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THE RE-MAKING OF THE ENGLISH LANDSCAPE: COAL, TRANSPORT, AND THE
SENSE OF PLACE IN THE ROMANTIC ERA

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Table of Contents

Acknowledgements	iii
Introduction	1
Chapter 1 Standing at the Edge of Prospect: Jago’s <i>Edge-Hill</i> and Early Industrial Vision	27
Chapter 2 The Fourth Most Common Element and Its Uncommon Properties: Iron Taxonomy and the Exploited Estate in Austen’s Realist Novel	83
Chapter 3 “Strict Energetic Measures”: Vapor, Effluence, and Coal’s Cheap Nature in Anna Seward’s Mining Sonnets	139
Chapter 4 “Where Science Smiles, the Muses Join the Train”: Canal, Coals, and Dissenting Education in “The Invitation”	214
Coda/Conclusion	265
Bibliography	274

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Introduction

In *A Defence of Poetry* (1821), Percy Bysshe Shelley famously remarks of the poet's unique faculty,

The mind in creation is as a fading coal, which some invisible influence, like an inconstant wind, awakens to transitory brightness; this power arises from within, like the colour of a flower which fades and changes as it is developed, and the conscious portions of our nature are unprophetic either of its approach or its departure.¹

The analogy of the poet's mind in creation to a "fading coal"² epitomizes the Romantic ideal of poetic inspiration. Yet while the imagination's power is internally generated, Shelley understands the imagination not simply as a self-emanating and closed system, but rather, it is the product of a complex and contingent human interaction with an equally generative and unpredictable creative, material world.³ Indeed, the very phrase, "is as a fading coal" evinces what M.H. Abrams reads as the "two planes of thought in Shelley's aesthetics—one Platonistic and mimetic, the other psychological and expressive—applied alternatively, as it were, to each of

¹ Percy Bysshe Shelley, *A Defence of Poetry*, in Shelley, Percy Bysshe, et al. *Shelley's Poetry and Prose: Authoritative Texts, Criticism*. 2nd ed. (New York: Norton, 2002), 531.

² This image is originally Sir Isaac Newton's. In "Query 16" of *Opticks* (1718) Newton addresses the process whereby the quickness of the "Successions the Impressions of the several Colours are confounded in the Sensorium" resulting in a "mix'd sensation." He continues, "If a burning Coal be nimbly moved round in a Circle with Gyration continually repeated, the whole Circle will appear like Fire; the reason of which is, that the Sensation of the Coal in several places of that Circle remains impres'd on the Sensorium, until the Coal return again to the same place." Newton, *Opticks: or, a treatise of the reflections, refractions, inflections and colours of light. The fourth edition, corrected. By Sir Isaac Newton, Knt.* (London: printed for William Innys at the West-End of St. Paul's, MDCCXXX. [1730]), 123.

³ This is the premise of Manuel De Landa's 1997 book, *A Thousand Years of Nonlinear History*, in which De Landa argues that economics, language, and technology, what humans view as their own self-evident creations, are in fact the result of coexisting and interacting forms of creative matter.

the major topics under discussion” in the *Defence*.⁴ Indeed, Tobias Menely asserts that in the *Defence*, Shelley unites “the materialist historicism of the early Greek critic with Sidney’s idealizing conception of *poiesis* as noninstrumental labor.”⁵ Throughout the work, Shelley incorporates the dynamic material world, into his understanding of poetic discourse.⁶ His “favored metaphor for the real—the shaping externality and the material of making,”⁷ is the “ever-changing wind,” and the mind is an “Æolian lyre.”⁸ And yet, Shelley’s evocation of the mind in creation carries within itself, traces of its own finitude, its own exhaustion. The “brightness” and the “power” of the coal are transitory and faded the moment composition begins: “Could this influence be durable in its original purity and force, it is impossible to predict the greatness of the results: but when composition begins, inspiration is already on the decline.”⁹ Indeed, the immense, inventive forces that generate the creative mind are finite. Far from the imagined “indestructible order” of ancient, cyclical poetry, inspiration becomes a feeble shadow of its original form once it materializes. In essence, for Shelley, the composition of poetry is “a resource-depleting model.”¹⁰ Throughout the *Defence*, Shelley uses the language of invisible cataclysm and upheaval, power, and force, “a spark, a burning atom,” to describe the divinity,

⁴ Abrams, M. H., *The Mirror and the Lamp: Romantic Theory and the Critical Tradition* (London; New York: Oxford University Press, 1971), 126.

⁵ Shelley scholars have long interpreted Shelley as moving between materialism and idealism. Christopher R. Miller traces this critical tradition, whose practitioners include Earl Wasserman, Tilottama Rajan, and Angela Leighton, among others. See Christopher R. Miller, “Shelley’s Uncertain Heaven.” *ELH* 72, no. 3 (2005): 579. See also Tobias Menely, *Climate and the Making of Worlds: Toward a Geohistorical Poetics* (Chicago; London: The University of Chicago Press, 2021), 11.

⁶ Timothy J. LeCain, *The Matter of History: How Things Create the Past* (Cambridge ; New York: Cambridge University Press, 2017), 80.

⁷ Menely, 11.

⁸ Shelley, 511.

⁹ *Ibid.*, 531.

¹⁰ Naomi Klein, *This Changes Everything: Capitalism Vs. the Climate* (Toronto: Knopf Canada, 2014), 169.

growth, and the science of the “mind in creation.” In short, Shelley employs images of geological formation and of coal combustion to describe the process of inspiration. The *Defence* illustrates the period’s wider engagement with imagination, materiality, and what Timothy LeCain calls, a “partnership humans formed with other powerful material things whose potentialities often pushed them in directions they neither envisioned nor intended.”¹¹ In LeCain’s conception, and indeed, in Shelley’s *Defence*, we see that coal offers a compelling example of such a partnership. Almost a century later, Robert Sherlock suggests that due to coal extraction and combustion, humankind has now taken on the character of cataclysm; he has, in fact, become a “geological agent.”¹² While Shelley’s interest lies in the ways the inanimate enlivens and shapes human imagination and poetry, what we see in Sherlock is that the relationship between men and another form of the inanimate—coal—has now become an earth-shifting entanglement. Yet, if we return to the Romantic period of Shelley’s composition, we can begin to understand the very foundations of man’s entanglement with coal, combustion, and geological cataclysm, and how mineral extraction was beginning to dramatically shape human perception of the natural world, and their imaginative response.

Foundations

In his 1795 geological treatise, *Theory of the Earth*, James Hutton ponders coal—calling it the “most peculiar” of all the geological strata and the “the touch-stone for every theory of the earth.” Hutton notes that this most distinguishable mineral is “best understood in the science of

¹¹ Timothy J. LeCain, “Against the Anthropocene. A Neo-Materialist Perspective.” *International Journal for History, Culture and Modernity* 3.1 (April 1, 2015): 11.

¹² Robert Lionel Sherlock, and Arthur Smith Woodward, *Man as a Geological Agent: An Account of His Action on Inanimate Nature*. London: H. F. & G. Witherby, 1922.

mining,” and provides imaginative access to “Time” and to a unique long view of geological transformation, whereby the naturalist can view

bodies which we may investigate through all the stages of their change, which is extreme; for, from vegetable bodies produced upon the habitable earth, they are now become a mineral body, and the most perfect coal, --a thing extremely different from what it had been, and a thing which cannot be supposed to have been accomplished by the operation of water alone, or any other agent in nature with which we are acquainted [. . .].¹³

Hutton points out coal’s “most distinguished character”: its “extreme” contingency and historicity,¹⁴ accomplished through natural agents and temporal processes. Noting the visibility and traceability of a lost geological past, the geologist identifies in coal multiple, ancient life forms that now constitute and compose a part of “this present earth.” He theorizes that the “most perfect” coal is nature “now become”—a wondrous convergence of vital, potential, and temporal forces, millions of years of historical growth and accumulation compressed and transformed into a novel ontological entity in his present moment. Hutton also contends that this “thing extremely different” not only comprises the third strata of the earth’s core, but that coal—a hybrid fossil, an amalgamation of the animal, mineral and vegetable kingdoms—represents an entirely new way

¹³ See James Hutton, *Theory of the Earth: With Proofs and Illustrations. In Four Parts. By James Hutton, M.D. & F.R.S.E.* (Edinburgh: printed for Messrs. Cadell, Junior, and Davies, London; and William Creech, Edinburgh, 1795), 563-4.

¹⁴ Interestingly, in this passage Hutton notes *coal’s* especial contingency and historicity in the phrase “now become,” features commonly associated with the branch of natural philosophy Martin R.S. Rudwick denotes as “geohistory.” Yet, what separated Hutton from his contemporaries, and placed him squarely within one of the major rifts between geological schools was his adherence to the opposite branch, “geothory,” in which geological processes are not marked by historicity and contingency. Hutton famously states, “No vestige of a beginning—no prospect of an end” to note the historical directionlessness of the “habitable world.” Hutton argues that the present is a key to understanding the steady state of geological formation and destruction.

of visualizing the earth's origins. It is diachronic evidence of the dramatic temporal and material changes of an inaccessible past, and the visual means whereby the naturalist infers proper cause.

For Hutton, as for many of his fellow geologists,¹⁵ natural philosophers, and mining industrialists, the extraction of fossil coal in the late eighteenth and early nineteenth centuries made observable, and phenomenologically accessible, deep earth operations and temporal mechanisms. More importantly, his observations illustrate the encounter between man and minerals, and the way the human subject was now positioned at the epochal shift between ancient organic life and future energetic and imaginative transformations. Indeed, Hutton's fascination with the long metamorphosis of coal signals a larger scale transformation occurring at the time of his writing—one that would see the entire British and global economic framework convert from a land-based agricultural system into a subterranean, carbon-based, energetic grid, driven and maintained by inorganic coal extraction.¹⁶

¹⁵ While Hutton is commonly seen as the “father of modern geology” due to his formulation of geological principles based on empirical observations, it is important to note that, at the time of Hutton's composition, “Geology” had not yet become formalized as its own branch of the natural sciences. Instead, it was absorbed under larger, more capacious branches of natural philosophy and natural history comprised of the competing discourses and tensions between geology and geohistory. For more on the multiple, competing geological schools, see Rudwick's excellent two-volume work, *Bursting the Limits of Time: The Reconstruction of Geohistory in the Age of Revolution*. University of Chicago Press, 2005.

¹⁶ Wrigley further notes in *Energy and the English Industrial Revolution* that one “necessary condition for the escape from the constraints of an organic economy was success in gaining access to an energy source which was not subject to the limitations of the annual cycle of insolation” and plant photosynthesis: phenomena that classical political economists such as Adam Smith and Thomas Malthus identify as the largest limiting factors to agricultural growth and population expansion. See E. A. Wrigley, *Energy and the English Industrial Revolution* (Cambridge ; New York: Cambridge University Press, 2010), 21.

Stock and Extractive Capitalism

Prior to the publication of *Theory of the Earth*, Britain's economists were compelled by another form of accumulation: the aggregation of capital, known as "stock." Using naturalized, stratigraphic metaphors of accretion and growth, economist Adam Smith recognized stock as one of the three crucial factors of production, in addition to labor and land: "As the accumulation of stock must, in the nature of things, be previous to the division of labour, so labour can be more and more subdivided in proportion only as stock is previously more and more accumulated."¹⁷ Yet the economic conception of stock's impact on labor and value was considered from the standpoint of an "organic,"¹⁸ agricultural economy. Capital accumulation was dependent on fixed land areas to provide food, raw materials, and fuel, rather than on mineral stores for energetic capability. Within a strictly agricultural framework, ideas around economic growth and accumulation of stock were limited by natural cycles and calamitous events such as drought and soil conditions. Land was in fixed supply, which set limits to output and growth.¹⁹

¹⁷ See Adam Smith, William Strahan, and T. (Thomas) Cadell, *An Inquiry Into the Nature and Causes of the Wealth of Nations* (London: Printed for W. Strahan, and T. Cadell, in the Strand, 1776), 328.

¹⁸ E.A. Wrigley uses the phrase, "organic economy," to denote "all economies which developed in the wake of the Neolithic food revolution." In organic economies, not only was the land the source of food, but it was also the source--directly or indirectly--of all material products of use to man, its production horizon set by the annual cycle of plant growth, and which ultimately set "physical and biological limits to the possible scale of production." I use "organic" and "agricultural" interchangeably throughout this proposal. For more on organic versus mineral stock-based economies, see E. A. Wrigley, "The Limits to Growth in Organic Economies," in *Energy and the English Industrial Revolution* (Cambridge: Cambridge University Press, 2010), 9–25.

¹⁹ This is the basis of Malthus's later (in)famous theory in his 1798 edition of *An Essay on the Principle of Population*, where he first outlines geometric progression of population growth in proportion to arithmetic progression of food production. Malthus notes that due to fixed land supply and limited crop productivity, population would quickly outstrip food resources resulting in higher mortality rates.

There existed another form of accumulated stock tied to Britain's growing wealth and changing labor practices: coal. At the time Smith composed *The Wealth of Nations*, coal mining on an industrial scale was in its nascent stages, Britain had not yet fully accessed "ghost acres"²⁰ beyond its own national borders, and political economists considered mineral extraction within a singularly agricultural schema. Given that the natural philosophers, economists, and writers were "looking at Britain mainly through the eyes of the landed classes," with an attendant sense of historical and social continuity tied almost wholly to agriculture, "the historical importance of the Industrial Revolution as a driving force of social change could not be discerned by them—or indeed by most observers from their social background."²¹ Yet, what those looking at land and the nation's growing wealth and commerce failed to see was this:

London had grown into the largest city in Europe because of its access to coal shipped from the northeast of England. The seventeenth and eighteenth centuries saw the development of new coal-powered manufacturing industries and a shift from charcoal to

²⁰ This concept is from Kenneth Pomeranz's, from his work, *The Great Divergence*. Pomeranz explores the ways in which Britain escaped a purely Malthusian fate—one where land as a fixed variable ultimately limited arable crops and population growth based on food production—by "materializing" ghost acreage elsewhere (i.e. in the colonies) for food and commodity production and for emigration to help relieve a redundant population. Pomeranz connects "ghost acres" to the success of Britain's First Industrial Revolution; this additional land permitted division of labor, global trade and higher quality consumer goods—each an important element in Britain's industrialization. Coal, too, functioned as a kind of domestic form of "ghost acres," as Pomeranz calculates that coal from the underground was equivalent to fifteen million acres of forest. See Kenneth Pomeranz, *The Great Divergence: China, Europe, and the Making of the Modern World Economy*. Princeton: Princeton University Press, 2009. Tobias Menley further notes that Pomeranz's "colonies and coal—outward and downward expansion—allowed Britain and then Europe to transcend environmental constraints, reducing exposure to dearth and disaster while enabling an economic system based on accelerating growth." See Menely, 7.

