**Thomas Telford’s Tour in the Highlands:**

**Shaping the Wild Landscape through Word and Image**

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Summary: In his account of his journeys in Northern Scotland from 1801–23, and in his proposed engineering works, Telford worked to efface any sense of unfamiliarity about travel on his roads and canals, remediating the landscape through a rational transport infrastructure. As a “literary engineer” Telford created a narrative for the Highland landscape that was interdisciplinary and intertextual, in parallel with literary and artistic expressions, and expanding the genre of travel writing. Telford’s apparently inexpressive “technical” accounts can inform and complicate our understanding of the conceptual, social, and practical mechanisms involved in the construction and consumption of the romantic landscapes of Scotland.

This essay examines engineer Thomas Telford’s (1757–1834) presentation of his Caledonian Canal project in word and image, a landscape construction scheme linking the east and west coasts of Scotland, and undertaken for the Hanoverian government between 1801–1823. This was one element of broader modernising “improvements” to transport infrastructure across the Highlands, all designed by Telford, to encourage trade, and hasten assimilation into Great Britain (Colley; Lenman). The Canal followed a natural rift in the Scottish mountains, the Great Glen, and joined up a series of deep inland waters with short additional lengths of engineered waterway (fig. 1). Telford presented the Canal works within two parallel narratives, verbal and visual, in his autobiographical *Life* and *Atlas* of 1838. His accounts resonate with other travel writings and artistic depictions of the Scottish Highlands connected with the “discovery of Scotland” at this date (Southey; Holloway and Errington; Alfrey and Daniels; Klonk; Rackwitz), an area where artistic, scientific, economic, and indeed touristic interests converged and overlapped. Telford’s technology of travel both prompted and assisted exploration, while his writings as an engineer contribute to the hybrid field of travel literature in their own right. Engineering was a new profession establishing itself in the Romantic period alongside new disciplines of science such as chemistry, geology, and natural history. Working engineers contributed to these enquiries, gathering empirical data while engaged in major excavations and other land works (Cunningham and Jardine 6). But in addition, and in accord with the inclusive nature of exploration in this period, Telford’s travelling companion when surveying the canal works was the poet Robert Southey, whose *Journal of a Tour in the Highlands* runs in parallel to Telford’s account. Southey and Telford were introduced by their mutual friend John Rickman (1771-1840 ) who proposed the tour as a joint holiday of engineering tourism (Herford 1929 xv; Eastwood 2004). Rickman was a civil servant and statistician, holding amongst several other posts that of secretary to the commission on the Caledonian Canal. He was also a friend and frequent adviser and collaborator with Southey in articles for the *Quarterly Review* (ODNB Rickman). Recent debates about the “politics of nature” in this period (Roe; Oerlemans) in relation to British Romantic poets in the circle of Robert Southey, as well as theoretical approaches to landscape representation around 1800 in British art have informed the development of this essay, and while recognizing the difficulties of the notion of an overarching Romantic movement voiced by many recent scholars in literature (for example Ruston) or art history (such as Matthew Craske) who avoid any style terms such as Romanticism at all, nevertheless I will argue that a contextual analysis of Telford’s apparently inexpressive “technical” accounts can expand and also complicate our understanding of the conceptual, social, and practical mechanisms involved in constructions of the Romantic landscape of Scotland.[[1]](#endnote-1)

**[PLACE ILLUSTRATION 1 (S) HERE]**

Fig. 1. Northern Scotland, showing the line of the Great Glen and Caledonian Canal (indicated by dotted lines). Author’s diagram.

In relation to engineering literature, Telford’s works reflected the layout of the emerging genre of illustrated encyclopaedias such as Diderot’s *Encyclopédie* or Abraham Rees’s *Cyclopaedia* that explicated the hitherto neglected mechanical and useful arts (Gillipsie; Kafker; Yeo). A more direct precedent was John Smeaton’s *A Narrative of the Building of the Edystone Lighthouse* (Second Edition 1793) whose striking title page illustration, *The Morning after a Storm at SW*, disseminated the image of this “supremely sublime edifice,” product of engineering prowess, throughout Europe (Picon 233). But more broadly, we should consider Telford within a community of “literary engineers” such as Isambard Kingdom Brunel, immersed in the “wordy cultures of reading and writing” of this era (Marsden, “Introduction” 7; Marsden, Hutchinson and O’Connor). To fully explicate literary aspects of engineering, moreover, we must also include the visual dimension, for visual communication was equally central to engineering self-presentation. Technical drawing was based on architectural, artistic, and mathematical visual practices and fused line, image, and word in a distinctive montage-like manner (Baynes and Pugh; Fox; Robertson), exploiting layered registers of denotation such as diagrams, verbal annotation, and illusionistic, three-dimensional rendering in a single image.

