper maps and digital geographical data to consumers including the military, the public sector (including councils, the NHS and national parks) and private sector agencies and companies (including energy, telecommunications, transport, land and property, and financial services) – as well as

enthusiastic individual hikers, fell-runners, cyclists and tourists. I will anachronistically employ the name ‘Ordnance Survey’ throughout this chapter to refer to an endeavour that originated in intertwined efforts to improve military engineering, geodesy and mathematical instruments in the late Enlightenment, but which swiftly became integral to the infrastructure of a newly united nation, and to the day-to-day lives of many citizens across the industrialising nation.

During the first two to three decades of its activities, the Ordnance Survey attained a certain prominence in publications ranging from newspaper reports to travel writing, topography and natural history, poetry, philosophical reflections, assessments of the effect of taxation and scientific appraisals of its methods and utility. That the Survey sparked general interest early on is indicated by the fact that it was evoked in seemingly incongruous settings. In *Elements of the Philosophy of the Human Mind* (1814), for example, the Scottish philosopher Dugald Stewart presented the Trigonometrical Survey as a material, real-world example of the perfect logic usually reserved for abstract geometry.⁶ The rapidity with which the Ordnance Survey pervaded popular consciousness is partly explained by the decision taken by its principal surveyors, William Mudge and Edward Williams (who died in 1798, after which Mudge succeeded as its director), together with their assistant Isaac Dalby, to disseminate information about the triangulation project to the reading public in ‘Accounts’ published in the *Philosophical Transactions of the Royal Society* in 1795, 1797, 1800 and 1803.⁷ In 1799, Mudge and Dalby collated the first two *Philosophical Transactions* articles, appended a lengthy preface, and published a stand-alone volume, *An Account of the Operations Carried On for Accomplishing a Trigonometrical Survey of England and Wales*.⁸ Second and third volumes of the *Account* appeared in 1801 and 1811, and the ‘first series’ of the maps themselves began appearing on the 1-inch-to-1-mile scale between 1801 and 1873. The first maps were sold from the Board of Ordnance’s headquarters in the Tower of London and from

the engraver William Faden's premises at 6 Charing Cross; the price ranged from three guineas (£3 3s) per county survey (for the first map of Kent) up to six guineas (£6 6s) for the 1816 map of Devon. Civilian access to these first maps, which were printed on enormous rectangular sheets, each around thirty inches wide and twenty inches high (the Devon map extended over eight sheets), was primarily restricted to wealthy 'gentlemen' who sought 'to procure a map of the country surrounding their own habitations'.⁹ Over the next half century, the price of a county map diminished to 2s 6d, which was considered to be 'within the reach of all who may require such aid'.¹⁰

For the purposes of this chapter, I propose to concentrate on the presence of the Ordnance Survey's director William Mudge in a range of texts published between the mid-1790s and the 1820s. These textual representations of Mudge are notable since they indicate a departure from depictions of the figure of the mapmaker or surveyor in earlier eighteenth-century literature, and since very few real-life Ordnance Survey mapmakers or specifically named surveyors – as opposed to cartographers as a generic category – figure in literary texts in quite the same way. Depictions of Mudge variously deployed the figure of the mapmaker as a route to exploring, among other things, late-eighteenth-century conceptions of the impartial spectator's role in politics and science, or the significance of elevated observation of landscape. Writers' representations of Mudge were sometimes prompted by their interest in his personal background, or by the emergence of the mapmaker as a prominent civil or military servant rather than a private employee. The visibility to civilian onlookers of military activities, together with the relatively recent importance of accurate surveying to military strategy, also lay behind the cultural prominence of the military mapmaker. The figure of Mudge was used to interrogate the significance of the trained observer in late-Enlightenment efforts to improve accuracy, and as part of discussions surrounding appropriate means of representing and experiencing landscape – a defining feature of literary Romanticism. Mudge's cultural

presence was the product of a certain historical moment in which all these strands coincided, coming to light in public discussion in the space of only a few decades. The disappearance of the Ordnance Survey mapmaker from cultural view after the brief moment of Mudge's textual visibility can be traced, in part, to shifts that Lorraine Daston and Peter Galison track in conceptions of the role of the individual observer in the process of attaining 'objectivity'. Alterations in the Ordnance Survey's own organisational structure and its specific undertakings also, arguably, played a part in the disappearance of the OS mapmaker from literary view.¹¹

The fleeting appearance of the Ordnance Survey mapmaker in literature has been literally relegated to a footnote in history: Mudge appears, albeit unnamed, in a note dictated by William Wordsworth to Isabella Fenwick in 1843, explicating an 'inscription', 'Written with a Slate-pencil on a Stone, on the Side of the Mountain of Black Comb', that he had composed thirty years earlier.¹² But the argument of this chapter is that the apparently ephemeral interest in Mudge's temporary cultural presence, followed by the disappearance of the named Ordnance Survey mapmaker from literary representation, in fact illuminates far wider and more significant shifts in British science and the relationship between military and civilian cultures.

2. Mapping Mudge

Before exploring how Mudge was represented in Romantic-era texts, it is necessary to explore the familial context in which he was raised. Mudge's family connections situated him in close proximity to prominent figures and debates in mid-Enlightenment Britain; their influence undoubtedly shaped Mudge's conception of the Ordnance Survey's national role and prompted his own relative fame.

William Mudge was born in 1762 into a family with well-established cultural and mathematical connections. Mudge's uncle, Thomas Mudge, had been apprenticed as a teenager

to a London watchmaker, after which he set up his own successful business and was commissioned to construct timepieces for King Ferdinand VI of Spain. Thomas entered into the long-running eighteenth-century ‘longitude debate’, during which mathematical instrument makers, navigators and astronomers competed to ascertain the most accurate, reliable method of determining longitude at sea, for a prize of £20,000 offered by the Board of Longitude.¹³ Like his predecessor John Harrison, Thomas Mudge defended the ‘chronometer method’ of calculating longitude on board ship, arguing that if a mariner could transport a clock set to the time of the home port, the time difference between that port and the precise time measured at the ship’s position (determined through astronomical observations) would allow longitude to be accurately ascertained. But it was an almost insurmountably difficult task to construct instruments capable of keeping time despite the rolling of the ship and the dramatic changes in temperature and air pressure experienced during global voyages.

Harrison had constructed five such timekeepers. After his death in 1776, Thomas Mudge produced three more, which were tested and found to exceed Harrison’s in accuracy over the long term. But, like Harrison, Thomas Mudge was acting in opposition to the Astronomer Royal, Nevil Maskelyne, who doubted whether – even if a single, sufficiently accurate and hardy timekeeper could be made – it could be duplicated cheaply enough to allow each and every mariner across the world to benefit from it. Maskelyne supported an alternative, potentially more accessible method of determining longitude: the ‘lunar distance method’, according to which time on board ship was measured by observing the moon’s position, and compared to the time in Greenwich by consulting a volume of ‘lunar tables’. Calculation of the time difference between the two revealed the longitudinal difference. Maskelyne’s resistance to Thomas Mudge’s methodology led to the Board of Longitude’s financial reward being withheld from the latter, and in 1793 Mudge’s eldest son Thomas – William Mudge’s cousin – brought his father’s case before parliament, seeking remuneration.¹⁴ He was eventually

presented with the sum of £2,500, but Maskelyne and Joseph Banks, President of the Royal Society, remained concerned that any reward given to the chronometer method would ‘discourage the advancement of knowledge’.¹⁵