²¹ See Rudolph Beck's excellent study on the eighteenth-century georgic as a celebration of British mining, "From Industrial Georgic to Industrial Sublime: English Poetry and the Early Stages of the Industrial Revolution." *Journal for Eighteenth-Century Studies* 27, no. 1 (March 1, 2004): 21.

coal in metal smelting, innovations that culminated in the fossil-powered factories and transportation networks of the Industrial Revolution.²²

Coal was already a driving agent for economic growth and industrial innovation; even if coal was not outwardly recognized within classical economic frameworks as a catalyst for Britain's growing wealth, the transition from agriculture to coal mining and manufacturing was well underway.

Hutton's writings offer some of the missing insight into the wider dialogic between geology, industrial capitalism, and stock, as well as a window into the emerging tensions between the agricultural and extractive economies in Britain at the end of the eighteenth century. As Adelene Buckland, Noah Heringman, Nigel Leask, and Martin J.S. Rudwick note, Hutton's popular geological treatise introduced late eighteenth-century audiences to a three-dimensional world of structures, and to a knowledge system whose foundation was largely predicated on earth-based, empirical data.

Argument

This dissertation investigates the larger cultural dissemination and literary interest in coal mining and its products and argues that late eighteenth-century and Romantic-era literature and poetry offer a dynamic entry point for considering expanding mineral extraction, iron and steel manufacture, and changing economic patterns largely driven by the burgeoning fossil fuel industry. In this project, I look at how Romantic poets and writers were fascinated by the extractive processes, forms, and subsequent functions of coal and iron, and how these elements marked the rural industrial movement within Georgian and Regency economies and culture.

²² Menely, 7-8.

Whereas political economists used mines and mining to bolster extant theories of agricultural labor and value, literary and artistic treatments treated mineral “stock,” and the new classes of citizens and mining wealth, as uncommon and altogether unique subjects for aesthetic consideration.

Moreover, while the arts often had a stake in perpetuating claims of Britain’s stability and continuity during the early stages of the First British Industrial Revolution, the mining literature and poetry illustrate, instead, that Regency and Romantic-era artists were highly cognizant that the British landscape and its populace were now, taken together, a “thing extremely different than it had been.” This project illustrates how literary and aesthetic modes and genres played a pivotal role in the new representation of fossil capital and its role in British national identity; it also investigates the considerable dialogic overlap between political economy, geology and natural philosophy within literary discourse itself, and argues that poetic and aesthetic modes offer a valuable way to mark the major shift from domestic to larger-scale extractive fossil capitalism between the eighteenth century and early nineteenth centuries.

The moment of shift between the agrarian and extractive economies, what other fossil-capital scholars have called the end of the Holocene, the start of the Anthropocene, or “the modern,”²³ is of particular importance in my project. Tobias Menely notes that the rise of fossil fuels, such as coal, is the “definitive feature of modernity,” as

²³ The start of the Anthropocene—a proposed geological epoch dating from the start of human impact on Earth’s geology and ecosystems—is still under debate. Paul Crutzen and Eugene Stoermer coined the phrase, “The Anthropocene,” in their 2000 article of the same name in the *IGBP Global Change Newsletter*, marking the date of this epoch as 1784, the year James Watt is credited with inventing the steam engine. Yet, the origin of the Anthropocene, the mythical “Golden Spike,” has been said to start anywhere from the Columbian Exchange and Orbis hypothesis event of 1610 to the Great Acceleration in the 1950s.

fossil fuels enable an abstraction of space and time, a disaggregation of extraction, consumption, and disposal, a decoupling of cause and effect that makes it impossible to connect the phenomenology of modern life with the geologic consequences of mass fossil-fuel consumption.²⁴

In this project, I take a slightly different approach in interpreting the role fossil capitalism plays in demarcating “modernity.” While I agree that coal helped enable abstractions of space and time during this epochal shift, I argue that the broader topological “disaggregation” happens much later in the nineteenth century, when industrial coal use reaches its apex in accordance with an advanced factory system and large-scale extractive processes. Instead, I take the position that a unique phenomenon is happening during the Romantic period: in the face of nascent coal extraction, literary and poetic engagements rearticulate and substantiate the social, phenomenological experience, rather than to disconnect fossil fuels and the human actor from spatiotemporal registers and the geologic consequences of the coal industry.²⁵ Instead, I claim that the Romantic-era quotidian, embodied encounter with coal allows the subject to recognize, contemplate, and denaturalize fossil capital and mineral extraction, in ways that later become unavailable to the human observer in the latter half of the nineteenth century.

Key Methodology: The Romantic “Extractive Mode”

In my approach to Romanticism’s phenomenological recognition of coal’s effects, I consider the wide range of responses and discourses occasioned by mineral extraction. I

²⁴ Menely, 27.

²⁵ This position is in conversation with other scholars of the Anthropocene, such as Dipesh Chakrabarty, who famously argues in his treatise on species-thinking, that the growing awareness of the Anthropocene confronts human actors with their status as geologic agents. See his article, “The Climate of History: Four Theses.” *Critical Inquiry* 35, no. 2 (2009): 197–222.

investigate how coal appears in multiple guises throughout the eighteenth and nineteenth centuries: it is simultaneously a neutral subject of knowledge, the occasion for economic and social misery on the part of miners, and finally, the subject of popular picturesque tourism and sublime programs. What we see is that throughout Romantic-era literary and artistic productions, coal is depicted in strikingly ambivalent terms—it is productive, destructive, the source of aristocratic landowners’ expanding wealth and reinvestment into the British estate, and the cause of displacement for rural workers. It is a source of amusement for tourists and the cause of environmental destruction and malaise for the British countryside and its populace. It is precisely this ambivalence between production and destruction with which the Romantics grapple in their multifarious and often conflicting representations of mineral extraction.²⁶ Yet the major theme that emerges throughout this constellation of coal’s effects, is how the knowledge of coal and its impact, and its subsequent uptake in the literature and visual arts pushes the British public toward a more expansive and visual understanding of land, landscape, and temporality.

The period’s literary portrayal of mineral development, and writers’ response to the shift from organic, land-based economies to wealth and development organized around fossil capitalism, signals the key idea I trace throughout the dissertation: what I call the Romantic “extractive mode.” I deem this unique literary and aesthetic response the “extractive mode,” partially in reference to the term’s etymological origins—the “extractive” denotes a specific concern with the industrial removal of natural, non-replaceable raw materials such as coal. I therefore look at how the “extractive mode” is a specific formal response to small- and large-scale landform changes, taking as its subject the environmental and social transformations

²⁶ This tripartite approach was first suggested by Frances Ferguson, to understand the ambivalence surrounding coal’s generative and destructive nature/s at this historical moment.

happening across Britain as the result of coal and iron mining. The “extractive” also signals the drawing out of an origin and descent; it is the seeking of an active principle of a substance.²⁷

The extractive mode thus further describes the Romantic impulse to locate and express a unique temporal origin during Britain’s seismic shift from an agrarian to a fossil-capital society, and to connect emergent British national identity with the newly discovered geological past.

In my study of the Romantics’ exploration of coal and its mineralogical origins, I build on several works, including Noah Heringman’s landmark 2004 work, *Romantic Rocks*, Tobias Menely’s *Climate and the Making of Worlds: Toward a Geohistorical Poetics* (2021), and Elizabeth Miller’s *Extraction Ecologies and the Literature of the Long Exhaustion* (2021). In each, they explore the unprecedented geological discovery and industrial growth of extractive capitalism, whereupon aesthetic programs introduce a “range of response, which belies the metaphor of a ‘consensus,’ [that] comes with the diversity of forms—esthetic, practical, ideological, scientific, or some combination of these.”²⁸ What I add to their studies is an interrogation of the ways Romanticism’s formal rubrics-- the picturesque, the sublime, geological exploration and early industrialization--capture and represent coal and iron mining and how these programs, invariably, end up introducing a similarly diverse range of practical and aesthetic responses. Like Heringman, I seek to understand how “writing about how landscape in the Romantic period became a forum for the discussion of changing attitudes towards the earth’s material and toward materiality itself,” and agree with his contention that the rising demand for

²⁷ *Oxford English Dictionary*, s.v. “extractive,” “extract,” accessed July 6, 2021. <https://www-oed-com.proxy.uchicago.edu/view/Entry/67088?redirectedFrom=extractive#eid>.

²⁸ See Heringman’s text, *Romantic Rocks, Aesthetic Geology*. (Ithaca, N.Y.: Cornell University Press, 2004), 50.

mineral resources predicated a “complex cultural pattern” that, at once, provoked scientific curiosity and sublime wonder.²⁹

Throughout the project, I put the extractive mode in conversation with other critical methodologies. This project draws heavily upon the tenets of New Historicism and neo-Materialism³⁰ to situate the Romantic literary representation of coal within its historical milieu: I employ Marjorie Levinson’s and Jerome McGann’s methods of New Historicist systems analysis--what Levinson calls an “empirically responsible investigation of the contemporary meanings informing literary works”³¹--to track the “complex interplay between a dynamic Earth system and dynamic social formations” at the locus between the eighteenth and nineteenth centuries.³² However, in my approach to systems analysis, I seek to move away from the contemporary narrative of extraction as a solely exploitative, material and economic process of mining mineral wealth from the Earth, with its attendant mistreatment of miners, and irreversible decimation of land and traditional agriculture practices. While these practices, better known as “extractive capitalism,”³³ are certainly a major facet of the history of eighteenth and-nineteenth

²⁹ See pg. xiv-xv for an overview of Heringman’s book, which includes his overall argument that the literary culture during the Romantic period was shaped by “many of the same cultural practices that formed geology as a science” (xxiii).

³⁰ I employ Neo-Materialist approaches such as those propounded by Jane Bennett and Timothy LeCain. Bennett, drawing from Deleuze and Guattari’s material vitalism, looks at how coal challenges the traditional definition of matter as inert and stable, and instead, investigates how materials have “efficacy,” insofar as they depend on the “collaboration, cooperation, or interactive interference of many bodies and forces.” See her study, *Vibrant Matter: A Political Ecology of Things* (Durham [N.C.]: Duke University Press, 2010), 21. See also Timothy J. LeCain, *The Matter of History: How Things Create the Past*. Cambridge; New York: Cambridge University Press, 2017.

³¹ See Marjorie Levinson, *Thinking Through Poetry: Field Reports On Romantic Lyric*. First edition (Oxford: Oxford University Press, 2018), 33-66.

³² Menely, 8.

³³ See Sarah Byrnes and Chuck Collins, “The Equity Crisis: The True Costs of Extractive Capitalism” in *The Community Resilience Reader: Essential Resources for an Era of Upheaval*. Washington, DC: Island Press, 2017.

century British coal mining and iron production, extractive capitalism does not fully account for the multiple, nuanced ways in which Romanticism expresses a unique and ambivalent aesthetic response to the phenomenological experience of mining—ranging from horror and apprehension to experimental fascination and deep wonder. Incorporating the extractive mode in New Historicist systems analysis reframes this often myopic extractive capitalism narrative, and expands traditional approaches to Romantic-era landscape theory to include scenes of mining, combustion, and waste. In essence, accounting for coal extraction and its aesthetic representation creates a more fully dialogical New Historicist approach to land use during the Romantic period: what Stephen Greenblatt famously proposes as accounting for the fullness of the past in all its heterogeneity, and what I view as an underreported facet in the history of human and geological relationality.

Similarly, I see the Romantic extractive mode as a heteroglossic expressional form: it is a convergence of economic, geognostic, and literary voices and ideologies. It relativizes linguistic borders between disciplines and illustrates that for Romantic-era authors and artists, there exists no monolithic discourse for understanding coal's effects and its proper representation. Instead, the extractive mode is a discourse marked by a stratigraphic layering of aesthetic and epistemological approaches. The notions of accretion and shift are crucial in understanding this literary mode, as it is a compression of genres and discursive modes created and revealed through literary and social revolutions. For example, I note how the authors and poets, in their employment of the extractive mode, agglomerate past literary forms such as the apostrophe, pastoral, and georgic, compressing and incorporating them into revived and emerging genres like the sonnet, novel, scientific poem. This compression creates what Nigel Clark calls “a lexicon of

seismic shifts, fault lines, eruptions, upheavals, fractures, fissures, abysses, chasms and rifts”³⁴ and reveals the kind of cultural assemblages used for coal’s representation and the historical and literary movements that subsequently expose its forms and techniques.

The notion of “chasms and rifts” also connects the extractive mode to other kinds of disruptive representational forms emerging at this historical and cultural nexus. Throughout the dissertation, I note how the extractive mode is a type of *écriture féminine* for women writers and artists; in their encounter with fossil capitalism and its produce, the extractive mode gives voice to the feminine phenomenological experience within the traditionally masculine realms of the coal industry and geological sciences.³⁵ I show how women’s writing about coal helps provide the “socially reproductive backbone to the mining industry.”³⁶ I investigate how the household, domestic use of coal provides the preponderance of literary women’s experience, and assert that their concerted interest in coal and its aftereffects is expressed in sonnets and other traditionally feminine and often private documentary forms, such as travelogues. These extraliterary components illustrate the vast network of the feminine engagement with coal mines and the subsequent impact of mining on women’s literary forms and themes. My concerted focus on women and children’s experiences and aesthetic productions is an attempt to redress what Kathryn Yusoff calls the “White Geology of the Anthropocene,”³⁷ and more broadly, to enhance

³⁴ Nigel Clark, *Inhuman Nature: Sociable Life On a Dynamic Planet*. (Los Angeles; London: SAGE, 2011), 248.