In comparison to scientific representations, engineers did not simply study the natural world. Their riddles of form were self-created, even self-reflexive. As the Charter of 1818 of the Institution of Civil Engineers in Britain announced, engineering was: “the art of directing the great sources of power in Nature for the use and convenience of man” (Buchanan 64). Engineers intervened in the natural world to build new structures. In Telford’s Highland projects we see a cycle of observation, representation, and shaping, affecting travel, exploration, and landscape, both on the page and out in the open air, on the road. Thomas Telford’s *Life* and *Atlas* are works on paper that speak of his self-presentation as an elite professional individual, but they also interact with other texts and images to suggest that engineering literature, visual production, and actual landscape shaping intersected with more recognized “Romantic” expressions in art or literature. Such intersections are already familiar through the interdisciplinary work of historians of science and literary scholars, but engineering literature has received far less attention, despite its importance in the cultural history of the Romantic period.

In *Romanticism and the Materiality of Nature*, Onno Oerlemans challenged critical attacks on “Romantic ideology” as an escapist, idealist, subjective refuge adopted by formerly radical or revolutionary poets such as Wordsworth. Instead he argued that many Romantic period thinkers valued nature as an intractable and non-human material Other. Travel writing, claims Oerlemans, complemented nature poetry as “the most widely circulating mode of writing,” but it was journalistic, hybrid, eclectic, from many writers beyond those in the “traditional ‘high culture’ of romanticism” (Oerlemans 148–9) expressing a wide cultural appreciation of the material otherness of landscape. Indeed, Oerlemans’s claim is probably too modest. Travel writing at this time, with an expanding constituency of travellers, certainly overran boundaries, when readers were often writers themselves, and full of amateur self-publishing and new combinations of text and image thanks to new print media such as lithography or letterpress/wood engraving combinations (Schaaf; Twyman; Rosen and Zerner). Of course, and unlike various non-standard publications in this period, Telford’s more conservative publication choices did not aim to integrate text and image on one page. Instead, we get separate volumes in two separate mediaof letterpress text and engraved plates, presenting narratives that offer the promise of control through orderly, rational and systematic methods of representation, yet also constantly undermine that promise, sliding apart towards different registers of attention. These parallel literary and visual modes of expression, intended as complementary “multi-media” platforms, actually generated uncertainty of meaning due to their interdisciplinary and intertextual methods of composition.

**[PLACE ILLUSTRATION 2 (M) HERE]**

Fig. 2. Thomas Telford (1757–1834), *Atlas*, Plate 15. *Caledonian Canal or Inland navigation between the Eastern and Western sea capable of admitting a frigate of 32 guns; Longitudinal section cut through lochs and canal to show elevations and water depths from Loch Eil and Corpach at west to Clachnacharry sea locks on the Moray Firth at Inverness*, 1838. Engraving. Courtesy of University of Glasgow Special Collections.

I will argue that these contradictions manifest themselves most clearly within two images, first that of the map and cross-section of the entire length of the Caledonian Canal (Plate 15 of the *Atlas*, fig. 2) and second in Plate 21 of the *Atlas* showing three outlet sluices at Strone (fig. 3), discussed at greater length below. Telford uses the magisterial image of the map in Plate 15 as the “establishing shot” of his narrative that at first glance acts as an imposing and somewhat literalistic ruling metaphor signifying trouble-free travel from A to B. The straight blue line of the route acts as a terse, diagrammatic, and authoritative statement of intent, almost empty of the gloomy and portentous atmosphere of the Highland scenery that would draw future tourists along the Canal. By contrast, the image in Plate 21 presents complex designs for flood control mechanisms that merely hint, in the most cryptic way, at the natural forces they were designed to suppress. Both images conceal as much as they display.