Thomas Mudge Sr’s efforts linked the family name to Enlightenment advances in mathematical instrument-making, and William Mudge almost certainly derived his own early interest in horology from his uncle’s enterprise. Much later, when Mudge took up the directorship of the Ordnance Survey, he was acutely sensitive to that project’s indebtedness to an Enlightenment scientific tradition responsible for rapid mid-century progress in navigation, astronomy and instrument-making, in which his own uncle played a role. However, the specific terms of the ‘longitude debate’ positioned Mudge’s family in opposition to the scientific institutions of the Royal Society and the figureheads of its president and the Astronomer Royal. Seeking to publicise the Ordnance Survey’s activities and establish for the Survey the authority of a national, scientifically rigorous institution, Mudge needed to cultivate the Royal Society’s approval. Its journal, the *Philosophical Transactions*, offered a wide-reaching forum for dissemination of the Survey’s aims, methods and results. So, perhaps with an awareness of the family history of antagonism with Joseph Banks and Nevil Maskelyne, Mudge was chary of alienating such figures and institutions, and although he later inserted a small note of support for his uncle’s chronometers into the 1800 ‘Account of the Trigonometrical Survey’, Mudge was, in general, notably reticent about this aspect of his family history.¹⁶

Throughout this chapter, I challenge the dominant popular narrative concerning the Ordnance Survey’s origin – that it lay chiefly in an acute military response, necessitated at the crisis point of the early 1790s by the outbreak of the Revolutionary War. I hope to show that, as a project, the Ordnance Survey emerged from ongoing, interlinked trajectories of progress in civilian geodesy and scientific instrumentation, alongside other cultural shifts such as the budding impetus towards data collection and survey methodology, exemplified, for example,

by Sir John Sinclair's *Statistical Accounts of Scotland* (1791–99). It is also important to consider the historic associations of maps with state control and surveillance – an aspect of the Survey's identity that demanded consideration during its mapping of Ireland in the 1820s and 1830s. I argue that Mudge's far-sighted and daring innovation lay less in seeing the potential of accurate topographical surveying for military defence (although he was certainly aware of the French military's advances in this area), than in recognising the potential for a national military institution to host and sponsor a trigonometrical surveying project whose principal importance lay in its scientific and instrumental advances. As I will show, a notable feature of the Ordnance Survey's early reception is the fact that very few people commented on its military utility; there is little evidence of military use of the published maps themselves on the ground.

Instead, the Ordnance Survey provides an example of the cross-fertilisation of military and civilian cultures in the eighteenth century. Mudge himself – his background, expertise, decisions, social networks – embodies such fruitful interchange of ideas, ambitions and methods across fields that include mathematical instrument-making, geodesy, art, astronomy, ordnance and surveying. Mudge's ambition for the Survey lay primarily in its potential to provide the civilian population with vastly more accurate and wide-ranging information about the national territory than currently existed. In a period whose literary and aesthetic endeavours were marked by explorations of the relationship between the individual, landscape and nation-state, the Ordnance Survey possessed far-reaching cultural relevance alongside its scientific significance. That cultural relevance was not a coincidence: Mudge grew up on the periphery of one of the most important cultural networks of the mid-Enlightenment.

If William Mudge's uncle provided a direct familial link to the scientific advances of the age, other members of his family offered a route into one of the most prominent cultural circles of eighteenth-century London. Mudge's father, John Mudge, had grown up in a village

north-east of Plymouth, Plympton St Maurice, where he became close friends with the son of the local headmaster Samuel Reynolds, a boy named Joshua. By the age of eight, the young Joshua Reynolds had taught himself the rudiments of perspective and was engaged in drawing ‘the schoolhouse according to rule’.¹⁷ He was particularly fond of William’s grandfather, Zachariah Mudge, vicar of St Andrew’s Church in Plymouth. Zachariah had published a well-received selection of politically conservative, monarchist sermons in 1739, stressing how there is ‘something sacred in the Persons of Princes, a kind of Divine Cloud hovering over their Heads’.¹⁸ It was subsequently said of Reynolds, once he had become founder and first president of the Royal Academy of Arts and a major European portraitist and painter, that he owed ‘his first disposition to generalize, and to view things in the abstract, to old Mr Mudge’.¹⁹

After training at Plymouth Hospital, William’s father, John Mudge, became a physician specialising in the treatment of smallpox and respiratory illnesses; ‘Mudge’s Inhalers’ were advertised widely.²⁰ His friendship with Joshua Reynolds survived beyond childhood, and in 1752 the latter travelled to Devon to consult his physician friend about his poor health and painted his portrait. A few years later, when John Mudge’s eldest son was too ill to travel from London to Devon to celebrate his sixteenth birthday with his father, Reynolds instead painted a portrait of the boy and dispatched it to his old friend, reportedly exclaiming ‘Never mind! I will send you to your father!’ (Flint, *Mudge Memoirs*, 117). In 1762, Reynolds visited John Mudge in Plymouth, along with Samuel Johnson, and the pair resided with Mudge for nearly four weeks, attending Zachariah’s sermons and visiting the newly built lighthouse on Eddystone Rocks, a recent construction of Mudge’s friend, the civil engineer John Smeaton (Flint, *Mudge Memoirs*, 15; Leslie, *Sir Joshua Reynolds*, I, 116–17).²¹

John Mudge’s second wife, Jane, was heavily pregnant with William Mudge at the time, and during William’s childhood, his father and grandfather were regular fixtures among a London-centred social circle that included Reynolds, Johnson, David Garrick, Oliver

Goldsmith and Edmund Burke. In the early 1790s, Burke arranged for Zachariah Mudge's sermons to be republished in Britain as part of a counter-revolutionary effort to assert the need for monarchic hierarchy; he was said to 'esteem' Zachariah as 'an idol', 'a learned and venerable old man' (Flint, *Mudge Memoirs*, 20; Reynolds, *Works*, I, xxxiii–iv). It was likely that William Mudge was introduced to Burke: the latter was recorded reminiscing that 'I have lived in intimacy with two generations of Mudges, and have much pleasure in making the acquaintance of a third' (Flint, *Mudge Memoirs*, 20). Biographers of the Mudge family claim that Samuel Johnson was made godfather to William Mudge, and when Mudge was accepted into the Royal Military Academy at Woolwich, aged fifteen, Johnson visited him, bestowing a gift of a guinea and a book.

In 1779, aged nineteen, William Mudge gained a commission in the Royal Regiment of Artillery, was sent to South Carolina to participate in the American War of Independence, and returned in 1781, when at the age of twenty-one he was dispatched for training in the Drawing Room at the Tower of London among the Board of Ordnance's surveyors. In 1791, Mudge's old tutor, Charles Hutton, Professor of Mathematics at the Royal Military Academy, recommended him to Charles Lennox, third Duke of Richmond, as an ideal candidate to assist the newly founded trigonometrical survey, and in 1798, after the death of its first director, Edward Williams, Mudge acceded to the directorship.

Mudge's family circle therefore provided him with access to many of the most prominent cultural figures of Enlightenment Britain, which shaped his approach to his directorship of the Ordnance Survey. Certain comparable predecessors in Enlightenment military surveying – for example, Hugh Debbeig, who was employed in the 1760s on 'a Secret Service to Survey the principle sea-ports of France & Spain & to make Sketches and Drawings and to take Plans thereof with a view to Discover and State the Strength and weakness of those places' – arguably engaged with military cartography in a way that was mostly restricted

specifically to military intelligence and strategy.²² But Mudge saw himself more in the tradition of the late-eighteenth-century military surveyor William Roy. Alongside conducting a Military Survey of Scotland in the 1740s, followed by maps of Minden and Dunkirk, descriptive and cartographic surveys of the British coast, barometric measurements of landmarks around London and the geodetic measurement between the observatories of Paris and London, Roy was also a dedicated antiquarian. He was a prominent member of the Society of Antiquaries, who clearly perceived the opportunity presented by military surveying for recording historical and cultural aspects of landscape and topography. ‘While the ranges of mountains, the long extended valleys, and remarkable rivers, continue the same, the reasons of war cannot essentially change’, Roy wrote in *Military Antiquities of the Romans in North Britain*.²³ Landscape was the theatre in which a variety of human activities took place; in his view, surveyors enjoyed privileged opportunities to chart relics of human and geological activity – ‘to compare present things with past’ and ‘converse with the people of those remote times’ – that exceeded direct military relevance (*Military Antiquities*, i).