³⁵ The embodied aspect of *écriture féminine* is particularly important when examining the sexually subversive and psychoanalytic registers of mixed-gender relations in coal mines. Fear around women miners’ sexual corruption was one of the driving forces of Mines and Collieries Bill of 1842, which prohibited all underground work for women and girls.

³⁶ Helene Strauss, “Energy Archives: Of Rocks, Rubbish, and Feminist Feeling in Alike Saragas’s Strike a Rock.” *Subjectivity* 13, no. 4 (2020): 254.

³⁷ Yusoff’s project builds on Saidiya Hartman’s 1997 *Scenes of Subjection* and in other “critical black feminist work” to reconfigure the state of relations assigned through “material colonial inscription, which simultaneously enacted the cutting of geographical ties to land and

the current discourse around women's experience of the First British Industrial Revolution. In my consideration of feminine relations to the coal industry, I attempt to show how women's aesthetic language and structures of thought are valuable "material geographies," that help shift the current accretion and dominance of masculine narratives within fossil capitalism's larger social and literary history.

Chapter 1: Standing at the Edge of Prospect: Jago's *Edge Hill* and Early Industrial Vision

My first chapter examines the notion of "prospect," to understand how eighteenth-century visual and landscape aesthetics are dramatically transformed by extractive capitalism and coal mining upon the rural British estate. Using John Barrell's influential work on prospect and gentlemanly administration of the rural estate, I look at Richard Jago's 1767 prospect poem, *Edge-Hill*, and the way Jago interrogates traditionally held beliefs around rural property boundaries, the gentry's land management, and mineral resource exploitation. I argue that prospect is a useful hermeneutic through which to understand extractive capitalism in the eighteenth century, as it registers simultaneously across economic, industrial, and social realms. At once, during this period, prospect signifies the search for geological resources, financial prosperity, and marriage fitness, as well as denotes changing notions of time, futurity, and spatial recognition. I assert that despite the gesture to naturalize landowners' claims to hegemony and rule, predicated on what Tobias Menely calls "the epistemological authority of sight,"³⁸ prospect and power are both unstable propositions, in the face of subterranean exploration. Jago

attachments to ecologies." See *A Billion Black Anthropocenes or None* (Forerunners: Ideas First From the University of Minnesota Press. Minneapolis, MN: Univ Of Minnesota Press, 2018), n.p.

³⁸ Menely, 155.

introduces contingency to address shifting attitudes around proprietorship and gentility. For Jago, as for his eighteenth-century contemporaries, prospect exposes the transforming underpinnings of rural society, and indeed, of Britain's wider "lawful and liberal political order."

In the face of Enlightenment empiricism and the dominance of the eye, Jago's use of prospect instead relies heavily on imaginative apparatuses and exigency to usher in a new era of coal "viewing" and the emerging, extractive rural estate. Yet, I claim that *Edge-Hill* also provides the reader with crucial evidence that in Britain, during the mid-eighteenth century, coal mines and mineral schemes do not necessarily signal the commercial values of the encroaching middle class, with its attendant themes of mobility, industry, and production³⁹: what other critics have taken as a sign of the inevitable disintegration of the gentry's aesthetic and moral stability. I illustrate that Jago's poem is an accurate description of the gentry's historical exploitation of mineral resources upon the estate, what was seen as an important form of landscape improvement and economic diversification. While mining certainly brought the gentry and the merchant classes together, through mutual capitalization and investment schemes, I argue that Jago integrates the working coal mine into his topographical poem to illustrate the gentleman's ever-widening expanse and his growing prospect, with coal as one of the "essential connections between town and country."⁴⁰ More crucially, I claim that Jago's poem engages in what Benjamin Colbert calls an "oscillating movement between taste and science," as the coal mine further provides the gentleman observer with visual access to geological theory and the natural foundations of the earth: discourses that help explain the processes and composition of the very

³⁹ Colbert identifies in the picturesque tourist the representation of "claims of productive wealth over those of inherited wealth; his 'command' of a landscape bespeaks its accessibility to his physical presence, his taste, and his understanding, all of which mirror the economic integration of the nation rather than the paternal presence of a landed master." See Colbert, 29.

⁴⁰ Raymond Williams, *The Country and the City* (London: Chatto and Windus, 1973), 98.

landscape upon which his estate is built. Jago not only incorporates the subterranean mine as part of the estate's entire visual and economic prospect, but he also illustrates that the mine guarantees a gentleman even greater command over his domain, as it extends the spatial boundaries of the estate far beyond its surface topographical parameters. In his possession of mineral wealth and the capability to extract and exploit his estate's "latent tracts," the gentleman thus increases his prospect, and he further augments his own power, taste, and capability for aesthetic appreciation of his landscape.

Chapter 2: The Fourth Most Common Element and Its Uncommon "Properties":

Extraction and the Exploited Estate in Austen's Realist Novel

My second chapter further contextualizes themes of prospect, as well as environmental exploitation, a changing populace, and extractive commerce in the Regency-era novel. In considering the British estate and its relationship to its mines and manufactories, this chapter considers Jane Austen's intertextual derivations of iron and steel nomenclature and how land ownership shaped coal and iron mining landscapes. We see these concerns come to the fore in Austen's novels, specifically in *Sense and Sensibility* (1811) and *Mansfield Park* (1814). In these two works, I examine how Austen registers the Regency-era landscape transformed by newly sunk mines and manufactories, and how novels' narratives portray larger changes in land use, such as the introduction of new classes of upwardly mobile citizens. The second chapter engages in a larger consideration of mining and land use, treating coal as the driving component of a more complex extractive matrix also involving the coppicing of trees, charcoal, and the manufacture of iron and steel on the rural estate. What is not generally understood about Regency-era mining and manufactory, but what becomes clear in Austen's work, is the gentry's

power over mining activities. Great estates could stimulate mining, but they could also restrict it for aesthetic or moral reasons. The pattern of development in many mining communities and manufactories was thus shaped by property boundaries and wealthy landowners' short-term and long-term land management and resource exploitation. Indeed, T.S. Ashton connects the iron industry's early beginnings on the English estate with its abundance of forest land: it was the "presence of trees, rather than of iron ore, that determined the location of ironworks" subsequently, by the late eighteenth century, the iron industry moved to parts of the country where "woodlands still remained or new coppices could be planted. "⁴¹

I begin my investigation of this movement in Austen's first published novel, *Sense and Sensibility*, and argue that the instances of iron names and objects in the novel too frequent to ignore, invite us to rethink a reading of Austen's estates as wholly conservative markers for agricultural management, social stability, and individual virtue. I instead claim that there exists tension within Austen's examination of the landed gentry's exploitation of mineral rights and their creation and maintenance of the estate to measure and expand earnings. I look at factors of improvement in the novel, the drainage of wastes and harvesting of ancient woods, to illustrate that the estate's active involvement in domestic extractive economies. I then turn my focus to *Mansfield Park*, and its evocation of the "wilderness" at Sotherton. Again, focusing largely on the estate's tree plantation, I argue that the novel tracks what I call the "respatialization and expansion of the estate," as it considers the convergence of industrialization, imperialism, and extractive capital as part of its domestic improvement schemes.

⁴¹ See T. S. Ashton, *The Industrial Revolution, 1760-1830*. [1997 ed.] (Oxford; New York: Oxford University Press, 1997), 39.

In general, the second half of the chapter looks at how *Mansfield Park* provides the extractive context for Edward Said's evocation of empire on the British estate,⁴² insofar as coal and mineral development not only provides the economic stock necessary for colonial investment abroad, but that the produce from colonial exploitation is then reinvested into the manor home, and into the estate's landscape under the rubric of promoting domestic social order and national stability. Throughout the chapter, I claim that Austen reveals the landed gentry's estate management as a measure of their morality, but in reverse of how other critics consider the estate in her novels: Austen uses the gentry's association with mineral extraction and tree plantations to refute the spurious mythology that England's rural gentry was solely an agrarian one, under constant threat from outside industrial forces.⁴³ Instead, she resituates the First British Industrial Revolution's origins firmly within the estate and questions how natural resource exploitation serves to complicate her characters' moral inclinations.

⁴² Edward W. Said, *Culture and Imperialism*. New York: Knopf, 1994; Pomeranz's notion of "ghost acres" is also integral for this chapter, to understand the role of the colonies in mineral extraction and the estate coal mine understood as a kind of domestic colonial space. See also Stephen Muecke's chapter, "The Composition and Decomposition of Commodities: the Colonial Careers of Coal and Ivory" in *Commodities and Culture in the Colonial World*. In this chapter, Muecke tackles the composition and decomposition of coal, and the way in which it is "packaged into a network of relations that move the object around and give it life." Although Muecke speaks about steam-powered travel, and at the time of Austen's writing, steam powered ships had not yet reached full commercial application, his emphasis on relational networks is helpful for my own exploration of the extractive matrix and the role of the estate and the gentry within it. See Muecke in Supriya Chaudhuri, *Commodities and Culture in the Colonial World* (Abingdon, Oxon ; New York, NY: Routledge, an imprint of the Taylor & Francis Group, 2018), 77.

⁴³ This is in line with Raymond Williams' contentions in the *Country and the City* (1973), but where Williams commented on the redeployment of organic poetic and literary forms, such as the pastoral, as a kind of recuperative gesture in the face of modernity, Austen's use of the poetic and the apostrophic provides no such generic salve. Instead, the apostrophe functions as rupture temporal dislocation. The integration of the apostrophe within the realist novel, in line with Williams' greater argument, illustrates the very artificiality of "the natural" for Austen.

Chapter 3: “Strict Energetic Measures”: Pollution, Poetics, and Cheap Nature in Anna Seward’s Mining Sonnets

My third chapter examines the noxious effluence and irrefutable impact of coal conversion on nature, and more importantly, how such invisible processes, that eventually became known as “energy” after 1840,⁴⁴ illustrate the changing form of coal and the reshaping and transformation of Romantic vision into one that now incorporates industrial particulates as part of its very atmosphere. I assert that the representation of coal combustion, energy, and most notably, “vapor,” exemplifies the shift in British locodescriptive poetry, from a style that traditionally emphasized the topographical and picturesque with static views and prospects, to a moving mode that “portrays the atmospheric effects”⁴⁵ of fossil capitalism and of material energy combustion. I argue that the visual representation of combustion processes and material aftereffects (including effluence) is seen throughout Anna Seward’s late eighteenth-century mining verse, particularly Sonnet 47, and her most famous sonnet, “To Colebrook Dale.” I look

⁴⁴ Cara New Daggett’s insightful and comprehensive treatment posits that energy is not an ahistorical phenomenon, “a unit free of context,” but rather, that energy arose in the 1840s, amidst a collision of deeply historical entities: fossil fuels, steam engines, global capitalism, human terraforming, the slave trade, climate systems, empires.” While I agree with Daggett that energy, proper, was not formalized as such until this moment, in accordance with the instantiation of thermodynamics, I assert that these Romantic-era writers begin to make visible the energetic, dynamic, and effluent processes connected to coal combustion, particularly that happening in the Coalbrookdale mining district. These depicted energetic processes, in fact, are fully situated and contextualized, albeit within an earlier historical and material moment than the one Daggett names. See *The Birth of Energy: Fossil Fuels, Thermodynamics, and the Politics of Work* (Durham: Duke University Press, 2019), 18.

⁴⁵ Bermingham notes Walpole’s *The Castle of Otranto*, Diderot’s stage tableaux, landscape design such as the gardens at Stourhead, and William Gilpin’s Wye Valley tour as further evidence of moving landscapes and animated painting techniques that strained traditional, static “conventions of pictorial composition.” For more, see her 2016 article, “Technologies of Illusion: De Louthembourg’s Eidophusikon in Eighteenth-Century London.” *Art History* 39 (2): 376.

at how her poems draw upon and challenge the celebratory, nationalistic portrayal of mineral extraction explored elsewhere in Richard Jago's *Edge-Hill* (1767), and in John Sargent's *The Mine* (1788). Whereas these pieces celebrate the mine as a site of technological innovation and national pride, I consider Seward's ambivalent aesthetic response to her male poetic predecessors' laudatory poems as the feminine rejoinder to unbridled coal extraction and masculinized literary modes.⁴⁶ For Seward, the mine is both a wondrous spectacle and site for neoclassical reverie; yet it is simultaneously a site of pollutive excess, exploitative capitalism, and unbridled human displacement. In response to the extant scholarship regarding the erasure of energy networks and outputs, I argue that the murky after-effects of coal conversion were, in fact, seen, felt, and acknowledged at the inception of coal's large-scale use during the Romantic period and taken up in the moment's moving pictorial representations of Britain's first Industrial Revolution.

I note that Seward's uses the compressed, Miltonic sonnet form to enact her nuanced scalar imagination, and to move between incommensurable ranges of the insignificant and the ethereal. Seward's choice of the Miltonic form in her mining sonnets act as a domesticating and nationalistic gesture. Just as Coalbrookdale is a "representative English place,"⁴⁷ one in which large-scale industrial, social, and economic changes play out in a smaller geographic and geologically unique locale, so too her choice of sonnet form represents a kind of representative

⁴⁶ In the case of Darwin, it is not entirely accurate to call him a "predecessor," as Seward was a highly involved collaborator and editor of Darwin's work. Indeed, the opening section of *The Botanic Garden* is directly copied, unattributed, from Seward's own verse. I discuss this intertextual derivation in more detail in the chapter, noting how Seward's "To Colebrook Dale" reconfigures Darwin's masculine celebration of industrial achievement, instead, highlighting the environmental implications of industry's residuum.