**[PLACE ILLUSTRATION 3 (M) HERE]**

Fig. 3. Thomas Telford, *Atlas*, Plate 21. *Caledonian Canal outlet of three sluices at Strone*, 1838. Engraving. Courtesy of University of Glasgow Special Collections.

As noted, Telford and Southey met in 1819 due to the networking efforts of John Rickman just before they set off on their Highland Tour, a trip that cemented their friendship as a group. Southey is famous, or notorious, as a repentant Romantic and revolutionary, not unlike Telford himself (Roe; odnb Telford; Pratt). Southey’s editor, C. H. Herford, characterized Telford as a “taciturn giant” (Herford xvi), but this is disingenuous, for evidently Telford did publish his own extended account in his *Life* of 1838, not to mention his numerous other literary efforts such as the survey reports and engineering proposals that won him many immensely expensive major engineering projects (such as the Highland improvement schemes). Telford also wrote several articles for the *Edinburgh Encyclopaedia*, a publishing enterprise in which he was also a major shareholder (Telford, *Edinburgh Encyclopaedia* 209–315) and, like other “literary engineers” he read and wrote poetry.

In 1819, Northern Scotland had only recently become an ancient and primitive haunt. The European-wide cult of the mythical Ossian, the best-selling works of Walter Scott, and the Romantic celebration of its wild landscapes in art all contributed to this image of the country (Glendening; Morrison). Tourism in the region was equally recent, and complementary to this ancient image of the nation. Thomas Pennant’s *A Tour in Scotland in 1769* was one spur to an expanding tourist trade; indeed, Pennant’s vigorous atmospheric descriptions echo on in later accounts (Southey borrows frequently from this text). But equally, as Martin Rackwitz comments, “The Highland tourist boom in the second half of the eighteenth century coincided with the collapse of the old social and economic order. Many travellers observed shocking scenes of poverty, evictions, and emigration” (Rackwitz 19–21). This cultural collapse was hastened by the aftermath of the Jacobite Rebellions of 1715 and 1745, and subsequent Hanoverian pacification; we see the names of this regime change planted across the region in Fort George, Fort Augustus, and Fort William. Even though new military roads were laid in after 1745, these were often very rough and eroded; and while rough tracks were not inconvenient for the local population, human or animal, who travelled unshod and preferred softer ground (Telford, *Life* 165), they were impassable for wheeled transport. By the end of the eighteenth century the second wave of investment in the Telford roads schemes placed the needs of vehicles such as the mail coach much more centrally, as essential for the creation of a civilized and polite society. Perversely, just as travelling in Scotland became more convenient than ever before at this time, travellers’ accounts at the height of the Romantic movement gave a different impression; the “terror” and “horror” evoked by the sight of certain mountains, cataracts, gorges, and passes became an “essential ingredient of travellers’ accounts” (Rackwitz 165).

Southey provides an alternative account, mostly avoiding horror and terror, instead offering the amused tone of the educated and experienced traveller, the voice of “masculine didactic tourism” (Glendening 3). As an observer on Telford’s survey team he was an embedded correspondent, part of the inner circle of progress, scoffing at an overpriced tourist pamphlet glimpsed in a Perthshire inn titled: *Striking and Picturesque Delineations of the Grand, Beauthiful* [sic], *Wonderful and Interesting Scenery around Loch Earn* (Southey 37–38). On the road north to Inverness, Southey and Telford followed established routes until they came to the canal itself, where they travelled North East to South West, from Inverness to Fort William, observing the progress of the engineering workings.