So although the Ordnance Survey was initially housed in the military context of the Board of Ordnance, staffed by military engineers, it owed its inception more to civilian traditions of Enlightenment advances in geodesy, navigation and mathematical instrument-making and to William Roy’s creative, expansive conception of military cartography’s applications than to the immediate military requirement for a new survey of the British coastline that emerged in the early 1790s. Mudge’s personal background was rooted more deeply in civilian aesthetic and scientific cultures than in military protocol. He continued in Roy’s tradition, repeatedly asserting the public utility of the military mapmaking project under his jurisdiction. Mudge willingly contributed the data resulting from the Ordnance Survey’s triangulation to a number of civilian projects, including the thirteenth edition of Daniel Paterson’s *New and Accurate Description of the Roads in England and Wales, and Part of the*

Roads of Scotland, which thanked ‘the very ingenious Major Mudge’ for the ‘Measurements of the Heights of Mountains and other Eminences, so accurately taken in the grand trigonometrical survey of the kingdom’.²⁴ Mudge knew that private estate surveyors and county mapmakers would use the Ordnance Survey’s data to underpin their own projects, and appears to have been supportive of this appropriation of information.²⁵ He also donated free copies of the Ordnance Survey’s maps to libraries, institutions and associations, through which those who could not afford to purchase them might still witness the new surveys.

Today, such devolved use of Ordnance Survey data does not appear remotely strange: the twenty-first-century OS provides data to private and public sector organisations, across retail, energy, telecommunications, transport, financial services and town, parish and community councils. But in 1803, this creative, expansive vision of the Ordnance Survey’s potential applications was an innovative utilisation of military information. Mudge was key to the decision to make the Ordnance Survey’s maps accessible to the public and he passionately, albeit unsuccessfully, defended his position in 1811. Then the new Master-General of the Board of Ordnance, Henry Phipps, first Earl of Mulgrave, issued a command to ‘withhold every map from the public’ until well after the end of the Napoleonic Wars; his concern related to potential French access to detailed information about Britain’s harbours, coasts and fortifications.²⁶ William Mudge’s consistent assertion of the Ordnance Survey’s wide-ranging relevance set the stage for the eventual transfer, in 1870 (well beyond Mudge’s own lifetime), of the mapmaking project away from the military’s Board of Ordnance to the government department known as the Office of Works, located within the Office of Woods, Forests, Land Revenues, Works and Buildings. Undoubtedly, Mudge’s expansive vision of the Ordnance Survey’s civilian application was also a key factor in the extent of cultural interest in the Ordnance Survey that coincided with the dates of Mudge’s directorship (1798–1820).

3. Prospects and Stations

From the late 1790s, Mudge's hopes for the civilian applications of the Ordnance Survey were reciprocated in the form of public curiosity about his endeavour. More specifically, contemporary print culture shows evidence of numerous engagements with Mudge's own persona, and commentary on his role in shaping national identity. Newspapers frequently reported on the Trigonometrical Survey's progress. As the first maps began to emerge from the presses in 1801, journals and newspapers covered the interior survey's advance across the country and described the paper maps themselves. A few quotations among many give a flavour of the level of detail in the reporting. The *Weekly Register* for 21 August 1799 described the appointment of 'Mr. Woolcut, an eminent mathematician, from Devonshire . . . under the grand Trigonometrical Survey of England, under Capt. Mudge', and recounted how

Mr. Gardner, of the drawing-room in the Tower, follows Capt. Mudge with a portable theodolite, for determining the exact situation of every church and remarkable object, and to fill up the plans in a style of accuracy and elegance never hitherto attempted: and these maps the Board of Ordnance have very liberally determined to publish for the benefit of the public.²⁷

The *Caledonian Mercury* explained the process of triangulation for a lay readership, calling on passers-by to help conserve the makeshift trig points set up by the surveyors at each trigonometrical station:

In the course of this very important survey, the points from which the different angles are set off, are marked on the tops of the most prominent hills, by the erection of a pillar of loose stones, staves, or other objects, upon their summits, by which their position

and distances from each other, and their height above the level of the sea, are ascertained with the greatest precision.

As these marks become *data* of the utmost importance to the land surveyors, either in the construction of county maps, or private estates, our object for noticing the subject at present is, to call the attention of the public to the obvious utility of preserving these marks...²⁸

In the second half of the 1810s, after the maps had been returned to public sale following the five years of restricted access imposed by Phipps, newspaper reports of the Ordnance Survey's activities and publications appeared far more frequently. For example, the *Times* covered in detail a collaboration between 'Colonel MUDGE, and his able assistant, Captain COLBY' and the 'French Institute of the Academy of Sciences' to extend the meridian arc between the Paris and Greenwich Observatories, measured in the 1780s, up to the Orkney Islands.²⁹ The same newspaper notified its readers when each new sheet became available, listing their prices; it also reported on an exhibition at the Royal Military Academy of 'some most beautiful drawings . . . (the landscapes were copies from the famous Paul Sandby)' at which 'the Lieutenant-Governor Colonel Mudge' was present.³⁰ (Sandby had been employed in his youth in colouring many of the sheets of the Military Survey of Scotland, under William Roy.) A recurrent presence in such newspaper stories, in which he was identified as a 'celebrated and scientific' mapmaker, Mudge appeared more as a catalyst of geodetic advancement than as an enhancer of specifically military intelligence and defence.³¹ In those contexts where Mudge was praised for maintaining the 'honour of the nation', like his predecessor William Roy, it was usually for his contribution to 'the finest piece of Topography in Europe' in the name of scientific progress, rather than for the predicted utility of the maps in defending against French invasion (Flint, *Mudge Memoirs*, 144).

Literary writers utilised the figure of Mudge and his family in a range of ways. Under the pseudonym Peter Pindar, the satirist John Wolcot composed *Peter's Prophecy . . . Or, an Important Epistle to Sir J. Banks, On the Approaching Election of a President of the Royal Society*, in which the poet urges that 'Fame and glory' be given, not to Banks, but instead to 'Dr. Mudge of Plymouth' – William Mudge's father – 'whose head contains more nous/ Than (trust me) ever lodg'd in Herschel's house'.³² Perhaps to William Mudge's subsequent dismay, the satirical poem cemented the opposition between the Mudge family, including Mudge's horologer uncle Thomas, and the scientific establishment that was centred around the Royal Society and the Astronomer Royal. That John Mudge was connected in the public imagination to his son William is possibly suggested by a punning review in the *Morning Chronicle* in 1795 of a portrait of Dr Mudge by James Northcote, which explicitly deployed cartographical language: the painting is not 'a mere map of a face', the reviewer stresses, 'but a delineation of the mind'.³³

A similarly glancing connection to Mudge occurs much later, in the latter half of the next century, in Jules Verne's *Around the World in Eighty Days* (1873) and *Adventures of Three Russians and Three Englishmen in South Africa* (1872; sometimes given the title *Meridiana* or *Measuring a Meridian*). Verne's close acquaintance with 'Geodetical operations' is revealed throughout the latter, which followed an expedition to measure a meridian arc. Verne describes in detail the process of triangulation: 'At each signal, a triangle comes out, whose angles are given by the aforementioned instruments with a mathematical exactitude. Indeed, any object whatever – a bell, the day, a reflector, the night – can be remarked with perfect accuracy by a capable observer, who discerns them by means of a telescope, the object-glass of which is half obscured by a threaded net'.³⁴ Verne extensively referenced the 1806–9 endeavour by Dominique François Jean Arago and Jean-Baptiste Biot to extend the Parisian meridian arc down to the Balearic Islands, and namechecked 'Colonel Everest' – George

Everest, the surveyor, geographer and Surveyor General of India. In the context of Verne's close familiarity with eighteenth- and nineteenth-century geodesy, the presence of 'Mudge' as a 'confident' navigator in *Around the World in Eighty Days* is likely a nod to the British surveyor.