⁴⁷ Heringman, 266.

English mode. Yet, Seward expresses a deep anxiety regarding the ways in which, much like the debasement of the pristine landscape around Coalbrookdale, this poetic form is easily and continually desecrated by those who are not fully committed to its rigors and its nationalistic implications.

Seward also addresses the mine as a stage for British nationalism, and the creation of the industrial site as a tourist “sight.” I provide an account of the shift to The Domestic Grand Tour, as an aesthetic, touristic substitute for the experience of the Continental Grand Tour. I also explore how Coalbrookdale, the site of Seward’s poetic inspiration, was a key locale in the burgeoning mining tourism industry; seekers, in the spirit of the Grand Tour, traipsed across Britain’s more remote regions in search of sublime and horrifying scenes of nature. The landscape of the mining districts provides a domesticated, prescriptive access to the industrial sublime.⁴⁸ In the Domestic Grand Tour, the fixed settings and sites, as well as the unfamiliar populace, have been replaced by a dynamic, working spectacle and workers of The Pit, where the “overall effect is no longer panoramic” but instead, it is “scenery-in-motion,”⁴⁹ that exceeds the

⁴⁸ Arthur Young, in an entry dated July 13, 1776, from his famous *Tours in England and Wales*, notes the sublime horror of the Coalbrookdale forges:

These iron works are in a very flourishing situation, rising rather than the contrary. Colebrook Dale itself is a very romantic spot, it is a winding glen between two immense hills, which break into various forms, and all thickly covered with wood, forming the most beautiful sheets of hanging wood. Indeed too beautiful to be much in unison with that variety of horrors art has spread at the bottom: the noise of the forges, mills, &c. with all their vast machinery, the flames bursting from the furnaces with the burning of the coal and the smook of the lime kilns, are altogether sublime. Young quoted in Barry Trinder, *The Most Extraordinary District in the World!: Ironbridge & Coalbrookdale : An Anthology of Visitors' Impressions of Ironbridge, Coalbrookdale and the Shropshire Coalfield*. 3rd ed. (Chichester, West Sussex: Phillimore, 2005), 44.

⁴⁹ Rudolph Beck discusses the way in which industrial sublime shifts the georgic’s natural landscape “cultivated by man,” and instead introduces a sense of theatricality and dynamism to the picturesque scene; he compares the active industrial scene to the de Louthembourg’s ‘moveable canvas,’ the Eidophusikon, which he had debuted in London in 1782. See Beck, “From Industrial Georgic to Industrial Sublime,” 21.

limits of Nature and of the poetic imagination. In the face of the industrial sublime, then, Seward's composition and the other travel accounts illustrate how the neoclassical impulse is at once, a recuperative gesture--an effort to restore nature and the nation back to a past, orderly, verdant world. Yet, the neoclassical and the Miltonic also signal a failure of realism and the limits of aesthetic representation in the face of the moving effluence of toxic pollution and a redundant, displaced, and migrating population.

Chapter 4: "Where Science Smiles, the Muses Join the Train": Canal, Coals, and Dissenting Education in "The Invitation"

In my final chapter, I build on my investigation of the British topographical poem, and further explore how the domestic coal supply and its conveyance is represented as a kind of "active landscape" in the poetry and literature of the Romantic period; the literature's treatment of coal and the British canal system offers a way to understand new kinds of representational techniques during the period, notions of burgeoning ideas around resource extraction, and a recasting of genre, such as the topographical poem, to accommodate the kind of invisible and subterranean movements occurring in coal mining's extraction and transport. I assert that the generation of the canal system, in service of coal transport, helped create a new visual consciousness of the British landscape, as well as a more concrete sense of regionalism, as features of the old topography were eliminated and replaced with manmade waterways that reinforced a sense of Lancashire's regional topography and its connection to global transport.

I focus my study of nationalistic ideology around coal extraction, with Anna Letitia Barbauld's 1773 work, "The Invitation: to Miss B*****," to establish the literary culture's burgeoning cognizance of supply chain phenomena, and an early awareness of the extractive coal

economy's role in the domestic and global economy. I draw upon Merleau-Ponty's notion of giving visible existence to "what profane vision believes to be invisible"⁵⁰ through material structures of movement. I specifically look at how Barbauld's topographical poem treats themes of movement and dimensionality in its consideration of the Worsley coal mines and the Bridgewater canal system and Irwell Aqueduct, and how the work reveals major spatial and schematic developments in the mapping and characterization of British coal. Their representations instead reveal the wider epistemological shift occurring as the result of mineral extraction--what Iva Peša and Corey Ross call "a complex reciprocal relationship between the growing science of geology and the extraction and transport industries in the late eighteenth and early nineteenth centuries."⁵¹ Throughout the chapter, I consider how coal and canals afford Barbauld a way to engage with the larger matrix around eighteenth-century mapping, commerce, and the burgeoning extractive industry. While "The Invitation" is local in scope and focuses specifically on the rapidly industrializing Lancashire countryside, I contend that Barbauld charts the key role of coal extraction and the canal system to not only show how these features underlie the changing rural landscape but how they connect the domestic landscape within a larger schema of liberal progress. I more fully underscore Barbauld's characterization of Warrington's "science" in "The Invitation" as geo-topographical in scope and claim that the poem's depiction

⁵⁰ In *The Primacy of Perception*, Merleau-Ponty explores the way in which aesthetic works surpass muscular sense in possessing what he calls the "voluminosity of the world." Volume, depth, dimension are all key notions when thinking about the way in which the topical and surface British canal system provides this kind of voluminosity to hidden underground coal mining and invisible structures like supply chain and transport. Maurice Merleau-Ponty, and James M. Edie, *The Primacy of Perception*. ([Evanston, Ill.]: Northwestern University Press, 1964), 166.

⁵¹ See Peša and Ross's piece, "Extractive Industries and the Environment: Production, Pollution, and Protest in Global History." *The Extractive Industries and Society* 8, no. 4 (December 1, 2021), n.p.

of the Warrington pupils' commercial pursuits abroad reveals a deeply important epistemological transition occurring in Britain during the second half of the eighteenth century: the growing importance of commercial geography and its connection to extraction and geological science during this period. However, I also note how Barbauld's treatment of these landscape and economic changes reflects her characteristic ambivalence toward global expansion, and that despite her enthusiasm for extractive schemes and for the expansion of commercial geography, she also recognizes the high human cost of coal mining.

Chapter 1. Standing at the Edge of Prospect: Jago's *Edge Hill* and Early Industrial Vision

In his commentary on Alexander Pope's *Essay on Man*, John Barrell notes that Pope describes the scene of man as a "prospect": a peculiar "point of view as the station occupied by the independent landed gentleman."¹ Indeed, Epistle I opens with Pope's apostrophe to Henry St. John, Lord Bolingbroke²—compelling the Viscount to survey his orderly prospect in all its topographical and productive measure:

Awake, my ST. JOHN! Leave all meaner things
To low ambition and the pride of Kings.
Let us (since Life can little more supply
Than just to look about us and to die)
Expatriate free o'er this scene of Man;
A mighty maze! But not without plan . . .
Together let us beat this ample field,
Try what the open, what the covert yield;
The latent tracts, the giddy heights explore
Of all who blindly creep, or sightless soar;
Eye's Nature walks, shoot Folly as it flies,

¹ John Barrell, "The Public Prospect and the Private View: The Politics of Taste in Eighteenth Century Britain," in *Projecting the Landscape*, ed. J.C. Eade (Canberra: Humanities Research Centre, Australian National University, 1987), 24.

² Bolingbroke, an English politician, government official and political philosopher was famous, in part, for leading the Tories and for his support of the Jacobite rebellion of 1715. Moreover, he gained fame in his support of a real property qualification for a seat in the British Parliament.

And catch the Manners living as they rise . . .³

The narrator's invocation evokes a panoramic viewpoint from a lofty promontory: "free o'er this scene of Man/ A mighty maze!" Here, the narrator compels Bolingbroke to survey the entirety of his holdings from "giddy heights," emboldening the gentleman's absolute oversight over his full dominion, from the open to the covert. This kind of absolute vision is what eighteenth-century rhetorician George Campbell characterizes as analogous to the progress of knowledge, rising from the low and particular to the general and expansive: "perpetually enlarging at every moment, and when we reach the summit, the boundless horizon, comprehending all the variety of sea and land, hill and valley, town and country, arable and desert, lies under the eyes at once."⁴

Barrell claims that the kind of prospect seen in Pope's opening lines is a depiction of social hierarchy--a form of gentlemanly visual possession in which "Those who can comprehend the order of society and nature are observers of a prospect, in which others are merely objects."⁵ Yet it is important to note that in his conception, prospect is differentiated from eighteenth-century notions of "landscape"--the genre of painting and of viewpoint concerned with the particular, the incidental, and the accidental aspects of nature and of lived experience. Instead, prospect partakes in what John Macarthur claims is "a noble generality: an aptitude for oversight, analysis and higher understanding that assumed freedom from necessity. [. . .] this understanding of prospect is based on an ideology in which land was understood as a secure form

³ Alexander Pope, *Pope, Alexander. An essay on man. Address'd to a friend. Part I. London: printed for J. Wilford, at the Three Flower-de-Luces, behind the Chapter-House, St. Pauls, [1733]. Eighteenth Century Collections Online* (accessed February 7, 2023), lines 1-6; 9-14.

⁴ George Campbell, *The Philosophy of Rhetoric. By George Campbell, ... In two volumes. ... Vol. I.* (London: printed for W. Strahan; and T. Cadell; and W. Creech at Edinburgh, 1776), 5.

⁵ Barrell, 23.

of property that guaranteed objectivity in judgement and suitability to govern.”⁶ Barrell interestingly notes the connection between the natural domain and governance, stating that there needs to be opportunity for a

generalizing and abstracting rationality: the successful exercise of the mechanical arts requires that material objects be regarded as concrete particulars, and not in terms of the abstract or formal relations among them. The man of independent means, on the other hand, who does not labor to increase them, will be released from private interest and from the occlusions of a narrowed and partial experience of the world, and from an experience of the world as material. He will be able to grasp the public interest, and so will be fit to participate in government.⁷

Denis Cosgrove and John Guillory follow Barrell in linking the gentry’s disinterested, topographical perspective to their propensity for natural rule. Likewise, they similarly claim a special role for poetry in perpetuating this ideal. Cosgrove notes “The analogy between the rural estate and the state of the realm which is so frequently made in this poetry and in the country house picture reinforces the ideology of landscape in the service of absolutism.”⁸ Cosgrove links this analogy to the mercantilist state, where the system is self-sufficient, mutually cooperative, and serves the interests of the nation, above all. Guillory further asserts that descriptive prospects

⁶ John Macarthur, *The Picturesque: Architecture, Disgust and Other Irregularities* (London ; New York: Routledge, 2007), 190.

⁷ Barrell, 16.

⁸ See Denis E. Cosgrove, *Social Formation and Symbolic Landscape* (Totowa, N.J.: Barnes & Noble Books, 1985), 196.

“depict the view as a representative image of the national order,” where “land” functions metonymically as “nation,” and likewise, ownership as governance.⁹

However, Ingrid Horrocks observes that in the eighteenth century, the gentlemanly position, “which claimed to encompass everything, was annexed to the position of the disinterested gentleman in retirement, and was a fiction born out of a real sense that society was becoming more difficult to comprehend and describe.”¹⁰ Barrell links this loss of visual totality and the fiction of prospect to the rise of commercial society; he asserts that by the end of the century, “prospect as a secure form of property came under scrutiny, as with the introduction of the credit economy, land lost a degree of this symbolic power and its connection to civic duty and inherent nobility.”¹¹ Likewise, Christine Bolus-Reichert notes that as a response to “the multiple disintegrative forces of industrialization, class warfare, imperial consolidation, and urbanism,” the landed classes became even more invested in providing the illusion of a self-sufficient and harmonious landscape under the authority and care of the gentry, but that this could be read as “the desperate reaction of a class in dissolution.”¹² Macarthur further claims that with the rise of the merchant class, the commanding eye of the gentlemen subsequently becomes “cadastral: not so much roaming freely as calculating the area of its dominion; offended not by the concavities of a valley but rather by those fences and walls that marked the limit of real property.”¹³ As the eighteenth century progressed, and industrialization of the rural countryside

⁹ John Guillory, “The English Common Place: Lineages of the Topographical Genre.” *Critical Quarterly* 33, no. 4 (1991): 3.

¹⁰ Ingrid Horrocks, “‘Circling Eye’ and ‘Houseless Stranger’: The New Eighteenth-Century Wanderer (Thomson to Goldsmith).” *ELH* 77, no. 3 (October 1, 2010): 665–87.665.

¹¹ Macarthur, 190.

¹² See Christine Bolus-Reichert, “The Landed Revolution: Humphry Repton, Arthur Young, and the Politics of Improvement.” *Romanticism* 5, no. 2 (November 1999): 204.

¹³ Macarthur, 179.

gathered pace, prospect, in all its totality, was now visibly demarcated as a calculable, limited, and unstable possession. As a result, the landowner's unassailable political and civic power was, likewise, threatened.