In their texts, both Telford and Southey stressed Nature’s part in this scheme, with Southey noting the “straight regular opening which Nature has made [for the canal] … such an avenue between the mountains, extending from sea to sea … a noble sight and a grand object of contemplation” (Southey 188), while Telford, more pragmatically, notes the saving of 500 miles of dangerous sea passage (Telford, *Life* 49). Nor do we meet Nature simply in the abstract, for Southey’s text also makes Loch Ness and its waters into one of the characters in the narrative. The loch comes alive on first encounter at a “high beach of pebbles, ridge upon ridge, upon which the waves, impelled along its whole length by a strong breeze, were breaking with a sound like the voice of the ocean” (Southey 172). Southey notes, wonderingly, the energy of the lake, its immense depth and its resistance to frost: “How can this prodigious hollow have been formed? It never freezes. The Survey of Moray says that ‘during the most intense frosts both the river and the lake smoke, a thick fog hangs over them, mitigating the frost to some distance on either side’” (174). In the wet Highland climate, water was constantly falling into the watercourse. The travellers made a touristic detour to the famously scenic Falls of Foyers, which Southey compared to the Reichenbach falls, lazily using staid picturesque terms: “the accompaniments cannot be finer anywhere; everything is beautiful, and everything … in proportion” (177–78). Foyers was famous because of Pennant’s account of 1769, where it was far more vigorously described as “a vast cataract, in a darksome glen of a stupendous depth; the water darts far beneath the top through a narrow gap between two rocks, then precipitates above forty feet lower into the bottom of the chasm, and the foam, like a great cloud of smoke, rises and fills the air …” (Pennant 131–32). Southey does however exert himself to conjure a mysterious physical-cum-psychic force lurking in the Loch when he mentions the tsunami-like wave convulsing the waters in 1755 at the time of the great earthquake at Lisbon (Southey 180).[[2]](#endnote-2)

But while Nature is powerful, Man’s work appears as a rival or equal, with the scale of operations dwarfing the workers. For example, between Loch Oich and Loch Lochy we encounter this scene of excavation, a technological sublime, with the workings portrayed as an immense machine driving the automaton-like laboring men and beasts:

at what they call a ‘deep cutting,’ this being the highest point in the line, the Oich flowing to the East, the Lochy to the Western Sea … And here also a Lock is building. The earth is removed by horses walking along the bench of the canal, and drawing the laden cartlets up one inclined plane, while the emptied ones, which are connected with them by a chain passing over pullies, are let down by another. This was going on in numberless places, and such a mass of earth had been thrown up on both sides of the whole line, that the men appeared in the proportion of emmets to an ant-hill, amid their own work. The hour of rest for men and horses is announced by the blowing of a horn; and so well have the horses learnt to measure time by their own exertions and sense of fatigue, that if the signal be delayed five minutes, they stop on their own accord, without it. (Southey 189)

The grand finale to the canal (we read) was the sight of Ben Nevis and the series of eight steeply descending locks, “Neptune’s Staircase” at Corpach (Southey 202–06). Here the canal fell 64 feet through a series of eight foot drops in 500 yards so that “a panorama painted of this place would include the highest mountain in Great Britain, and its greatest work of art [the canal]… The Pyramids would appear insignificant in such a situation, for in them we should see only a vain attempt to vie with greater things. But here we see the powers of nature brought to act on a great scale, in subservience to the powers of man … and art and order assuming a character of sublimity” (203–4).

In actuality, and despite the bold imagistic sweep of this writing, both Ben Nevis and the magnificent “panorama” only appeared in the *Life* and *Journal* texts in the reader’s imagination, not in the *Atlas* images.[[3]](#endnote-3) In both Southey’s and Telford’s accounts, we learn that to them the most overwhelming aspect of the Staircase was something hidden from sight, impossible to represent in a landscape view, namely, the need to control and manage the immense fluctuating flows of water at this point, the ability to lower the whole canal over a six-mile stretch by a foot in an hour through the outfall sluices at Strone (Southey 205). At the same stage of his journey narrative, Telford inserts two forceful, but strangely incommensurable accounts in text and image. In writing he allows himself a boastful passage to convey the violence of the natural forces he channels in the “let-off or outfall … the water, issuing from the triple sluice, falls nine feet before it strikes the rock … no artificial cataract exceeds the fury and the foam with which it issues from its rocky cavern” (Telford, *Life* 64). The image for this structure (fig. 3) is by contrast highly technical, layered, and complex, hard to read without the knowledge provided in the text, and with few visual clues to the “fury and foam” experienced by the observer at the sluices.