These are peripheral literary depictions of the Ordnance Survey mapmaker and his family. The most direct and revealing appearances of William Mudge explicitly in his guise as Ordnance Survey mapmaker occur in early-nineteenth-century landscape poetry. In a poem entitled 'The Vale of Ilkley' (c. 1820–8), the Airedale poet John Nicholson (1790–1843) portrayed 'the crown of wide-spread Rom'lies' Moor' or 'Rombald's Moor' – a stretch of moorland to the south of Ilkley, West Yorkshire:

. . . the vast scene is stretched to either shore.
There we behold the hills of many a shire;
The lofty mountains to the clouds aspire;
Whernside uprears on high his snow-clad crest,
While the blue Pendle trembles in the west;
The hills of Derbyshire are southward seen,
Though vales divide, and rivers roll between;
Old Ingleborough lifts his time-worn head,
And Yorkshire as one spacious map is spread . . .
A scene like this, within old England's coast,
Nor Matlock, Buxton, nor proud Bath can boast.
Grandeur and peace upon the Station dwell,
and Health sits smiling at the mountain well . . .³⁵

Nicholson appended a footnote to the description of the ‘Station’, revealing it to be an Ordnance Survey trig point: ‘The Station is the highest point on Romilies’ Moor, from which place Captain Mudge took his observations nearly seventy years ago’ (*Poems by John Nicholson*, 134). Nicholson’s positioning of the ghost of William Mudge at the highest point on the moor, revelling in the ‘vast scene’ laid out before him, echoes the eighteenth-century tradition of landscape or prospect poetry described extensively by John Barrell in *The Idea of Landscape and the Sense of Place* (1972) and *English Literature in History* (1983). Barrell locates the significance of the wide-ranging prospect – the ‘equal, wide survey’ of British landscape that occurred frequently in mid-eighteenth-century landscape poetry – in contemporaneous changes that were occurring to the concept of ‘unity’ in Britain. Ideas of social coherence were transformed by geopolitical union between England and Scotland (followed at the turn of the nineteenth century by the Anglo-Irish Union) but were most dramatically impacted, Barrell argues, by ‘the increasing belief that British society was becoming highly differentiated in terms, particularly, of occupation’.³⁶ In the context of the reading public’s emerging alertness to social divisions according to rank, occupation and income, Barrell argues that English literary culture became charged with inspecting ‘the variety of elements that compose a society, by representing them in the form of occupational variety, and by understanding them therefore as no longer necessarily, or no longer simply, disruptive of social coherence, but capable also of confirming it’ (*English Literature in History*, 25).

Poetic representations of the prospect – the far-ranging elevated view of landscape – became mechanisms not only for depicting national variety and difference, but also for conjuring up a human figure uniquely capable of perceiving unity within diversity. In the modality of mid-eighteenth-century prospect poetry practised by James Thomson and John Dyer, the figure ‘to whom the task of reconciling opposed interests is assigned’ is the landed gentleman who possessed a stake in the successful accord and stability of his nation through

his permanent ownership of land, while simultaneously enjoying a disinterested remove from, or elevation above, the mundane details of division of labour by dint of his ‘freedom from engaging in any specific profession, trade, or occupation which might occlude his view of society as a whole’ (*English Literature in History*, 32–3).

As Barrell’s subtitle to *English Literature in History* – ‘An Equal, Wide Survey’ – indicates, cartographic discourse, including the phrases ‘like a map’ and ‘as in a map’, recurred in eighteenth-century prospect poetry to depict the wide-ranging, unified viewpoint available to the elevated, impartial gentleman. John Hughes’ ‘A Monumental Ode’ (1714) urged the ‘Muse’ to behold how ‘Nature’s Hand . . . / . . . far around in beauteous Prospect spreads/ Her Map of Plenty all below’.³⁷ Robert Dodsley’s *Agriculture: A Poem* (1777) recounted how

There sweet prospects rise
Of meadows smiling in their flow’ry pride,
Green hills and dales, and cottages embower’d,
...
In those fair scenes of wonder and delight,
Where, to the human eye, Omnipotence
Unfolds the map of Nature, and displays
The matchless beauty of created things.³⁸

The ‘equal, wide survey’ of Barrell’s subtitle is taken from James Thomson’s *Seasons*. The phrase was deployed in that poem to describe how the gentleman’s ‘saving Virtues’ – peace, love, charity, truth, dignity of mind, courage, temperance and so on, but especially ‘That first paternal virtue, *Public Zeal*’ – throw ‘o’er all an equal wide survey’, thus discovering the unifying ‘great design’ within the apparent disparity of the ‘common weal’.³⁹ The occurrence

of cartographic metaphors in the context of mid-eighteenth-century prospect poetry connotes the genre of the estate survey: the elevated, disinterested gentleman pores over the extensive view in the same way that landed male figures in literature were repeatedly imagined leaning over privately commissioned surveys of their estates and the surrounding territory.

By the close of the eighteenth century, the same figurative cartographic language – used to profile an extensive view of landscape granted to an elevated observer and compared to a map – was being used to trace the emergence of very different types of individuals to whom the task of finding unity in variety was assigned. In Erasmus Darwin's *Botanic Garden* (1791), the lone figure who 'Journey[s] on high' was not a landed gentleman, but a 'calm Philosopher' who 'Views broader stars, and breathes in purer gales;/ Sees, like a map, in many a waving line/ Round Earth's blue plains her lucid waters shine'.⁴⁰ The elevated, detached observer in Darwin's poem is a natural scientist and experimenter in the mould of 'great Mongolfier', the hot-air balloonist. For the poet Anna Seward, in 'Addressed to the Rev. Thomas Sedgewick Whalley, on Leaving his Seat, Mendip Lodge, in Somersetshire' (1804), the disinterested observer stood 'High on thy mountain-eminence' and saw 'vales, and woods, and lesser hills expand,/ As in a map, the verdant steps below'.⁴¹ But the observer was not the landed gentleman himself: Whalley's own eyes were 'seal[ed]' by 'the grave's iron slumber' and 'must never view thy bright domain'; rather, the observer was the female poet, the 'Friend', who attained a similar elevation and observational capability to the 'upraised' dead male landowner through sympathy, reflection and poetic composition. Throughout these examples, a shift is visible in which the idealised national commentator is no longer being imagined in relation to his inherited wealth and property ownership, but instead is being celebrated for empirical observation, dispassionate rationality and familiarity with key scientific institutions and personae. That shift in the understanding of the qualities necessary for political commentary and judgement was reflected in changing deployments of cartographical

metaphors. It was also paralleled in a shifting notion of the role and significance of the mapmaker, both as a literary device and as a public figure.

By the beginning of the nineteenth century, it was William Mudge himself who was being cast in the figure of the elevated observer capable not only of perceiving unity in multiplicity and disparity, but also of displaying that unity for everyone privileged enough to come into contact with the Ordnance Survey's maps. The maps were explicitly celebrated for providing a visualisation of a *united* kingdom in material form: the *Daily News* described how 'the maps fit together at the edges without any overlapping or duplicate engraving, so that they form, not merely separate maps, but . . . one map'.⁴² Nicholson's 'The Vale of Ilkley' positions Mudge smiling above a view that encompasses Cumbria, Derbyshire and West Yorkshire, and imaginatively bringing into focus counties as distant as Somerset. Through Mudge's eyes, the poem offers a vision of a unified nation – one in which the distinctive regional identities of 'county commonwealths' persist, while centralised unity is emphasised above all.⁴³ The poem deliberately recalls the map metaphors of mid-eighteenth-century prospect poetry: 'Yorkshire as one spacious map is spread'. But whereas the cartographical language of the poem's mid-eighteenth-century predecessors invoked the estate map as the frame of reference for the gentleman observer, in Nicholson's poem the estate surveyor is replaced by the mapmaker as public servant and military scientist, and the national 'Ordnance Survey' is evoked in place of the privately commissioned estate map.