This growing tension in the eighteenth century, concerning prospect, dominion, and gentlemanly administration of landholdings elucidates a particularly acute argument regarding the "extent and the problematic of proprietorship"¹⁴; it also illuminates broader issues around the metaphor of the prospect view, and its influence on and depiction within eighteenth-century polite culture, especially in the period's poetry.¹⁵ Like Barrell,¹⁶ Horrocks identifies the unique role of topographical poetry in perpetuating the ideal of prospect during the eighteenth century. Topographical poetry, and its subgenre, prospect poetry, such as John Denham's "Cooper's Hill" (1642) and Alexander Pope's "Windsor Forest" (1713), reached its critical and popular apex in the eighteenth century. Foster notes that prospect poetry is "extremely pertinent to any discussion of visual composition in eighteenth-century poetry, since a necessary but insufficient criterion of the topographical genre is that it 'aims chiefly at describing *specifically named actual*

¹⁴ Barrell further notes how Coleridge evokes the panoramic quality of Prospect in his first version of the Allegoric Vision, where Coleridge states: "She led us to an eminence in the midst of the valley, from the top of which we could command the whole plain, and observe the relation of the different parts, of each to the other, and of all to each." Then, 'with the rapid transition of a dream,' Coleridge finds himself again with the more numerous party, who have come to 'the base of a lofty and almost perpendicular rock', which shuts out the view, the 'only perforation in the precipice is 'a vast and dusky cave', at the mouth of which sits the figure of Sensuality." Barrell notes this motif of Prospect throughout Coleridge's oeuvre—the oscillation between panorama and lowly, sunk situation—and that the "panoramic view may be the notion of a wider society, and the notion of the ability to grasp objects in the form of their relations to each other." Barrell, 16-17.

¹⁵ See Horrocks, 665.

¹⁶ Guillory claims that Barrell's "distinction" is his demonstration of how topographical poems in the eighteenth century "organize their pictorial descriptions not in order to replicate exactly the pictorial scene of landscape painters such as Claude, but rather to produce a textual analogue for the way in which the eye moves across and into the space of painting." Guillory, 4.

localities.” Like other poetic forms during the time, topographical poems absorbed many other genres including the georgic, the country house poem, and the prospect poem: creating what Guillory calls “a new configuration of pre-existing genres.”¹⁷ As Dwight Durling suggests, “topographical poetry, like other forms in the eighteenth century, showed a tendency toward confusion of genres, and felt the influence over a long period of time of the georgic and the Thomsonian descriptive types.”¹⁸ Indeed, Samuel Johnson’s early characterization of topographical poetry reflects its broad character: “A species of composition of which the fundamental subject is some particular landscape, to be poetically described, with the addition of such embellishment as may be supplied by historical retrospection or incidental meditation.”¹⁹ Yet Johnson further claims that topographical verse is so popular with his contemporaries, they have “left scarce a corner of the island not dignified either by rhyme, or blank verse.”²⁰

The loosely formal traditions of the eighteenth-century topographical poem carry well into the nineteenth, as William Lisle Bowles, echoing Johnson’s prescriptions, writes in 1855 that the topographical poem “must consist, first, of the graphic view of the scenery around the spot whence the view is taken; and secondly, of the reflections and feelings which that view may be supposed to excite.”²¹ Throughout the topographical genre’s representations of “place” and

¹⁷ Guillory, 3.

¹⁸ Dwight Leonard Durling, *Georgic Tradition in English Poetry* (New York: Columbia University Press, 1935), 193.

¹⁹ Johnson traces the origin of topographical poetry to John Denham’s “Cooper’s Hill,” a work that confers upon the author “the rank and dignity of an original author.” Samuel Johnson, *The Works of Samuel Johnson* (Dublin, 1793), 55.

²⁰ Samuel Johnson, *The lives of the English poets; and a criticism on their works. By Samuel Johnson*. Vol. 1. (Dublin: printed for Messrs. Whitestone, Williams, Colles, Wilson, Lynch, Jenkin, Walker, Burnet, Hallhead, Flin, Exshaw, Beatty, and White, M,DCC,LXXIX. [1779]), 401.

²¹ William Lisle Bowles, *Preface to Banwell Hill, The Poetical Works of William Lisle Bowles* (Edinburgh, 1855),i.

incidental meditation, the gentleman plays a key role, as both a muse and a silent interlocutor. Horrocks notes that in the topographical tradition, the poet is imagined standing next to the landed gentleman; together, looking over the entire landed prospect, the poet, at once, brings the figure of the gentleman into being, and assumes his view “endeavoring to present some kind of survey in poetic form of the landscape, the nation, and the empire.”²²

However, when we examine the formal and thematic gestures of the mid-eighteenth-century prospect poem, we find that contemporary issues, such as industrial changes to the local topography, become increasingly important in the depiction of prospect, the landscape, and the gentleman’s command over his landed possession. While the incorporation of modern themes is not unique to eighteenth-century topographical poems, the heightened focus on an industrializing landscape as constitutive of the poem’s prospect signals a major departure from traditional represented scenes. Indeed, the gentleman’s “equal, wide survey” of landscape²³ from his singular, stable position--a position that traditionally symbolized his ownership and responsibility to the scene before him--is no longer a naturalized viewpoint. With the rapid changes in landscape, it became increasingly difficult to represent through aesthetic and literary forms. Similarly, the industrial transformations to topography exerted a major influence over the depiction of three-dimensional space and time projection.²⁴ The industrial now asserted its

²² Ibid., 665.

²³ Horrocks, 665.

²⁴ John Wilson Foster provides a more nuanced definition of prospect in that includes its spatiotemporal registers:

A prospect is a view into the distance (space); it is also a view into the future (distance in time), often with the suggestion of opportunity or expectation: in each case, a prospect is a view of something beyond, yet to be achieved or satisfying merely in the spectacle. Understood in both its spatial and temporal senses, the prospect was a frequent culmination of a traditional allegory.

Foster later identifies five broader structural characteristics of the genre, including the “creation of three-dimensional space, the use of space as a patterning device, the use of time-projections,

“presence in literary representations of space,”²⁵ and in ideas of estate improvement. It further opened discussions about the changing parameters of visual composition throughout eighteenth-century poetic traditions.²⁶ Barrell claims that in this period, as “society becomes more various,” it is increasingly difficult to “comprehend the range and organization of activities necessary for its survival and progress.”²⁷ He asserts that the topographical poem must compensate for this lack of cohesion. As a structuring motif and a totalizing impulse, the artist must radically simplify and depopulate the represented landscape.²⁸ Building off Barrell’s claims around the interpretive difficulty in an increasingly fractured eighteenth-century society, Tobias Menely echoes the difficulty of representation. Menely asserts, “The defining representational challenge for a poet—or political economist or statesman—in the eighteenth century was growing social and economic differentiation.”²⁹ He further argues that various mechanisms, including the “prospect view,” help create a unifying vision amidst the multiple, competing forces of advanced agriculture and increasing industrialization.

However, Menely asserts that despite the narrative gesture to unify, topographical poetry instead illuminates the “inadequacy of descriptive verse” for representing differentiation and

the use of extended metaphor, and the development of a controlling moral vision.” See Foster, “The Measure of Paradise: Topography in Eighteenth-Century Poetry.” *Eighteenth-Century Studies* 9, no. 2 (1975): 238. See also Foster, “A Redefinition of Topographical Poetry.” *The Journal of English and Germanic Philology* 69, no. 3 (1970): 404.

²⁵ See Jean-Paul Forster, *Eighteenth-Century Geography and Representations of Space: In English Fiction and Poetry* (Austria: Peter Lang AG, Internationaler Verlag der Wissenschaften, 2014), 14.

²⁶ Macarthur makes the critical point that the enunciative structure of maps, which, in effect take on the aerial perspective of prospect, also “serve as allegories of sovereignty.” See Macarthur, 228.

²⁷ Barrell, *English Literature in History, 1730-80: An Equal, Wide Survey* (New York: St. Martin’s Press, 1983), 29.

²⁸ Guillory, 4.

²⁹ Menely, 128.

mining: what he calls the new mode of energy production “decoupled from the concrete realities and temporality of the stable, agricultural economy.”³⁰ Indeed, with industrialization, and particularly, the growth of the extractive sector, prospect seems to no longer represent stability or unity. Instead, prospect comes to signal what Ann Bermingham identifies as “a marked tension between the old country families and the new industrialists who were creating rural estates and setting themselves up as country squires.”³¹ Bermingham further ascribes the dramatic visual changes to aesthetic programs such as the picturesque, which, like Barrell’s claim of representational cohesion, endorsed and erased the disastrous landscape changes resulting from Parliamentary enclosure and agricultural industrialization³² in the “an attempt to wipe out the fact of enclosure and to minimize its consequences.”³³ Noah Heringman echoes Bermingham’s claims, noting that during the period, “landscape as both an aesthetic and political category is organized around property divisions.” Yet, he also notes that dramatic “Changes in the use of landscapes weaken these assumptions.” He argues that eighteenth-century poets and authors increasingly view the land not as a stable, distant prospect, but rather, as “foreground”: a visual

³⁰ Ibid., 129.

³¹ Ann Bermingham, *Landscape and Ideology: The English Rustic Tradition, 1740- 1860* (Berkeley: University of California Press, 1986), 74.

³² While Bermingham places emphasis on the “great agricultural boom” and the resulting enclosure of two million new acres of land in response to soaring wheat prices, Gregory Clark asserts, instead, that the idea that an agricultural revolution accompanied the first British Industrial Revolution, and indeed contributed “more to the overall productivity growth of the British economy in the years 1700 to 1850” than did changes to the textile industry dominates thinking about the Industrial Revolution period. However, he contends, “when we get down to the level of what was happening in the fields and the barns during the Industrial revolution period, we see little sign of any major changes.” He claims, instead, that there was no agriculture revolution, only modest gains in output through minor and incremental changes in agriculture. See Bermingham, 73; see also Clark, “Too Much Revolution: Agriculture in the Industrial Revolution, 1700-1860,” in *The British Industrial Revolution: An Economic Perspective*, ed. Joel Mokyr (Boulder, CO: Westview Press, 1999), 206.

³³ Bermingham, 75.

phenomenon that marks a shift in visual aesthetics from the distant, general, and cohesive, to the “locally specific and often disorderly.”³⁴ Heringman asserts that far from “invoking the landscape itself. as a national and pictorial ‘totality’ serving to regulate this chaos,” the period’s topographical literature begins to display a “fascination” with material details and landscapes that “resist organization.”³⁵ John Wilson Foster also argues for the influence of the advancing sciences and changing topography in “accounting for the visual organization of landscape poetry.” Like Heringman, Foster argues that changes in the “essential symbolic meanings” of the topographical poem’s locale, and of the poetic perspective, are directly related to transformations occurring within geographical locations and the nature of its terrain. He contends that in the latter half of the eighteenth century, with the rise of taxonomy--the ordering of the world not through resemblance and similitude, but rather, through quantifiable identities and differences--there is a transformation to how one sees and depicts the natural world. The prior harmonious social order, once determined by the gentleman’s disinterested visual apparatus becomes supplanted by other methods, such as scientific surveying and mapping. These new frameworks now characterized visible representational order in the topographical poem. Foster especially notes the transformation to the poet’s “eye,” as it becomes liberated from its “close and traditional identification with the muse and fancy,”³⁶ and instead, becomes a “physical organ or instrument,” no longer capable of taking in all it wishes, across all spatial dimensions and time.

Each of these arguments illustrate the major shift occurring in the notion of prospect and the role of the poet in topographical works in this period. Once viewed as a mythic and

³⁴ See Noah Heringman’s discussion of “prospect” in relation to the Peak District in *Romantic Rocks*, 242-243.

³⁵ *Ibid.*, 242.

³⁶ Foster, “The Measure of Paradise,” 235; 239.

“perspectiveless totality, and a point of view from fancy’s omniscience,” the poet instead becomes a detached observer, who surveys and calculates the land before him. His “eye” is now singular and limited in its perspective; thus, the poem now includes themes of obstruction, shadowing, foreshortening, optical illusions: signs that the poet must now construct a world “from which he is in some sense shut out.”³⁷ Foster tracks this change in topographical poetry from the perspective of “eye-as-muse,” which he argues is capable of “vision in several senses, i.e., of sight and, through the action of imagination upon the objects of *sight*, or *insight*, *hindsight*, and *foresight*.” He contrasts the eye-as-muse with its reverse, the “eye-as-poet.” He claims the poet is capable only of the “first kind of vision,” and even then, it is limited in angle and range, despite its position standing atop a prospect.³⁸

If we return to Pope’s first Epistle, we see that he alludes to precisely this kind of optical limitation. In the “scene of Man” the rural bucolic scene first appears to be comprised of “open,” visible agricultural production: what Pope calls “this ample field.” Yet, he also curiously notes that Bolingbroke’s Lydiard Park estate is equally comprised of “covert yield,” and “latent tracts.” These elements of the estate, while still within Bolingbroke’s entire prospect, signal that there exist productive measures that cannot be fully seen from the giddy heights by the poet’s limited sight. These occluded expanses, nonetheless, are an integral part to the estate’s entire produce and to its continued success. In fact, covert and latent tracts are crucial in understanding an emergent depiction of the eighteenth-century estate within the topographical poem, and the way what was hidden from the eye—namely, its mineral resources—was a crucial component of the changing understanding of prospect, its relation to the rural economy, and shifting ideas of

³⁷ Ibid., 239.

³⁸ Ibid., 239.

mobility and power on the “fixed estate.” In fact, with the introduction of mining, “prospect” was expanded below ground, and the kinds of visual and representative techniques used to view subterranean measures represented a new kind of totalizing vision. Prospect now incorporated emergent geological and speculative discourses for understanding the whole aspect of the landscape, including its mineral stores and hidden veins. Prospect no longer indicated a gentleman’s visual survey, from the top of a hill—but rather, prospect, and its analogue, “prospecting,” represented new material and economic frameworks for spectatorship, speculation, and commercial exploitation: themes that were increasingly outlined and celebrated in the period’s topographical verse.