The canal construction was a British state-building investment justified by militaristic empire-building aims and current naval hostilities against France. This second phase of Highland construction was no longer about pacification of the region but rather to support expansion of territory overseas. Perversely, though, this approach to transport infrastructure actually aligned Britain with the enemy state, with the centralising technocratic Napoleonic regime, and its aims of European standardization and rationalization (Picon; Cioc). In a similar manner to the navigation improvements along the Rhine initiated in 1815 and described by Mark Cioc in his “eco-biography” of that waterway, engineering work and investment to promote free trade in the Highlands also facilitated increasing Romantic leisure tourism in Scotland, allowing a comfortable adventure (Harvie; Buzard; Gold and Gold). Later tourists travelled along the Caledonian Canal so they could immerse themselves in a glowering mountainous landscape redolent of myth and historical incident, whereas Telford had no sympathy for the “warlike Celtic days” derided at the start of his poem *Eskdale*, in which he advocated instead enlightened progress through trade: “Awaked at length, britannia rear’d her head,/And feudal power and superstition fled/… Commerce at last her daring sails unfurl’d/And britain rose the envy of the world” (Telford, *Life* 655–59).

At first glance Telford’s efforts to drive transport links through part of the “Celtic fringe” on behalf of the British State could be aligned with many recent and hostile accounts of “landscapes of power” (Mitchell, *Landscape*; Andrews; Duncan and Ley; Hechter; Daniels). In his immersion in the landscape of the Great Glen we could also argue that Telford combines close attention to detail with an avoidance of controversial or radical scientific theory, evidencing the “tactful social strategy” associated with late Hanoverian geological inquiry (Porter 207); in short, that the *Life* and *Atlas* purvey the kind of benevolent, rational landscape representation of those in power that now appears so suspect to literary scholars, art historians and cultural geographers on guard against Romantic ideologues and their allies.

Was this what Southey had in mind when he described Telford’s engineering as “art and order assuming the character of sublimity” (Southey 203–4)? His improvements were intended to foster trade and to hasten the sharing of rapid, up-to-date accurate news and information in order to arrest depopulation (Telford, *Life* 300–1), with cultural infrastructure in designs for simple, uniform churches and manses (priests’ houses), alongside roads, canals, and sheltering harbours for fishing. Of course, increasing the “speedy and certain conveyance of intelligence” (461) through transport also allowed new ideas and external forces of control to move in to the region, from Lowland Scotland and beyond: “In Edinburgh, where a central post office exists, and where intelligent individuals associate, the subject of improved intercourse was discussed with characteristic ardour” (248). The canal construction plans depended on a wider infrastructure of transport and commerce beyond the Highlands, cast iron elements being supplied by boat to east and west coasts from iron founders in Derbyshire and Wales—along previously established canal routes from those foundries (fig. 4). Telford’s stated aim as a road and canal engineer was a quantifiable one, to speed up transport, and get the mail coaches moving at a uniform 9–10 miles per hour on smooth graded inclines. This was an observable criterion of modern progress, benefitting the “empire at large” and improving “the welfare of the country” (Telford, *Life* 290–94). Canals are in perfect accord with this aim: they offer a completely flat surface with low friction, offering sheltered inland navigation and allowing a steady computable traffic speed. Nevertheless, it is important to remember that the art and order we see, especially that emphatic ruled line crossing the map of the Canal, are indeed artful, part of Telford’s “literary engineering.”

**[PLACE ILLUSTRATION 4 (M) HERE]**

Fig. 4. Detail of Plate ccccxv In Thomas Telford, “Navigation inland.” *Edinburgh encyclopaedia* (1821), volume 15, 1830: 209–315.