4. The Quantifying Spirit: Range and Limits

Nicholson's ideal political commentator – the individual peculiarly suited to be an impartial, elevated spectator – was not the mid-eighteenth-century landed gentleman, detached from a specific state role, but William Mudge: an employee of the state, a military surveyor from a family background rooted in civilian literary, medical and scientific culture. On a simple level,

this shift in conception of the impartial spectator was a product of the Ordnance Survey's prominence. Thanks to its fame, the Ordnance Survey map had achieved the same visibility in the literary imagination as the estate survey. The wide-ranging bird's-eye view of the prospect poem brought to mind a map, but by the early nineteenth century, the map that most readily came to mind was as likely to be the OS map as the cartographic delineation of a private estate or county.

Nicholson's literal and figurative elevation of Mudge also marks a significant shift in conception of political power. The ideal commentator and legislator was no longer a member of the landed classes who warranted political responsibility through inheritance of land, but a senior public servant whose distinction had been earned largely meritocratically through successful execution of his role. This mirrored the rising significance of the middle classes as a political force in Britain.⁴⁴ It also aligned the figure of the mapmaker with public officials tasked with monitoring or measuring the population as part of democratic processes – the 'surveyors' of James Harrington's *Oceana* (1656), for example, who roamed across parishes 'teaching [the People] their first lesson, which was the Ballot', or statisticians like Sir John Sinclair, who saw his role in collecting detailed local information for the *Statistical Account of Scotland* (1791–9) as crucial to government's ability to promote citizens' welfare.⁴⁵ By the 1820s, Mudge's triangulation data was being used in comparable contexts; the economist Henry Beeke praised the 'very excellent trigonometrical survey' for providing measurements that would enable him accurately to calculate counties' revenue from taxation on the basis of newly exact measurements of their areas.⁴⁶ Such figures as Mudge and Sinclair were granted a wide-ranging view of national territory through their public service rather than from their private inheritance, and were charged with collating and comparing those data in order to discern concepts such as 'truth', 'accuracy' and the 'normal', in the name of improving national infrastructure, data and wellbeing.⁴⁷ Nicholson's representation of Mudge valorised and

idealised bureaucratic measurement and rational democracy, in place of the hereditary aristocratic system celebrated by the mid-eighteenth-century prospect poem.

The appearance of Mudge in Nicholson's poem also points to the visibility of military research in civilian public life at the end of the eighteenth century and the extent of reciprocal influence between military and civilian cultural spheres in Enlightenment Britain. Neil Ramsey and Gillian Russell have recently shown how, in the period 1750–1850, military concerns achieved heightened visibility in Britain, particularly when the army, militia regiments and volunteer forces were rapidly expanding against the backdrop of the Revolutionary and Napoleonic wars. In the space of twenty years, the regular army increased from around 40,000 to over 250,000 troops; many British families contained at least one son who entered the military. The enlarged presence of military matters in civilian British life drove 'an early modern military revolution' in which dramatic military advancements played 'a pivotal role in fashioning the infrastructures of modern industrial life'.⁴⁸ For example, practices of military drill and surveillance influenced the design of disciplinary institutions such as factories and prisons, and the demands of war catalysed the development of roads, shipping and postal networks. In the Romantic period in particular, the military became the subject of spectacle for civilians, through camps and parades in which drilled troops performed synchronised marches in elaborate uniforms to the accompaniment of martial music.⁴⁹

The Ordnance Survey was a prime example of the civilian embrace of military science and engineering, as it was – vice versa – of the rapid absorption of principles, methods and discoveries of Enlightenment quantification, geodesy, mathematics, geometry and astronomy into military theory and practice. Military surveying activity lent itself well to the civilian hunger for public military demonstrations. From mid-June to mid-September 1800 – shortly before the appearance of the Ordnance Survey's first map, and after the publication of many of Mudge's and Dalby's 'Accounts' of the survey's progress – the Establishment for Military

Education in London's Knightsbridge hosted weekly public displays of 'Geometrical and Trigonometrical Operations upon the Ground' (Ramsey, 'Exhibiting Discipline', 122).⁵⁰ Even in the Ordnance Survey's early days, its triangulation methodology was adopted by educational manuals for 'the liberal instruction of boys', which encouraged students to replicate Mudge's trigonometrical measurements.⁵¹

Aside from the trigonometrical survey, the Ordnance Survey's interior survey and its pictorial representation of landscape provided a fruitful opportunity for the interfusion of military and civilian influences. Embryonic surveyors at the Royal Military Academy at Woolwich were tutored by illustrious landscape painters including Paul Sandby, and the Ordnance Survey interior surveyor Thomas Compton went on to utilise the topographical skills he had learned while working for the Ordnance Survey in producing 'highly-finished coloured views' of the 'romantic country' of the 'Cambrian Hills', which were widely published.⁵² The career of the surveyor Robert Kearsley Dawson (1798–1861) mirrors the Ordnance Survey's own shift from superficially military to unashamedly civilian identity. After working for the Ordnance Survey in Ireland in the late 1820s, Dawson was recalled to England in 1831 to map boundaries of parliamentary boroughs for the Reform Bill. William Mudge's personal biography and surveying career – his origins in a family known for the richness of its cultural contacts and his superintendence of a military cartographic project whose scientific and public utility he continually stressed, to the extent that it was eventually detached from the military and reestablished in the Office of Works – perfectly encapsulated the interchange of military and civilian worlds in the late eighteenth century. It is that exchange that leads directly to Mudge's presence in Nicholson's nineteenth-century prospect poem.

The best-known invocation of William Mudge in Romantic-period literature displays similarities to Nicholson's poem, and was a possible influence on that later composition. As in 'The Vale of Ilkley', in this earlier poem Mudge is placed in the position of the elevated

observer of a wide-ranging national prospect. Similarly also, the specifically military aspects of his professional identity are sidelined in favour of his scientific intervention. When William Wordsworth came to compose ‘Inscription: Written with a Slate-pencil on a Stone, on the Side of the Mountain of Black Comb’ in 1811, he had already referred to Mudge in an unpublished tour as the ‘best authority’ on Lake District topography. This was a sentiment he would later reiterate in his *Guide to the Lakes*, in which he explicitly designated Mudge an ‘experienced observer’ and referred to ‘that experienced surveyor, Colonel Mudge’.⁵³

Wordsworth’s ‘Inscription’ informs a ‘bold Adventurer’ about a ‘geographic Labourer’ who had previously ascended ‘this huge Eminence’:

. . . on the summit whither thou art bound,
A geographic Labourer pitched his tent,
With books supplied and instruments of art,
To measure height and distance; lonely task
Week after week pursued!⁵⁴

As noted above, Wordsworth subsequently identified the geographic labourer to Isabella Fenwick as William Mudge, about whose professional visit in 1808 to the mountain and the surrounding area, in the company of his Ordnance Survey team, Wordsworth had acquired information from the rector at Bootle in Cumbria, Rev. Dr James Satterthwaite, during a visit there in 1811.⁵⁵ From Black Combe’s summit, Mudge is granted a view of ‘the grand terraqueous spectacle’: an equal, wide survey of British landscape that another of Wordsworth’s Black Combe poems fleshes out in greater detail:

. . . from the summit of BLACK COMB (dread name

Derived from clouds and storms!) the amplest range
Of unobstructed prospect may be seen
That British ground commands: – low dusky tracts,
Where Trent is nursed, far southward! Cambrian hills
To the south-west, a multitudinous show;
And, in a line of eye-sight linked with these,
The hoary Peaks of Scotland that give birth
To Tiviot's Stream, to Annan, Tweed, and Clyde . . .