I argue that Richard Jago’s prospect poem, *Edge-Hill* (1767), interrogates these shifting attitudes around prospect, as well as proprietorship and gentility, in conjunction with the rise of mining schemes upon the British estate. What Tobias Menely describes as a “locodescriptive poem that includes a georgic account, replete with direct allusions to Virgil, of coal mining, iron smelting, and metal manufacturing in the Black Country and Birmingham,”³⁹ Jago’s poem employs topographical poetry’s characteristic discursive style to explore new forms of property ownership, mineral development, and landscape practices. For Jago, “prospect” is a highly complex notion. The term itself traverses symbolic, economic, and social realms. In relation to mining, and “prospecting,” prospect, as depicted in the poem, exposes the latent underpinnings of eighteenth-century rural society—one that was traditionally based on agriculture, but which was rapidly transitioning due to new forms of resource exploitation and credit commerce centered on nonrenewable resource extraction. In considering the visible “estate above

³⁹ Menely, 128.

ground,”⁴⁰ and its relationship to its mines and manufactories, this chapter explores Jago’s particular depiction of the movement whereby “Pre-industrial trajectories of closure, completion, and revival” on the traditional landed estate were starting to give way to “a new vision of civilization in which humans were now dependent on finite, nonliving, nonrenewable stores of earthly resources, incapable of replenishment through seasonal rebirth,” and newly expressed in the topographical poetic form.⁴¹ What is not generally understood about eighteenth-century mining and manufactory, but what becomes clear in Jago’s poem, is the central role of the estate and of the gentry in extractive capitalism. *Edge-Hill* captures the historical reality that industrial entrepreneurs were rarely all-powerful and in possession of their industrial holdings.

“Adventurers”’ influence on mineral development was often pitifully small when contrasted with gentry’s power over mining activities on their estates. Great estates could stimulate mining, but they could also restrict it for aesthetic or moral reasons. The pattern of development in many mining communities and manufactories was thus often largely shaped by property boundaries and wealthy landowners’ short-term and long-term land management and resource prospects.

However, and crucially, this was the period where mines were largely sunk on rural British estates, where the landed gentry used mineral extraction as a measure of economic diversification, to supplement their agricultural schemes both in the domestic realm and abroad. It was the period in which the profession of colliery “viewing” began to come to the fore with figures such as John Buddle Senior, and when the middle class experienced unprecedented growth and economic success and was able to purchase land holdings and its attendant social

⁴⁰ This is Adam Smith’s phrase in his 1776 *The Wealth of Nations*, connecting the rent of an estate above ground to proportions of gross agricultural produce.

⁴¹ See Elizabeth Carolyn Miller’s article, “Drill, Baby, Drill: Extraction Ecologies, Open Temporalities, and Reproductive Futurity in the Provincial Realist Novel.” *Victorian Literature and Culture* 48, no. 1 (2020) : 35.

prestige with the profits from extractive schemes. It was, in sum, the period of prospect that traverses the social, economic, and aesthetic realms, through discount calculations, speculation, and picturesque politics.

Jago's treatment of prospect depicts and celebrates these kinds of movements in mining and extractive land use, and considers coal as the driving component of a more complex matrix of natural resources and industrialization, which also includes the prospecting for iron, and manufactures. The poem also illustrates a growing cognizance of how geology and subterranean landforms are key discourses in the gentleman's administration of his estate. Most crucially, Jago's poetic depiction of mining redresses the commonly held belief that expanding bourgeois ideology and extractive capitalism destabilized the traditional, rural estate. Instead, this chapter claims that Jago's poem depicts commercial character within the landed classes themselves, and illustrates that the landed, fixed estate was, in fact, mobile, fluid, and commercially driven. I claim, however, that despite the fluid and modern character of the landed estate, Jago recognizes that mining, in fact, economically stabilizes the landed classes and increases the gentleman's administration over his lands. Moreover, its depiction within the topographical poem is part of a network of the gentry's "complex and discursive strategies in order to maintain the structure as a whole."⁴² The topographical poem lends aesthetic credibility and permanence to the landed estate; likewise, its depiction of mining as part of the gentleman's prospect confers legitimacy to the practice, and attempts to cohere the rapidly industrializing landscape into a legible and secure prospect.

⁴² Guillory, 13.

In general, “prospect” is a useful hermeneutic to better understand this transition occurring in the topographical poem; it encompasses the kind of rhetorical crossover occurring as the result of extractive capitalism and the way prospect registers simultaneously across economic, aesthetic, and social realms. At once, during the latter half of the eighteenth century, prospect could signify the search for geological resources, sinking mines, financial prosperity, and marriage fitness, as well as denote changing notions of time, futurity, and spatial recognition. Jago’s poem contends with and depicts not only the connection between prospect, mining, and what Miller calls extraction’s own “social and aesthetic forms,” but the poem also addresses the way extraction relates to other kinds of aesthetic movements, namely the picturesque, during the period. At the time of Jago’s composition, “viewing” denoted both the apprehension of landscape through curated aesthetic schemes, as well as an emerging mining profession—a land “viewer”—and a way to speculate about latent mineral resources upon the estate. Consideration of the multivalent forms of “prospect” thus invite us to rethink the traditional reading of the British estate as a wholly conservative marker for agricultural production, social stability, and individual virtue. Instead, what we see through the framework of prospect is that there exists a deep tension within the topographical poem’s examinations of the landed gentry’s exploitation of mineral rights, and the social changes that accompanied their creation and maintenance of the industrial estate to measure and expand earnings. Jago’s topographical poem performs precisely the kind of semantic production of matters of fact in its catalogue of the area’s rich natural resources, but it also connects these facts to more elusive and symbolic concepts including speculation, language, and the imagination.⁴³

⁴³ Rowan Rose Boyson, “Air and Atmosphere Studies: Enlightenment, Phenomenology and Ecocriticism.” *Literature Compass* 19, no. 1–2 (February 2022), 4.

In providing the framework for Jago's exploration of prospect and mineral extraction on the estate, I first outline the aesthetic underpinnings of "prospect" itself, and examine the way different cultural programs such as Addison's *Essays* engage with prospect as a form of gentlemanly visual aesthetics. I then note how the later picturesque movement defines prospect as a marketable landscape feature—one that can be curated and purchased by landholders. I further investigate how the poem's employment of geological discourse provides an epistemic justification for prospecting on the British estate. Similarly, I explore how *Edge-Hill* ties together geology, landscape improvement, and imagination in its depiction of "prospecting," and characterizes the act as a gentlemanly endeavor and a necessary measure to increase his standing and to stabilize the estate.

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The connection between prospect and the gentlemanly administration of the landed estate is what Macarthur calls "an ancient idea." He identifies this connection, and prospect's ties to visual possession in Sir Henry Wotton's first treatise on architecture: "A well-chosen Prospect: which I will call the Royalties of Sight. [. . .] There is a Lordship likewise of the Eye (as of the feet) which being a raunging and Imperious, and (I might say) an usurping Sense; can indure no narrow circumscription; but must be fedde, both with extent and varieties."⁴⁴ The governing aspect of prospect for Wotton is the beholder's vision, what Wotton calls "the Royalties of Sight," that encompasses and rules the visual landscape in all of its range and detail, its "extent and varieties." Wotton's eye not only commands not only the entire view, but it is also enlivened

⁴⁴ See Henry Wotton, Izaak Walton, and Edward Hyde Clarendon, *Reliquiae Wottonianae. Or, A Collection of Lives, Letters, Poems; with Characters of Sundry Personages: And Other Incomparable Pieces of Language and Art* (London: Printed by Thomas Maxey, for R. Marriot, G. Bedel, and T. Garthwait, 1651), 204.

and moved by all aspects of its secure domain. The sight as an ordering principle is echoed in Joseph Addison's privileging of the eye, what Julie Park identifies as "far-reaching, enduring, and capacious sight."⁴⁵ Addison names sight as

The most perfect and most delightful of all our senses. It fills the mind with the largest variety of ideas, converses with its objects at the greatest distance, and continues the longest in action without being tired or satiated with its proper enjoyments. The sense of feeling can indeed give us a notion of extension, shape, and all other ideas that enter at the eye. Our sight [. . .] spreads itself over an infinite multitude of bodies, comprehends the largest figures, and brings into our reach some of the most remote parts of the universe.⁴⁶

As a natural extension of the eye, Addison further proposes aesthetic values for the gentlemanly discernment of natural scenery: of which prospect is an important element. It encompasses the "great or the grand or the august, distinguished by a 'rude kind of magnificence' discerned in mountains, a wide plain, or the open sea."⁴⁷ Addison's conception of prospect vacillates between sublime nature⁴⁸: "the rude prospect of rocks," and "the near prospect of the Alpes, which are broken into so many steps and precipices, that they fill the mind with an agreeable kind of horror. " It also includes a more disinterested aesthetic position, characteristic of Pope's gentleman viewer. He notes that when observing a vast swath of natural scenery, what "leaves the eye,"

⁴⁵Julie Park, "What the Eye Cannot See: Interior Landscapes in 'Mansfield Park.'" *The Eighteenth Century* 54, no. 2 (July 1, 2013): 169.

⁴⁶ See Addison, "The Pleasures of the Imagination,"

⁴⁷ George B. Parks, "The Turn to the Romantic in the Travel Literature of the Eighteenth Century." *Modern Language Quarterly* 25 (March 1964): 27.

⁴⁸ Addison, "Remarks on Italy," in Joseph Addison and Adolph Charles Louis Guthkelch, *The Miscellaneous Works of Joseph Addison* (London: G. Bell and Sons Ltd., 1914), 234.

becomes a “vast uninterrupted prospect for many miles.”⁴⁹ In Essay 411 of the *Spectator*, Addison describes the primary pleasures of the imagination as being acquired by “opening the Eye”; he later proposes that class position determines a man’s extent of pleasures, of which Prospect is an important facet:

A Man of a Polite Imagination, is let into a great many Pleasures that the Vulgar are not capable of receiving. He can converse with a Picture, and find an agreeable Companion in a Statue. He meets with a secret Refreshment in a Description, and often feels a greater Satisfaction in the Prospect of Fields and Meadows, than another does in the Possession. It gives him, indeed, a kind of Property in everything he sees, and make the most rude uncultivated Parts of Nature administer to his Pleasures.⁵⁰

Addison connects the gentleman viewer’s ability to “see beyond what lies before his eyes” to another sense: his imaginative capability. Anne F. Widmayer argues that Addison’s particular distinction between “Prospect” and “Possession” in this essay is a reminder to the merchant middle class, that aspiration to the “Pleasures” and the politeness of aristocratic culture is not simply realized through the accumulation of wealth, and the purchase of landed estates. As Widmayer states, “one must learn how to reproduce the cognitive mapping that is the natural property of the gentleman as it has been refined by his exposure to art.”⁵¹

⁴⁹ Addison, 19; 86; 201.

⁵⁰ Joseph Addison, *The spectator*. ... Vol. 6. (London: printed for S. Buckley, at the Dolphin in Little-Britain; and J. Tonson at Shakespear's-Head, over-against Catherine-Street in the Strand, [1712-15] [1713]), 86.

⁵¹ Anne F. Widmayer, “Mapping the Landscape in Addison’s ‘Pleasures of the Imagination.’” *Rocky Mountain Review of Language and Literature* 50, no. 1 (1996): 22.

He further discerns between aesthetic and economic prospect in his description of the Tirol; he depicts a “vast extent of naked rocks and mountains,” and a “long forest of Fir-trees” rising up “so regularly to give the view of a whole wood at once”:

The time of the year, that had given the leaves of the trees so many different colours, completed the beauty of the prospect. But as the materials of a fine landskip [*sic*] are not always the most profitable to the owner of them, we met with but very little corn or pasturage for the proportion of the earth that we passed through, the lands of the Tirol not being able to feed the Inhabitants.⁵²

Addison recognizes a significant difference between an aesthetic landscape and productive land—one prospect feeds the eye, while the other is signified by its visible agricultural production and its economic potential. While the Tirol’s prospect lacks Addison’s ideal combination of natural beauty and utility, he instead finds a perfect unity of aesthetic and productive landscapes in the verse of Virgil’s *Georgics*—what Addison characterizes as the “meanest and least improving” of the ancients’ verse, “but the most pleasing and delightful.” The georgic, for Addison, provides a perfect model of prospect, one that blends the labor and objects of the material world with the poetic imagination. Addison declares,

this kind of Poetry I am now speaking of, addresses it self wholly to the imagination: it is altogether conversant among the fields and woods, and has the most delightful part of Nature for its province. It raises in our minds a pleasing variety of scenes and landscapes, whilst it teaches us; and makes the dryest of its precepts look like a description. A

⁵² Addison, “The Isle of Caprea,” in *The Miscellaneous Works*, 88.

Georgic therefore is some part of the science of husbandry put into a pleasing dress, and set off with all the Beauties and Embellishments of poetry.⁵³

Nick Grindle argues that for Addison, the narrator of the georgic poem--the landed gentleman--derives his narrative power from “his superior imagination.”⁵⁴ He further observes what he calls “the intimate connection between the reader’s imagination and the exterior world of real objects and things,” and Addison’s claims for imagination’s particular role in perception and, therefore, on the narrator’s political identity and “capacity for practical action.”⁵⁵ Indeed, Addison states about the language of Virgil’s *Georgics*, “we receive more strong and lively *Ideas* of things from his words, than we could have done from the objects themselves: And find out imaginations more affected by his descriptions, than they would have been by the very sight of what he describes.”⁵⁶ Addison adduces that poetic language not only enhances the “*Ideas* of things,” and the objects of the senses, but that poetic language,⁵⁷ endows the poet with a special ability to augment the reader’s “very sight” and scenes of prospect through his verse.

The later picturesque movement, too, capitalized on capturing and augmenting “prospect,” in relation to viewpoint, social display, and aesthetics.⁵⁸ In his study of what he calls the “broadening social and institutional base” that gave impulse to “examination of the Earth,” Roy Porter claims that with the “growth of the picturesque, attention turned to landscapes.” He

⁵³ Addison, *An Essay on Virgil’s Georgics*, in *The Miscellaneous Works*, 4.

⁵⁴ See Nick Grindle, “Virgil’s Prospects: The Gentry and the Representation of Landscape in Addison’s Theory of the Imagination.” *Oxford Art Journal* 29, no. 2 (2006): 185.

⁵⁵ *Ibid.*, 188.

⁵⁶ Addison, *The Miscellaneous Works*, 254.