For there are other contrasting forces, pointing to a less orderly sublime within the brute matter of rock and water, and acting to create gaps and dissonances in Telford’s *Life* and *Atlas* text-image production, pulling against many established new historicist accounts of Romantic idealist constructions of nature and landscape. The dual volumes of text and illustration show us the incommensurability of word and image. In the images in the *Atlas*, there are serious gaps between the large map-like expanses in Plate 15, and the remaining six Plates devoted to the Canal, that show, as in Plate 21, the micro-structures, small localized details of wagons, cranes and locks. There are also gaps between the two media, between the words of the *Life* (and the experiences they conjure), and the images in the *Atlas*. While the images show the hypothesis, the proposal of how to go about the task in a rational way, the words in the *Life* present on the spot reports—mere glimpses of time—an embodied experience from inside the landscape. More seriously, there are the gaps between these pages and the material otherness of the process of landscape shaping, the hidden, unrepresentable contradictions involved in making a highway through the wilderness. Telford’s own “literary engineering” is equally fraught with impulses of repression and dissimulation alongside those of self-aggrandizement; at the start of his long encyclopaedia article “Navigation inland” Telford modestly disclaims mere book learning as a poor second to the “ingenious practical skill” honed through physical labor (fig. 5). Out on site, the outcome of his work, the smooth roads encountered by later travellers concealed his own hard work and real exploration; the effort of constantly surveying and travelling around his projects all his working life, and often before roads existed. His account remarks on the discomfort of forming the new roads in remote areas; he admits to fellow feeling with the superintendent masons on the first phase of Highland military roads constructed between 1732 and 1750, who were often ill with rheumatism caused by being cold and drenched all the time, trudging about 5000 miles a year on foot. Telford asked for and gained a cloth allowance and a pony for his own superintendents. He mentions the rough life of the workers sharing tents that were hot, stuffy and unbearable when cooking was in progress, noting how perversely the roads had to be already partially completed before conditions improved (Telford, *Life* 176–77).

**[PLACE ILLUSTRATION 5 (S) HERE]**

Fig. 5. Opening text of Thomas Telford’s “Navigation inland.” *Edinburgh encyclopaedia* [1821], volume 15, 1830, p. 209. Here Telford celebrates “ingenious practical skill” above “merely book-learned engineers,” a trope that remained extremely persistent in the writings of British engineers for the entire nineteenth century.

Telford’s books present images and texts in a fragmentary, montage structure. Unlike expressive, atmospheric and romantic landscape views in the developing genre of tourist guides (see for example Beattie’s *Scotland Illustrated* of 1838), his images engage with the violence and scale of nature through repression. To close, let us consider again Telford’s actual finished canal and road network as a medium of landscape display in its own right, as a vehicle of experience. Tourist traffic swelled along these roads, where travellers admired mountains and sought out hunting grounds for fish and game, rolling smoothly towards their encounters with the sublime. Like the naïve art lover or general reader who dives through the medium straight into the depicted content, the tourist is largely unaware of the roadway under his wheels. Telford’s engineering literature on the other hand maintains that consciousness of human intention in landscape shaping. The non-artistic and composite modes of engineers’ expressions can take us beyond more familiar discourses and debates in art history or literary studies on landscape depiction. The complexity and contradiction within this apparently pragmatic area of operations will allow us to develop new narratives of the shaping of public space in the “wild landscape” of Northern Scotland.

Notes

**Reading Eden’s Riddles:**

1. This essay echoes the arguments about “technical language” examined in Freedgood and Schmitt’s recent article “Denotatively, technically, literally” supporting their point, first that apparently literal and technical languages of representation are indeed opaque and resonant, second to engage seriously with texts from the “expansive and heterodox” archives of engineering and travel literature. [↑](#endnote-ref-1)
2. This same event had also affected Loch Lomond, Loch Long and Loch Katrine as reported in the *Scots Magazine* in 1755 (also previously reported in Pennant 134), and is explained by contemporary geologists Chen and Scawthorn within the phenomena of “tsunami and seiche” (Chen and Scawthorn 9–55), with seiche as the name of this distant agitating effect on inland waters. [↑](#endnote-ref-2)
3. A short consideration of the compressed nature of the cross-section through the Canal in Plate 15, and the unwieldy character of its actual width-length proportions will show that a true “panorama” of the Canal would not fit into any normal pictorial format, although later cheap tourist pamphlets such as *Shearer’s Panorama and Coloured Views* (1890) would try to deliver on the promise of such a viewpoint. Telford certainly used panoramic thinking to visualize the landforms within the future canal workings, for example when he asked his future apprentice Joseph Mitchell to prepare an accurate panoramic rendering of both sides of the canal as a test of his abilities (Mitchell, *Reminiscences* 69).

Sources Cited

Alfrey, Nicholas and Stephen Daniels, eds. *Mapping the Landscape*. Nottingham: University Art Gallery, 1990.

Andrews, Malcolm. *The Search for the Picturesque*. Ashgate: Aldershot, 1989.

Baynes, Ken and Francis Pugh. *The Art of the Engineer*.Guildford: Lutterworth, 1981.