(*Poems*, I, 303)

In the 'Inscription', Mudge initially appears aligned to the rural labouring figures of Wordsworth's poetry, such as the leech-gatherer of 'Resolution and Independence' who is 'About the weary moors continually/ Wandering about alone and silently'. Mudge appears as a 'Labourer' who has 'Week after week pursued' a 'lonely task', occasionally enjoying a privileged 'glimpse (but sparingly bestowed/ On timid man) of Nature's processes/ Upon the exalted hills'. At the end of the poem, however, Wordsworth calls into question Mudge's credentials as a commentator on landscape and united nationhood. Wordsworth imagines the Ordnance Survey's trigonometric efforts thwarted by a simple cloud, which turns 'the whole surface of the out-spread map . . . invisible', causing 'total gloom' to descend, in which Mudge 'sate alone, with unclosed eyes/ Upon the blinded mountain's silent top!'. Nature makes a mockery of what the historian of science Sven Widmalm calls the 'quantifying spirit' of eighteenth-century geographical science. Ultimately, rather than praising Mudge as an idealised political commentator on landscape, nation and geographical or scientific 'truth', Wordsworth's poem ends up linking him more clearly with the Enlightenment attitudes that the poet disparages – in cartographical language – in *The Prelude* as attempts to 'range the

faculties/ In scale and order, class the cabinet/ Of their sensations'.⁵⁶ Wordsworth's Black Combe inscription utilises the Ordnance Survey and Mudge specifically as vehicles through which to articulate scepticism about cartography's capacity adequately to represent 'Nature's processes'.

5. Sightlines, 1798–1810

Though not frequent in Romantic-period texts, invocations of the Ordnance Survey's William Mudge can be recognised by scholars of cartography's wider cultural resonance as marking a departure from earlier literary representations of mapmakers. Surveyors most often appeared in eighteenth-century literature in the guise of privately employed estate surveyors, untrustworthy interfering agents coming between landlords and their tenants. William King's poem *The Toast: An Heroick Poem* (1732) warned that 'whate'er *that* Surveyor/ For his Profit projects, or the *other* shall swear;/ Be abortive their Plots!'.⁵⁷ In Fanny Burney's *Cecilia* (1782), an estate surveyor figured as the simple facilitator of improvements to a private estate, but in Maria Edgeworth's novels, the role is invested with sinister ulterior motives.⁵⁸ In *Ennui* (1809), the estate mapper is 'a low man', an 'odious surveyor', who exchanges places with Lord Craiglethorpe and dupes a woman into falling in love with him.⁵⁹ In *The Absentee* (1812), the dishonest estate surveyor facilitates the absenteeism of the landlord and instead of simply measuring land in order to calculate rent, appropriates that land from the rightful tenants. The land agent informs longstanding tenants that '*your* little place [is] no longer yours, I've promised it to the surveyor' (*Tales of Fashionable Life*, II, 220–1). Even when the mapmaker was not a privately commissioned employee, the figure was still frequently associated with insensitive alterations to landscape or the state's encroachment on private property. John Clare aligned 'surveyors' with 'modern savages' – philistines who 'have lately dug up several foundation stones of the Abbey . . . for the purpose of repairing the parish roads'.⁶⁰ In Walter

Scott's *Guy Mannering* (1815), it is an 'English surveyor' who is behind a recommendation for a 'proposed road' to 'go clear through the main enclosures at Hazlewood, and cut within a mile, or nearly so, of the house itself, destroying the privacy and pleasure . . . of the grounds'.⁶¹

Literary representations of William Mudge differ significantly from such typical eighteenth-century appearances of mapmakers. Though Wordsworth's portrait in his 'Inscription' is complex, depictions of Mudge generally transform the mapmaker from petty, conniving provincial employee into eminent servant of the state. Mudge's cultural visibility up to the end, in 1820, of his directorship of the Ordnance Survey paved the way for the appearance in literature of mapmakers as indisputably political figures on the international stage. However, it is largely in generic, unnamed or fictionalised form that the mapmaker appears in texts post-1820, whereas the appearance of Mudge as a named cartographical celebrity in texts from the 1790s to 1820 is striking and almost without parallel in terms of public interest in specific surveyors.

The Ordnance Survey's work in Ireland from the 1820s to the 1840s under Mudge's successor, Thomas Colby, during which it (in)famously engaged in researching and translating Irish place-names, helped to cement the OS's reputation as an institution with explicit cultural and political relevance. This led to its adoption by a number of contemporary writers as a mechanism for reflecting on translation and linguistic standardisation. Barry MacSweeney's 'Pearl's Poem of Joy and Treasure' (1997) aligned the Ordnance Survey with 'the true height of the law'; the maps' anglicisation of place names 'twine[s] my tongue'. Hugh MacDiarmid characterised the Ordnance Survey as a weak, superficial form of geographical representation incapable of capturing national and regional cultural nuances that go 'deeper than Ordnance Surveys divine'.⁶² Most prominently, Brian Friel's play *Translations* (1980) fictionalised the Ordnance Surveyors' activities in 1830s Ireland to show how the mapmakers' brutal translation

of Ireland's place names 'into the King's good English' left its residents 'imprisoned in a linguistic contour which no longer matches the landscape . . . of fact'.⁶³

These contemporary literary deployments of the Ordnance Survey as an encapsulation of tensions between region and centre, between Westminster and the identities of Scotland and Ireland, and between standard English and regional dialect and Gaelic, cast the Ordnance Survey mapmaker as an explicitly political figure, but also as a faceless servant of a ham-fisted imperial state or, in Friel's case, of a 'bloody military operation' (Friel, *Translations*, 36). MacSweeney and MacDiarmid's poems reference the institution as a whole, rather than personalising it in the personae of individual mapmakers. Friel's play largely offers fictional surveyors, although the character of Lieutenant Yolland is likely to be a transposition of the military engineer William Yolland, who was overlooked for promotion to the Ordnance Survey's directorship in 1847.

The depersonalisation of the literary mapmaker continued to characterise poetry that evoked the Ordnance Survey as part of a critique of cartography as a reductive means of representing landscape, following the example of Wordsworth's Black Combe inscription. Robert Graves' 'Lost Acres' mourns the 'acres of the mind' – the affective and psychological layers with which landscape is overlain in the mind – that are 'always again lost/ By every new Ordnance Survey'.⁶⁴ Anne Stevenson's 'Salter's Gate' also evokes the Ordnance Survey in terms of what its maps omit rather than what they (choose to) capture, referring to 'that lost corner of the Ordnance Survey'.⁶⁵ Sean O'Brien's 'Special Train' aligns the OS with middle England; focusing on the council estate, he writes of the working-class 'country/ Known neither to us nor the Ordnance Survey'.⁶⁶ In such inscriptions, the Ordnance Survey appears as a depersonalised, faceless organisation whose political and cultural significance predominantly lies in its reductive standardisation of landscape, national identity and language.

The disappearance of the specific (named or implied) Ordnance Survey mapmaker from literary depictions after William Mudge's death in 1820 can be attributed to a number of shifts. Mudge was unusual in respect of the cultural prominence of his family name and connections, and as the first, famous director of a national mapping project, he benefited also from the exposure his pioneering development of instruments, techniques and organisational structures in the Ordnance Survey brought him (innovations his successors were tasked mainly with revising, rather than sweeping away). Newspapers showed far greater interest in Mudge than in succeeding directors, and Mudge himself carved an unusually large space in print culture through his open publication of the 'Accounts' of the Ordnance Survey's progress and of the maps themselves. Literary writers' loss of interest in individual Ordnance Survey mapmakers and directors may have been the result of the disaggregation of military and civilian culture into fully separate spheres, as military employment became professionalised in the nineteenth century; in the long term, it may also have been bound up with the Ordnance Survey's changing identity, from celebrated military-scientific project to bureaucratic government department.

The fall from visibility of the particularised Ordnance Survey mapmaker may also have reflected a shift in natural science in which, as Lorraine Daston and Peter Galison argue,

men of science began to fret openly about a new kind of obstacle to knowledge: themselves. Their fear was that the subjective self was prone to prettify, idealize, and, in the worst case, regularize observations to fit theoretical expectations: to see what it hoped to see. (Daston and Galison, *Objectivity*, 34)

Daston and Galison describe how those who aspired to 'objectivity' in the mid-nineteenth century began to emphasise 'the importance of effacing their own personalities and developed techniques that left as little as possible to the discretion of either artist or scientist, in order to

attain an “objective view” (Daston and Galison, *Objectivity*, 34–5). In the late eighteenth century, a ‘cult of the genius of observation’ (*Objectivity*, 238) ensured that the idiosyncratic talents of men like Mudge – who had the technology and judgement necessary to manage the vast number of observations conducted from trig points across the country and to rationalise error into neat data sets – were celebrated. However, Daston and Galison argue that after Mudge’s death, observation and scientific atlases began to efface the individual, skilled observer in favour of an aspiration to ‘automatism’ – the production of images apparently untouched by human hands.