⁵⁷ Grindle also notes that Addison’s model of the imagination closely follows what J. G. A. Pocock has called “the epistemology of the investing society,” an epistemology dependent upon symbolic exchange (paper for gold, promises to buy or sell at a future date), where “the objects of its knowledge are not altogether real, and rely on representation, without being entirely fantastical.” Grindle, 192.

⁵⁸ *Ibid.*, 190.

asserts, “Defoe’s “*Tour* (1724) had little interest in the natural landscape, finding non-cultivated land simply dreary waste. But by the time of, say, Richard Pococke in mid-century landscape was becoming interesting in its own right. In the age of Gilpin, it became picturesque.”⁵⁹ Henry V.S. Ogden and Margaret S. Ogden remark that purchases of topographical landscapes were motivated by “esthetic interest” and the “interest in places and buildings gratifying to personal, local, or national pride,” as well as to own landscapes that resemble landscapes seen on the Grand Tour.⁶⁰ Land ownership and improvement schemes were thus an important sign of gentlemanly conduct and cultivation through travel, education, and consumption.

Barrell, too, makes the claim that in the mid-eighteenth century there was a major change in the attitude toward land, as landscape “in nature, or as represented in the literature and the visual arts,” becomes an “important interest of the cultivated.” He tracks a major shift in landscape from early pictorial representations of the countryside as the “subject itself of a picture, or by-work in a portrait,” to what he describes as “more loose” visual phenomenon: where landscape is “a tract of land, or its representation in painting, which lay in prospect—that is to say, which could be seen all at once glance, from a fixed point of view; and in this respect both senses referred to particular locations, whether the locations themselves were real or imaginary.”⁶¹ He further argues that “a person of much education in the eighteenth century would have found it very hard, not merely to describe land, but also to see it, and even think of it

⁵⁹ Roy Porter, *The Making of Geology: Earth Science in Britain, 1660-1815* (Cambridge [Eng.]; New York: Cambridge University Press, 1977), 143.

⁶⁰ Henry V. S., Ogden, and Margaret S. Ogden, *English Taste in Landscape in the Seventeenth Century* (Ann Arbor: University of Michigan Press, 1955), 158-159.

⁶¹ Barrell notes that the general sense of the word was not easily separated from its more particular instances. He attributes this, in part to the definitions given by Johnson and later the OED, the latter’s definition for “landscape” is a region; the prospect of a country” which Barrell takes to refer to the general sense of the word, while Johnson’s examples of landscape, conversely, refer to particular landscapes. See Barrell, *The Idea of Landscape*, 1-2.

as a visual phenomenon, except as mediated through particular notions of form.”⁶² Tim Fulford similarly argues that the picturesque “was an attempt to appeal to and perpetuate the power of gentlemanly taste: by agreeing to enjoy a landscape that presented disorder in palatable and safe form, readers could retain faith in the ability of their judgment to discover, disinterestedly, an order within the world, despite its wildness.”⁶³

Indeed, Barrell’s claim that form and the cultivation of “correct taste” in poetry, as well as in landscape art, bolstered prospect as a measure of gentlemanly taste, is seen in William Salmon’s early *Polygraphice*: a work in which he advises the gentleman painter to compose his landscapes to simulate the perspective from the top of a prospect: “Make your Landskip to shoot (as it were) away, one part lower than another, making the nearest hill or place highest, and those that are farther off, to shot away under that, that the Landskip may appear to be taken from the top of an hill.”⁶⁴ William Gilpin, whom Barrell identifies as “the first theorist of the Picturesque,” later explores ideas of prospect--in relation to the rural estate--what he describes as a process whereby the “Eye is so taken up with Views at a distance.” In his 1748 treatise, *Dialogue upon the Gardens of the Right Honourable the Lord Viscount Cobham, at Stow in Buckinghamshire*, his interlocutors, Calloph and Polyphth discuss prospect and property boundaries, where Calloph inveighs against a “confined View,” to which Polyphth responds, “I am not against a Prospect’s being bounded even by the blue Hills in the Country”;

⁶² Barrell, 1.

⁶³ See Tim Fulford, *Landscape, Liberty and Authority: Poetry, Criticism and Politics from Thomson to Wordsworth* (Cambridge: Cambridge UP, 1996), 14-15.

⁶⁴ William Salmon, *Polygraphice: Or, the Arts of Drawing, Engraving, Etching, Limning, Painting, Vernishing, Japaning, Gilding, &c. In Two Volumns [sic]. ... The Eighth Edition. Enlarged, ... By William Salmon, M.D* (London: printed for A. and J. Churchill. And J. Nicholson, 1701), 35. Jonathan Richardson in his 1715 *Theory of Painting*, also notes that painting, like other arts, gives us so much pleasure at the sight of natural pictures, a prospect, a fine sky, a garden, &c.” See Richardson, *The Works* (London: printed for T. Davies, 1773), 3.

further asserts that Prospect should afford “Pleasure at any distance,” but that the ideal estate is not simply one that possesses a beautiful prospect, but rather, it is one that actively engages in improvement schemes. Indeed, Polyphth concludes his dialogue imagining himself into the role of a landed gentleman, “Were I a Nobleman,” and the kinds of productive alterations like farms, fields, and he would cultivate and craft, “Instead of useless Temples” and “unmeaning Vistas.” Polyth, in fact, ends his dialogue with the epigram: “Tis Use alone that sanctifies Expencc.”⁶⁵

Gilpin’s *Dialogue* illustrates an emerging tension between the neoclassical ideal of land proprietorship—one that serves the gentleman’s dual aesthetic and utilitarian purposes—and purely picturesque schemes as a marker of the landed classes’ pleasure and taste. Indeed, this tension comes to the fore with the growing popularity of the picturesque in the eighteenth century, in conjunction with the rapidly enclosing British countryside, and the loss of small, agricultural holdings. Barrell makes the claim that the picturesque aesthetic could no longer accommodate both “cultivation and commercial productivity,”⁶⁶ and Elizabeth Bohls writes that the picturesque denies recognition of “the material needs of its inhabitants,” and how “land shaped by people and serving their needs through agriculture, or even industry, is not the stuff of picturesque description.”⁶⁷ Stephen Copley, too, notes how the “vocabulary of the picturesque” resists the utility of industry and agriculture necessary for human life.⁶⁸ Yet, despite Gilpin’s

⁶⁵ See William Gilpin, *A dialogue upon the gardens of the Right Honourable the Lord Viscount Cobham, at Stow in Buckinghamshire*. London: printed for B. Seeley, Bookseller in Buckingham, and sold by J. and J. Rivington, in St. Paul's Church-Yard, MDCCXLVIII. [1748], 9; 45.

⁶⁶ Benjamin Colbert, “Aesthetics of Enclosure: Agricultural Tourism and the Place of the Picturesque.” *European Romantic Review*, 13, no.1 (2002): 24.

⁶⁷ Elizabeth A Bohls, *Women Travel Writers and the Language of Aesthetics, 1716–1818*. Cambridge: Cambridge UP, 1995), 95.

⁶⁸ Stephen Copley, “William Gilpin and the Black-Lead Mine,” in *The Politics of the Picturesque: Literature, Landscape and Aesthetics since 1770*, edited by Stephen Copley and Peter Garside, 42–61 (Cambridge, Eng.: Cambridge University Press, 1994), 48.

later assertion that the picturesque “has nothing to do with the affairs of the plough, and the spade,”⁶⁹ we see in *Dialogue* that the gentleman’s ideal “prospect” possesses a utilitarian character.⁷⁰ Likewise, his viewing pleasure is intimately bound up with visible production and cultivation upon the estate. Indeed, in Gilpin’s later writings, he claims that prospect “softens” marks of labor— “the spade, and the plough; the hedge, and the ditch.” Yet, he also asserts that neither “wild, uncultivated country,” nor “unbounded tracts of cultivation” produce prospect’s desired aesthetic effect. Instead, the unique and productive “English landscape affords a species of rich distance, which is rarely to be found in any other country.”⁷¹ Gilpin thus illustrates that prospect is not simply an aesthetic feature; rather, its “rich distance”⁷² also possesses within it a productive and economic character.

Landscape designer Humphry Repton later explores prospect, and how to stage its effects upon the British estate through picturesque design. In his *Red Book for Heathfield Park*,⁷³ Repton distinguishes between landscape and prospect:

⁶⁹ Gilpin, 1:298.

⁷⁰ Benjamin Colbert astutely points out that Gilpin frequently contradicts himself, and indeed, lauds the marriage of beauty and utility in his later writings: “Yet it is also worth remembering the Gilpin who exclaims how he “cannot help lamenting the capricious nature of picturesque ideas” which “run counter to utility” (*Remarks* 1: 7), or the Gilpin who equivocally states: “We esteem it fortunate, when the idea of picturesque beauty coincides with that of utility. The two ideas are often at variance. When they are so, we cannot help it; but must feel it with regret.” See Gilpin quoted in Colbert, 25.

⁷¹ William Gilpin, *Observations, Relative Chiefly to Picturesque Beauty, Made in the Year 1772: On Several Parts of England; Particularly the Mountains, and Lakes of Cumberland, and Westmoreland. ... By William Gilpin* (London: printed for R. Blamire, 1786), 1:323.

⁷² Colbert points out that this passage reveals Gilpin’s tacit acknowledgement of “sources of wealth in managed land—timber, rents, cultivation—that produce leisure for picturesque pursuits among the tourist classes to whom he appealed.” See Colbert, 26.

⁷³ Repton’s *Red Books*—a term referring to their red Morocco bindings--were famous during the period among the British landed gentry. Repton presented his landscape advice to clients in these documents, starting with a ground plan summary. An “introductory epistle would address the client in suitably deferential terms and recapitulate the terms of the commission,” then followed by a description of the property, its scenic attractions, defects, and suggestions for

Numerous objects so wonderfully combined in this extensive view; the house, the church, the lawns, the woods, the bold promontory of Beachy Head, and the distant plains bounded by the sea, are all collected in one splendid picture, without being crowded into confusion.

This view is a perfect *landscape*, while that from the tower is rather a *prospect*; it is of such a nature as not to be well represented by painting: because its excellence depends upon the state of the atmosphere which is very hostile to the painter's art. An extensive prospect is most admired when the distant objects are most clear and distinct; but the painter can represent his distances only by a certain haziness and indistinctness, which is termed aerial perspective.⁷⁴

Here, Repton clarifies the elements needed for the landscape plan—one that combines aspects of a “perfect landscape,” and “extensive prospect,” with the gentleman's unique social position--allowing him to properly see the limitless nature of his landed possessions,⁷⁵ and likewise, to

improvements. Approaches to aspects of the estate would be accompanied by watercolor illustrations, and advice from Repton urging the client to follow his good advice to enhance the “enjoyment of the estate but also display it in a manner befitting the owner's good taste, family pride, and social status.” See “About the Red Books,” The Morgan Library & Museum. <https://www.themorgan.org/collection/Humphry-Reptons-Red-Books/About-the-Red-Books>.

⁷⁴ Humphry Repton, *Landscape Gardening Sketches and hints on landscape gardening. Collected from designs and observations now in the possession of the different noblemen and gentlemen, for whose use they were originally made. The Whole Tending to Establish Fixed Principles in the Art of Laying out Ground. By H. Repton, Esq.* (London: printed by W. Bulmer and Co. Shakspeare printing-office, and sold by J. and J. Boydell, Shakspeare Gallery; and by G. Nicol, Bookseller to his Majesty, Pall-Mall, [1794]), 194.

⁷⁵ It is important to note, however, that a major feature of Repton's landscape design was to occlude scenes of labor and visible production from the estate's overall prospect. Bolus-Reichert argues that Repton's schemas for “refined taste and political prudence required the removal of the farm from the direct command of the house, thus concealing the source of the landowner's income. Two important goals were achieved in the redefinition and redistribution” of scenes of labor: the landowner was no longer linked to visible exploitation of tenants and laborers in the production of his income, and “the opening out of the lawn gave the impression of unenclosed

experience the full extent of his own power.⁷⁶ Repton is careful to distinguish between vastness and grandeur in his idea of prospect, noting that there is “no error so common as an attempt to substitute extent for beauty in park scenery, which proves the partiality of the human mind to admire whatever is vast or great.” For Repton, a carefully curated prospect is imbued with distinct power associations. One does not simply display or own a prospect; instead, it is the means whereby landowners naturalize their hegemony, and where the ability to view, in the proper sense, is analogous to the power of rule.⁷⁷ Yet, his characterization of prospect is unique from other picturesque treatments on the topic: a manmade “tower” and good weather are, for Repton, key elements in the gentleman’s visual “access” to prospect. Repton’s replication of prospect through the tower is what Ogden and Ogden identify as landscape gardening’s “topographical demonstration” of aristocratic taste, and reflects the vogue for landscape design increasingly fueled by the “new and wealthy merchant class” bent on “acquiring the culture of the aristocracy.”⁷⁸ The tower provides the artificial height necessary to view one’s prospect, and

freedom, while also elevating the consequence of the owner” and of his refined aesthetic taste. See Bolus-Reichert, 211.

⁷⁶ Interestingly, Julie Park observes that Repton is also preoccupied with “boundaries, both visible and invisible, and an attention to the way space is defined by the variables of perspective.” In fact, like Addison, Repton himself notes that “the imagination delights in filling up those parts of the picture which the eye cannot see,” and promoted avenues that passed over hills, leaving “the fancy to conceive of its termination.” Like Addison’s conception of a space beyond sight, Repton too points to the invisible quality of prospect. Repton qtd. in Park, 171.

⁷⁷ Stephen Copley and Peter Garside note in their Introduction to *The Politics of the Picturesque*: The picturesque translates the political and the social into the decorative, and so, as the route to the naturalization of the picturesque image. The clearest instance of this translation is the picturesque deployment of motifs for aesthetic effect which in other circumstances are the indicators of poverty or social deprivation.

Copley and Garside go on to assert that recent criticism on the domestic landscape portrayed in the picturesque “can be seen to shape British (or wide European) accounts of colonial landscapes and cultures.” See Stephen Copley and Peter Garside --, et al. *The Politics of the Picturesque: Literature, Landscape, and Aesthetics Since 1770* (Cambridge; New York: Cambridge University Press, 1994), 6.