Beattie, William. *Scotland Illustrated*, Volume 2. London: George Virtue, 1838.

Buchanan, Robert Angus. *The Engineers: A History of the Engineering Profession in Britain 1750–1914*. London: Jessica King Publishers, 1989.

Buzard, James. *The Beaten Track: European Tourism, Literature, and the Ways to Culture, 1800–1918*. Oxford: Clarendon Press, 1993.

Chen, Wai-Fah and Charles Scawthorn, eds. *Earthquake Engineering Handbook*. Boca Raton and London: CRC Press, 2002.

Cioc, Mark. *The Rhine: An Eco-Biography, 1815–2000*. Seattle and London: U of Washington P, 2002.

Colley, Linda. *Britons: Forging the Nation 1707–1837*. New Haven: Yale UP, 1992.

Craske, Matthew. *Art in Europe, 1700–1830: A History of the Visual Arts in an Era of Unprecedented Urban Economic Growth*. Oxford: Oxford UP, 1997.

Cunningham, Andrew and Nicholas Jardine. “Introduction: the age of reflexion.” In *Romanticism and the Sciences*. Ed. Andrew Cunningham and Nicolas Jardine. Cambridge: Cambridge UP, 1990. 1–9.

Daniels, Stephen. *Fields of Vision: Landscape Imagery and National Identity in England and the United States*. Cambridge: Polity Press, 1993.

Duncan, James, and David Ley. *Place/Culture/Representation*. London: Routledge, 1993.

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| Eastwood, David ‘Rickman, John (1771–1840)’, *Oxford Dictionary of National Biography*, Oxford University Press, 2004 [http://www.oxforddnb.com.ezproxy.lib.gla.ac.uk/view/article/23605, accessed 28 Aug 2017] |  |

Fox, Celina. *The Arts of Industry in the Age of Enlightenment*. New Haven and London: Yale UP, 2009.

Freedgood, Elaine and Cannon Schmitt. “Denotatively, technically, literally.” *Representations* 125.1 (Winter 2014): 1–14.

Gillispie, Charles C., ed. *Pictorial Encyclopaedia of Trades and Industry: 485 Plates Selected from L’Encyclopédie of Denis Diderot*. New York: Dover Publications, 1993.

Glendening, John. *The High Road: Romantic Tourism, Scotland, and Literature*. Basingstoke: Macmillan, 1997.

Gold, John R. and Margaret M. Gold. *Imagining Scotland: Tradition, Representation, and Promotion of Scottish Tourism since 1750*. Aldershot: Scolar Press, 1995.

Harvie, Christopher. *Scotland and Nationalism: Scottish Society and Politics, 1707–1977*. London: George Allen and Unwin, 1977.

Hechter, Michael. *Internal Colonialism: The Celtic Fringe in British National Development, 1536–1966*. Berkeley: U of California P, 1975.

Herford, C. H. “Introduction.” In Southey, Robert. *Journal of a Tour in Scotland in 1819*, with an introduction and notes by C. H. Herford. London: John Murray, 1929: vii–xlvi.

Holloway, James and Lindsay Errington. *The Discovery of Scotland*. Edinburgh: National Gallery of Scotland, 1978.

Irwin, David and Francina Irwin. *Scottish Painters at Home and Abroad 1700–1900*. London: Faber and Faber, 1975.

Kafker, F. A., ed. *Notable Encyclopaedias of the Late Eighteenth Century*, Volume 315: English-language successors II. Oxford: The Voltaire Foundation, U of Oxford, 1994.

Klonk, Charlotte. *Science and the Perception of Nature*. New Haven: Yale UP, 1996.

Knight, David. “Romanticism and the sciences.” In *Romanticism and the Sciences*. Ed. Andrew Cunningham and Nicolas Jardine. Cambridge: Cambridge UP, 1990. 13–24.

Lenman, Bruce P. *Enlightenment and Change: Scotland 1746–1832*. Second edition. Edinburgh: Edinburgh UP, 2009.

Marsden, Ben. “Introduction: Cultures of Literature, Science, and Technology.” In *Uncommon Contexts: Encounters between Science and Literature, 1800–1914*.Ed. Ben Marsden, Hazel Hutchinson and Ralph O’Connor. London: Picking and Chatto, 2013. 1–19.