Mudge’s appearance in Wordsworth’s Black Combe poems, his *Guide to the Lakes* and his unpublished tour, and in Nicholson’s ‘The Vale of Ilkley’ occurred during a brief historical moment between 1798 and 1820. In that window, Romantic-period fascination with the representation of landscape coincided with the valorisation of scientific observers, the unhindered mutual exchange of influences between military and civilian spheres and the heightened cultural currency of visual and textual constructions of a unified national landscape during the Revolutionary and Napoleonic wars, against the backdrop of the Anglo-Irish Union. In the midst of this coincidence of cultural strands, the birth of the Ordnance Survey in 1791 and its rise to prominence in the late 1790s resulted in the propulsion of Mudge, its director, to a certain degree of professional and cultural fame. Radiating out like the sightlines that diverge from each trig point in the Ordnance Survey’s own triangulation, the resonances of Mudge’s presence in Romantic-era texts extend from what is, at first sight, a minor literary detail to illuminate major historical changes in British civilian and military culture.

¹ *Oracle and Public Advertiser*, 3 March 1798, 3.

² William Roy, ‘An Account of the Trigonometrical Operation, Whereby the Distance Between the Meridians of the Royal Observatories of Greenwich and Paris has been Determined’, *Philosophical Transactions of the Royal Society*, 80 (1790), 111–614 (262); hereafter *Philosophical Transactions*.

³ Out-letters from Master-General, Board of Ordnance, and Commander in Chief, National Archives, WO 46/22, 1791–2.

⁴ For reference to the ‘Duke of Richmond’s Survey’, see *Lloyds Evening Post*, 25 July 1792, 91; for references to the ‘General Survey’, see ‘Lights on the Coast’, *Sussex Weekly Advertiser*, 8 and 15 April 1793, cited in J. B. Harley and Yolande O’Donoghue (eds.), *The Old Series Ordnance Survey Maps of England and Wales*, 8 vols. (Lympne Castle, Kent: Harry Margary, 1975–92), I, xxv and ‘The General Survey of England and Wales’, *The Times*, 2 November 1816, 1; for reference to the ‘British Survey’, see Joseph Portlock, *Memoir of the Life of Major-General Colby* (London: Seeley, Jackson & Halliday, 1869), 192; and for reference to the ‘Trigonometrical Survey’, see Surveyor-General’s Minutes, National Archives, WO 47/118, 12 July 1791. See also Rachel Hewitt, *Map of a Nation: A Biography of the Ordnance Survey* (London: Granta, 2010), 114–43 for the initial intentions of the trigonometrical surveyors and their early progress.

⁵ It seems that the term ‘Ordnance Survey’ was first used to refer to the project in 1801, when William Mudge wrote the name on one of the draught interior surveys; see Thomas Budgen, ‘Exeter’, Ordnance Surveyors’ Drawings, British Library, OSD 40 (1801), 3; however, Mudge’s annotation could have been added at a later date. The phrase first appeared in print in Aaron Arrowsmith, *Memoir Relative to the Construction of the Map of Scotland* (London: W. Savage, 1809), 5. ‘Ordnance Survey’ appeared on the 1810 ‘Ordnance Survey of the Isle of

Wight and Part of Hampshire’, but was relatively slow to be adopted as the principal moniker of the cartographical endeavour.

⁶ Dugald Stewart, *Elements of the Philosophy of the Human Mind*, 3 vols (Edinburgh: Ramsay, 1792–1827), II, 205.

⁷ The accounts of Mudge, Williams and Dalby appear in *Philosophical Transactions*, 85 (1795), 414–591 and *Philosophical Transactions*, 87 (1797), 432–541; Mudge’s further updates appear in *Philosophical Transactions*, 90 (1800), 539–728 and *Philosophical Transactions*, 93 (1803), 383–508.

⁸ William Mudge and Isaac Dalby, *An Account of the Operations Carried on for Accomplishing a Trigonometrical Survey of England and Wales; From the Commencement in the year 1784 to the End of the Year 1796* (London: Bulmer and Faden, 1799).

⁹ *The Times*, 16 January 1818, 1.

¹⁰ ‘The Ordnance Survey of England and Wales’, *Daily News*, 28 December 1848, 3.

¹¹ Lorraine Daston and Peter Galison, *Objectivity* (New York: Zone Books, 2010), 34–5.

¹² Jared Curtis (ed.), *The Fenwick Notes of William Wordsworth* (London: Bristol Classical Press, 1993), 29.

¹³ For histories of the eighteenth-century longitude debate, see Dava Sobel, *Longitude: The True Story of a Lone Genius Who Solved the Greatest Scientific Problem of his Time* (London: Fourth Estate, 1996) and Derek Howse, *Nevil Maskelyne: The Seaman’s Astronomer* (Cambridge University Press, 1989), 40–52, 74–84, 124–6. Thomas Mudge’s part in the longitude debate is covered by Howse, 170–7 and by Thomas Seccombe and David Penney, ‘Thomas Mudge (1715/16–1794)’, *Oxford Dictionary of National Biography*, www.oxforddnb.com/view/article/19486, accessed 21 January 2018.

¹⁴ Accounts of Thomas Mudge’s endeavours to ascertain longitude at sea, and his son’s defence of those efforts, can be found in Thomas Mudge, *A Description with Plates, of the Time-Keeper*

Invented by the Late Mr Thomas Mudge (London, 1799) and in documents in the Royal Society's archives, MM/7/91, MM/7/94, MM/7/100, MM/7/114 and MM/7/117–19. *The Times* (30 April 1793 and 10 April 1798) also reported Thomas Mudge Jr's efforts.

¹⁵ Joseph Banks, 'Observations on Mr Mudge's Application to Parliament for a Reward for his Time-Keepers', Royal Society, MM/7/100.

¹⁶ See William Mudge, 'An Account of the Trigonometrical Survey, Carried on in the Years 1797, 1798, and 1799', *Philosophical Transactions*, 90 (1800), 666.

¹⁷ Charles Robert Leslie, *Life and Times of Sir Joshua Reynolds*, 2 vols. (London: John Murray, 1865), I, 8.

¹⁸ Zachariah Mudge, *A Sermon on Liberty* (London: F. Knight, 1790), 34.

¹⁹ Joshua Reynolds, *The Works of Sir Joshua Reynolds*, 3 vols. (London: Cadell & Davies, 1798), I, xxxiii.

²⁰ Stamford Raffles Flint, *Mudge Memoirs: Being a Record of Zachariah Mudge, and Some Members of his Family* (Truro: Netherton and Worth, 1883), 81.

²¹ See also James Boswell, *The Life of Samuel Johnson*, 2 vols. (London: Charles Dilly, 1791), I, 347.

²² 'Legal Papers Regarding Case of Hugh Debbieg vs Lord Howe', National Archives, TS 11/944/3436, f. 1, 5 February 1782.

²³ William Roy, *The Military Antiquities of the Romans in North Britain* (London: Society of Antiquaries, 1793), p. i.

²⁴ Daniel Paterson, *A New and Accurate Description of the Roads in England and Wales, and Part of the Roads of Scotland* (London: Longman, Rees, Faden, 1803), xviii.

²⁵ See Hewitt, *Map of a Nation*, 147 and Thomas Vincent Reynolds, 'Queries Humbly Submitted to General the Duke of Richmond Relative to the Compilation of a Military Map of the Southern District', National Archives, OS 3/5.