—. “Re-reading Isambard Kingdom Brunel: Engineering Literature in the Early Nineteenth Century.” In *Uncommon Contexts: Encounters between Science and Literature, 1800–1914*.Ed. Ben Marsden, Hazel Hutchinson, and Ralph O’Connor. London: Pickering and Chatto, 2013. 83–109.

Marsden, Ben, Hazel Hutchinson, and Ralph O’Connor, eds. *Uncommon Contexts: Encounters between Science and Literature, 1800–1914*. London: Pickering and Chatto, 2013.

Mitchell, Joseph. *Reminiscences of my Life in the Highlands* (1883). Newton Abbott: David and Charles, 1971.

Mitchell, W. J. T. *Landscape and Power*. Second edition. Chicago: U of Chicago P, 2002.

Morrison, John. *Painting the Nation: Identity and Nationalism in Scottish Painting, 1800–1920*. Edinburgh: Edinburgh UP, 2003.

*ODNB (Oxford Dictionary of National Biography).* Oxford: Oxford UP. Online. “Thomas Telford.” http://www.oxforddnb.com/view/article/27107?docPos=1 [accessed 10 November 2016].

Oerlemans, Onno. *Romanticism and the Materiality of Nature.* Toronto, Buffalo and London: U of Toronto P, 2002.

Penfold, Alastair. *Thomas Telford, “Colossus of Roads.”* Telford: Telford Development Corporation and Ironbridge Gorge Museum Trust, 1981.

Pennant, Thomas. *A Tour of Scotland in 1769*. Introduction by Brian D. Osborne. Edinburgh: Birlinn, 2000.

Picon, Antoine. *French Architects and Engineers in the Age of Enlightenment*. Cambridge: Cambridge UP, 1992.

Porter, Roy. *The Making of Geology*. Cambridge: Cambridge UP, 1977.

Pratt, Lynda. *Robert Southey and the Contexts of English Romanticism.* Aldershot: Ashgate, 2006.

Rackwitz, Martin. *Travels to* Terra Incognita*: The Scottish Highlands and Hebrides in Early Modern Travellers’ Accounts c. 1600 to 1800*. Munster: Waxmann, 2007.

Robertson, Frances. “Ruling the Line: Learning to Draw in the First Age of Mechanical Reproduction.” Unpublished PhD Dissertation, Glasgow School of Art, 2011.

Roe, Nicholas.*The Politics of Nature: Wordsworth and Some Contemporaries*. Basingstoke: Macmillan, 1992.

Rosen, Charles and Henri Zerner. “The Romantic vignette and Thomas Bewick.” *Romanticism and Realism: The Mythology of Nineteenth Century* *Art*. London: Faber and Faber, 1984. 71–96.

Ruston, Sharon. *Creating Romanticism: Case Studies in the Literature, Science, and Medicine of the 1790s*. Basingstoke: Palgrave Macmillan, 2013.

Schaaf, Larry. *Out of the Shadows: Herschel, Talbot and the Early Invention of Photography*. New Haven: Yale UP, 1992.

*Shearer’s Panorama and Colored Views of the Caledonian Canal*. Stirling: R. S. Shearer and Son, 1890.

Smeaton, John. *A Narrative of the Building of the Edystone Lighthouse*. Second edition. London: Printed for G. Nicol, bookseller, 1793.

Southey, Robert. *Journal of a Tour in Scotland in 1819*, with an introduction and notes by C. H. Herford. London: John Murray, 1929.

Telford, Thomas. “Navigation inland.” *Edinburgh Encyclopaedia* (1821). Volume 15, 1830: 209–315.

—. *Life of Thomas Telford, Civil Engineer*, edited by John Rickman. London: Payne and Foss, 1838.

—. *Atlas to the Life of Thomas Telford, Civil Engineer*. London: Payne and Foss, 1838.

Twyman, Michael. *Early Lithographed Books: A Study of the Design and Production of Improper Books in the Age of the Hand Press*. Williamsburg, Virginia and London: The Book Press Ltd, Farrand Press and Private Libraries Association, 1990.

Yeo, Richard. *Encyclopaedic Visions*.Cambridge: Cambridge UP, 2001. [↑](#endnote-ref-3)