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- ²⁶ Henry Phipps to William Mudge, National Archives, Ordnance Survey Letter Book, OS 3/260, f. 131, 2 September 1811; cited in Charles Close, *The Early Years of the Ordnance Survey* (Newton Abbot: David & Charles, 1969 [1926]), 57.
- ²⁷ *Weekly Register*, 21 August 1799, 572; <http://tinyurl.galegroup.com/tinyurl/4zzVs5>, accessed 31 January 2018.
- ²⁸ *Caledonian Mercury*, 6 July 1815, 3.
- ²⁹ *The Times*, 28 May 1817, 3.
- ³⁰ See *The Times*, 2 November 1816, 1; 16 January 1818, 1; 16 July 1818, 3.
- ³¹ See *The Times*, 2 October 1821, 2.
- ³² Peter Pindar, *Peter's Prophecy; Or, the President and Poet; Or, an Important Epistle to Sir J. Banks, On the Approaching Election of a President of the Royal Society*, 4th edn. (London: G. Kearsley, 1788), 32.
- ³³ 'Exhibition at the Royal Academy', *Morning Chronicle*, 22 May 1795, 3.
- ³⁴ Jules Verne, *Meridiana: The Adventures of Three Englishmen and Three Russians in South Africa* (New York: Scribner, Armstrong & Co., 1874), 38.
- ³⁵ William Dearden (ed.), *Poems by John Nicholson, the Airedale Poet* (London: W. H. Young, 1859), 136.
- ³⁶ John Barrell, *English Literature in History 1730–80: An Equal, Wide Survey* (London: Hutchinson, 1983), 14.
- ³⁷ John Hughes, 'A Monumental Ode. To the Memory of Mrs. Elizabeth Hughes' (1714), from *Poems on Several Occasions*, 2 vols. (London, 1735), II, 101.
- ³⁸ Robert Dodsley, *Agriculture: A Poem*, in *Trifles* (London: J. Dodsley, 1777), 110.
- ³⁹ *The Works of James Thomson*, 4 vols. (London: A. Millar, 1757), I, 109.
- ⁴⁰ Erasmus Darwin, *The Botanic Garden* (London: Joseph Johnson, 1799), 78–9.

⁴¹ See Walter Scott (ed.), *The Poetical Works of Anna Seward, With Extracts from her Correspondence* (Edinburgh: 1810), 362–5.

⁴² ‘The Ordnance Survey of England and Wales’, *Daily News*, 28 December 1848, 3.

⁴³ John Langton, ‘The Industrial Revolution and the Regional Geography of England,’ *Transactions of the Institute of British Geographers*, 9:2 (1984), 145–67; 147.

⁴⁴ See Leonore Davidoff and Catherine Hall, *Family Fortunes: Men and Women of the English Middle Class, 1780–1850* (London: Hutchinson 1987), 18.

⁴⁵ See James Harrington, *The Commonwealth of Oceana* (London: J. Streater, 1656), 60; John Sinclair, *The Statistical Account of Scotland. Drawn up from the Communications of the Ministers of Different Parishes*, 21 vols. (Edinburgh: William Creech, 1791–9).

⁴⁶ Henry Beeke, *Observations on the Produce of the Income Tax* (London: J. Wright, 1799), 8–9.

⁴⁷ For a discussion of the rhetoric of truth and accuracy in Enlightenment geodesy, see Sven Widmalm, ‘Accuracy, Rhetoric, and Technology: The Paris-Greenwich Triangulation, 1784–1788’, in T. Frängsmyr, J. L. Heilbron and Robin E. Rider (eds.), *The Quantifying Spirit in the Eighteenth Century* (Berkeley: University of California Press, 1990), 179–206. For the emergence of the language of the ‘normal’ in the context of the rise of statistics in the early nineteenth century, see Ian Hacking, *The Taming of Chance* (Cambridge University Press, 1990).

⁴⁸ Neil Ramsey and Gillian Russell, ‘Introduction: Tracing War in Enlightenment and Romantic Culture’, in Neil Ramsey and Gillian Russell (eds.), *Tracing War in British Enlightenment and Romantic Culture* (Basingstoke: Palgrave, 2015), 1–16; 1–2.

⁴⁹ See Neil Ramsey, ‘Exhibiting Discipline: Military Science and the Naval Military Library and Museum’, in *ibid.*, 113–131; 121.

⁵⁰ See also *The Times*, 10 June 1800, 1.

⁵¹ See Arthur Hill, *Plans for the Government and Liberal Instruction of Boys* (London: G. and W. B. Whittaker, 1822).

⁵² See Thomas Compton, *The North Cambrian Mountains, or a Tour Through North Wales, Describing the Scenery and General Characters of that Romantic Country, and Embellished with a Series of Highly-Finished Coloured Views, Engraved from Original Drawings* (London, 1817).

⁵³ W. J. B. Owen and J. W. Smyser (eds.), *The Prose Works of Williams Wordsworth*, 3 vols. (Oxford: Clarendon Press, 1974), II, 302; William Wordsworth, *Guide to the Lakes*, ed. Ernest de Selincourt (Oxford University Press, 1977), 8. Compare Wordsworth's reference to Mudge with Thomas James Mathias's reference in the satirical poem *The Shade of Alexander Pope on the Banks of the Thames* (1799) to the 'keen decisive labours' of Major Rennell, the director of a map of India in the 1760s and 1770s and author of *Memoir of a Map of Hindoostan* (1782); Mathias celebrates 'the works so long and so eagerly expected by the learned, from that consummate Geographer, and most accurate investigator, Major James Rennell' (p. 73).

⁵⁴ William Wordsworth, *Poems*, 2 vols. (Longman, Hurst, Rees, Orme and Brown, 1815), II, 285–6.

⁵⁵ See John Wyatt, 'Wordsworth's Black Combe Poems: The Pastoral and the Geographer's Eye', *Signatures*, 3 (2001), http://d3mcbia3evjswv.cloudfront.net/files/Signatures_Vol3.pdf, accessed 25 January 2018; Michael Wiley, *Romantic Geography: William Wordsworth and Anglo-European Spaces* (Basingstoke: Macmillan, 1998), 30, 158.

⁵⁶ Jonathan Wordsworth, M. H. Abrams and Stephen Gill (eds.), *The Prelude, 1799, 1805, 1850* (New York: Norton, 1979), II (1805), ll. 229–33.

⁵⁷ William King, *The Toast. An Heroick Poem* (London, 1747), 158. The poem first appeared in Dublin in 1732.

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- ⁵⁸ Frances Burney, *Cecilia; or, Memoirs of an Heiress*, 3 vols. (London: T. Cadell, 1782), I, 120.
- ⁵⁹ See Maria Edgeworth, *Tales of Fashionable Life*, 3 vols. (London: Joseph Johnson, 1809), I, 143–53.
- ⁶⁰ Margaret Grainger (ed.), *The Natural History Prose Writings of John Clare* (Oxford: Clarendon Press, 1983), 227.
- ⁶¹ Walter Scott, *Guy Mannering; or, the Astrologer*, 3 vols. (Edinburgh: James Ballantyne, 1815), II, 230.
- ⁶² ‘The Borders’, in Hugh MacDiarmid, *Complete Poems: Volume II*, ed. M. Grieve and W. R. Aitken (Manchester: Carcanet, 1994), 1427. See also ‘Scotland’, in Hugh MacDiarmid *Complete Poems: Volume I*, ed. M. Grieve and W. R. Aitken (Manchester: Carcanet, 1993), 366.
- ⁶³ Brian Friel, *Translations* (London: Faber, 1981), 30, 52.
- ⁶⁴ Robert Graves, *Collected Poems* (New York: Oxford University Press, 1975), 76–7.
- ⁶⁵ Anne Stevenson, *Collected Poems of Anne Stevenson, 1955–95* (Oxford University Press, 1996), 156.
- ⁶⁶ Sean O’Brien, *Cousin Coat: Selected Poems, 1976–2001* (London: Picador, 2001), 121.

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