⁷⁸ Ogden and Ogden, 163.

subsequently for the landowner to become “sovereign from what was seen.”⁷⁹ Moreover, Repton notes that prospect is not consistent nor unending, but rather, “its excellence depends on the state of the atmosphere,” and it is “most admired when the distant objects are most clear and distinct.” His statement thus highlights that prospect is not an entirely natural phenomenon, but rather, it is curated and contingent on weather and on purchased, manmade structures. Indeed, Repton’s *Red Book* illustrates, if, in the instance that prospect was not a natural topographical feature of the landed estate, it could instead, be bought, built, and simulated.

The commercial popularity and accessibility of prospect is further seen in Uvedale Price’s 1794 *Essay on the Picturesque*; Price claims that amongst those who wish to improve their estate: “extensive prospects are the most popular of all views,” and that the “prospect shewer has great pleasure and vanity in pointing out these vouchers, so the improver, on his side, has full as much in being pointed at.”⁸⁰ Here, prospect possesses a dual, Janus-faced aspect: it simultaneously reflects the gentleman’s popular taste to the external community, and mirrors back upon him his own prospect’s emblematic power. In Macarthur’s words, prospect was now an “instance of an ideational architecture,”⁸¹ that reflected the good taste and cultivation of the gentleman and designer, and a visible sign of his purchase power, to which others of his class and the upwardly mobile classes aspired.

This shift in prospect--once a landed gentleman’s viewpoint and ideology predicated on land as an unchanging and “secure form of property” --to a contingent perspective based on manmade structures, artifice, and consumerism, highlights what Macarthur identifies as the

⁷⁹ Macarthur, 196.

⁸⁰ See Uvedale Price, *An Essay on the Picturesque, as Compared with the Sublime and the Beautiful; and, on the Use of Studying Pictures, for the Purpose of Improving Real Landscape, by Uvedale Price, Esq.* (London: printed for J. Robson, 1794), 138-140.

⁸¹ Macarthur, 108.

“problematic of proprietorship”⁸² or, major changes occurring in the landed gentry’s unbounded authority in the second half of the eighteenth century. Throughout the ages, “Prospect connoted the elevation of the viewpoint and was a kind of kingship where the power to see analogized the power to dispose.” Yet, he argues that despite the gesture to naturalize landowners’ claims to hegemony and rule, popular picturesque schemes reveal that landscape instead, relies on “contingency: the viewpoint had no significance in itself but allowed a surreptitious appropriation, a proprietorship, that relied on opportunity rather than rights, and a power that did not exist in exclusivity of possession so much as position.”⁸³ The rise of the merchant class, who could now purchase “possession” and “position” in landed estates, eroded such distinctions, and ushered in a new era of purchase power, and of subsequent capitalization and improvement of the estate. The “mythic and ideal nature” of prospect was now seen to have very real and material foundations, and likewise, the gentleman’s close and traditional identification with this prospect was called into question, as it was not something that could be bought and cultivated through popular aesthetic programs.

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1767 saw the publication of the first of Arthur Young’s works, *The Farmer’s Letters*, that took as its subject the rural landscape and agriculture of Great Britain⁸⁴ and is a work that George B. Parks calls a combination of “sober attention to crops, prices, and farming methods with rhapsody over scenery: a most unlikely combination, but obviously fashionable or the

⁸² Ibid., 190.

⁸³ Ibid., 228.

⁸⁴ This 1767 work is *The Farmer's Letters to the People of England: Containing the Sentiments of a Practical Husbandman, on Various Subjects of the Utmost Importance ... to Which Is Added, Sylva, or, Occasional Tracts on Husbandry and Rural æconomics*. London: Printed for W. Nicoll, 1767.

young man would not have made it. His potboilers abound in the new clichés, with ‘picturesque confusion’ and enthusiastic response to both the sublime and the beautiful.”⁸⁵ 1767 was also same year that Young left his home at Bradford and made his famous journey that formed the basis of his popular volume, *A Six Weeks’ Tour though the Southern Counties of England and Wales* (1768). Parks’s derision notwithstanding, Young’s *Letters* and *Tours* mark an important turn in topographical writing, as the works highlight Young’s unique textual approach—one that blends his practical concerns around enclosing wasteland, fertilizing depleted soils, and measures of agricultural output, with a traveler’s aesthetic response to the rural landscape and to the picturesque beauty of landed estates. What becomes clear in Young’s writing, is his marked concern with increasing the economic output of the estate, through modern farming techniques and increased diversification of the land, what he calls “the highest degree of goodness” of the land of an estate.⁸⁶ Indeed, he combines gentlemanly civic duty with proper estate management, stating, “But noblemen and gentry of large estates, cannot do more public service to their own posterity and their country, than by planting such tract of land as will not answer so well otherwise to cultivate.”⁸⁷ Young does not, however, promote the persistence of common property and for the continuation of shared pasture and grazing rights. Rather, he advocates for the enclosure of private land, and for the diversification of agricultural output, eliminating undercapitalized and unproductive small holdings, and increasing productivity and profits.⁸⁸ For

⁸⁵ Parks, 29.

⁸⁶ Young, 125.

⁸⁷ *Ibid.*, 255-256.

⁸⁸ In fact, Young later publishes a pamphlet, *The Example of France a Warning to Britain* (1793), during the French Revolution, in which he denounces the abolition of property rights and attempts to convince his readers that the peasantry would have benefitted more from his schemas for improvement. Yet he also criticizes the *ancien régime*’s failure to improve their estates. In his observations of the “pitiable management” of the fields, and the “misery” of the great houses, he asserts, “Yet all this country is highly improveable, if they knew what to do with it: the property,

Young, an ideal prospect is best evinced in immense tracts of the rural landscape in all its enclosed and productive measure. Indeed, Young imagines the gentleman's future prospect as a scene of full cultivation,

A prospect far different from flocks of sheep wandering over the sluggard's walks, followed each by their shepherd with a boy and a dog! Think of the wealth such a cultivation as I have hinted at, pours into the kingdom! Think of the employment given to the best hands a nation boasts! Think of this improvement; and then behold in the same country as many sheep as ever.

Young's speculative vision embodies his idea where "those very tracts of land are now covered with as fine barley and rye as any in the world—and great quantities of wheat besides." Young's conception of prospect and of "viewing" estate holdings, is not one of disinterested landscape aesthetics or picturesque schemes. Instead, his view is resource-intensive, focused on what he calls "the prospect of profit," and is based on the landed classes' vigorous cultivation and pasturing, as elements of intensifying agricultural improvement.⁸⁹

perhaps, of some of those glittering beings, who have figured in the procession the other day at Versailles. Heaven grant me patience while I see a country thus neglected—and forgive me the oaths I swear at the absence and ignorance of the possessors." See Young, *Abstract of the Example of France a Warning to Britain*. By Arthur Young, Esq. F.R.S. (London: Printed for W. Richardson, No. 91, Royal-Exchange, London, 1793), 19. Christine Bolus-Reichert engages in an extended commentary on Young's later political affiliations and the influence of Burke on Young's shifting ideology around France's land use. She claims that when he returned to France in 1788-89, he "became increasingly involved in the debate around liberty and property, and the design of good government." See Bolus-Reichert, 206-210.

⁸⁹ Barrell famously argues about Young, and other agriculturalists during that time, "It is not too much to say that as agriculturalists they felt themselves to be corrupted by the Picturesque," and that Young's inclusion of sublime and picturesque views in conjunction with enclosed estates is a measure of Young's "embarrassment at his own taste." He continues, "it becomes hard to believe that in each case the productive landscape is not being introduced to distract us from the unproductive landscape Young in one way prefers." Indeed, Barrell finds in Young's descriptions the inability for "real reconciliation" between the "interests of the practical farmer and the picturesque writer." See Barrell, 78; 82-83.

Young's focus on improvement throughout *Letters* is almost purely agricultural in scope. Indeed, there is scant mention of British coal mining, or other scenes of extraction throughout Young's early works. In *Letters*, he calculates that "London annually consumes 21,600,000 bushels of coals; now a bushel I have found, by experiment, yields a peck of ashes, that is 5,400,000 bushels which at 1½ *d.* per bushel is 33,750 £." ⁹⁰ He also estimates that this immense amount coal ash, produced by London households, is currently being wasted, and can instead be put to good use, in conjunction with animal manure, to fertilize crops and regenerate soils in the countryside. Yet, Young also notes that one of the costs to such coal consumption is higher mortality rates in London: he connects the higher death rates in London to excessive overcrowding and to the city's pollutive atmosphere, what he sees as the result of "the quantity of sea-coal consumed." Young asks, "Can any one imagine that *health* stands as good a chance in the midst of the stinking effluvia [. . .] breathing the sea-coal smoke from the chimneys of above 105,000 houses? And existing five miles from *country* air?" ⁹¹ Young further calculates the costs of "Stock necessary for an arable farm of the first Class" based on the farm's proximity to mines. He surmises that in counties distant from iron mines and coals such as in "part of *Gloucestershire*, in *Monmouthshire*, and *Glamorganshire*," the cost of farm implements, a "cart with ladders," and a plough, is estimably higher than in those counties. ⁹²

While Young's commentary on the growing rural extractive economy and mining's role on the estate is limited, his observations in *The Farmer's Letters* provide valuable evidence regarding his cognizance of several key mining districts during the time. Additionally, Young marks the effects of coal burning on the atmosphere and on Londoners' health and mortality

⁹⁰ Young, *The Farmer's Letters*, 362.

⁹¹ *Ibid.*, 348.

⁹² Young, 133.

statistics, even though he sees coal as a largely urban consumer phenomenon, rather than one connected to the larger improvement schemes on the rural estate. However, his writings, like Gilpin's observations, reveal his tacit understanding of the various "sources of wealth" upon the managed estates, and the important mutual relationship between coal and rural improvement schemes as part of wider diversification measures.

In fact, agriculture and coal extraction enjoyed a reciprocal relationship on the rural estate, as mining was an important part of the larger improvement and capitalization of the rural estate's natural wealth. Likewise, coal played an increasingly important role in Britain's energy needs during this time, and likewise, its production increased in proportion. E.A. Wrigley estimates that in 1700, Britain generated 50 percent of its total consumed energy from coal; by mid-century, the time of Young's composition, this percentage increased to 60 percent.⁹³ John Nef's famous study, *The Rise of the British Coal Industry* forcefully claims that "There can be no doubt that the coal industry provided the principal fields for the investment of British capital." Nef connects the sources from which this capital was derived, the manner of its investment, and the power incurred through control over this capital to greater "insight into the financial organization within the coal industry itself," which he then argues possesses "a bearing upon the whole development of economic and social life before the Industrial Revolution." He declares, "It is fairly obvious that the capital must have come, and investigation shows that in fact it did come, mainly from the landed families and from the merchant class within the towns."⁹⁴ While Young may not address the capitalization of the rural estate from coal measures, explicitly in his

⁹³ Wrigley, 36-38.

⁹⁴ See John U. Nef, *The Rise of the British Coal Industry* (Hamden, Conn.: Archon Books, 1966), 3.

early writing, in fact, we do see the cognizance of coal mining and mineral wealth as an important division of the gentry's landed prospect addressed in the period's poetry, namely, in Richard Jago's *Edge-Hill*.

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A work exactly contemporaneous with *The Farmer's Letters*, Jago's 1767 topographical poem *Edge-Hill* celebrates the expansion of the mineral economy across Britain and illustrates that the industrialization measures, what others have taken as a sign of the inevitable disintegration of the traditional agricultural economy and an assault on the gentry's aesthetic and moral stability, are in fact, measures that stabilize and expand the estate. Moreover, Jago's depiction of mining and manufactories throughout the work challenges the notion of a deepening conflict between mineral extraction and aesthetic unity in the rural countryside. The poem instead provides crucial evidence that during the mid-eighteenth century, coal mines and mineral schemes do not, in fact, represent a fundamental disjunction between the coal consumption of the urban centers and rural agrarian improvement. Likewise, it illustrates that the commercial values of mobility, industry, and production⁹⁵ are, in fact, the very values and measures whereby gentry creates its own stability and power through mining and industrialization on the estate. Jago's topographical poem reminds the reader that the estate's entire prospect is reliant not simply on disinterested, gentlemanly oversight but on their "a degree of commercial sense"⁹⁶ and prospecting schemes. What *Edge-Hill* makes explicit, in fact, is that British landowners not only

⁹⁵ Colbert identifies in the picturesque tourist the representation of "claims of productive wealth over those of inherited wealth; his 'command' of a landscape bespeaks its accessibility to his physical presence, his taste, and his understanding, all of which mirror the economic integration of the nation rather than the paternal presence of a landed master." See Colbert, 29.

⁹⁶ Peter Coss, *The Foundations of Gentry Life: The Multons of Frampton and their World 1270-1370, The Past & Present Book Series* (Oxford: Oxford Academic, 2010), n.p.

pursued agricultural interests, but they also exploited mineral resources upon their estates with the aim of financial return. However, Jago also alludes to the fact that this is not a recent nor unwelcome intrusion of the commercial classes upon the rural estate. Instead, he illustrates that extraction and mining is an important factor in maintaining the stability of the traditional estate. In his comparative study of the French and English aristocracy, Hippolyte Taine counts as the principal reason why the English nobility survived the eighteenth century, the fact that they “found new tasks to perform after its old feudal functions had lost their reality.”⁹⁷ John E. Davies further notes that in the more “open” society of eighteenth-century Britain, “landowners did not lose status by participating in commercial and industrial enterprise, and with their estates frequently encumbered by debt, they were eager to secure the additional revenues that would be yielded from industrial undertakings.”⁹⁸ John U. Nef argues that coal exploitation was, in fact, a major facet in maintaining the rural estate. Mineral extraction was a crucial means for the landed establishment to continue intact. While a number of landowners leased their mines to concessionaires, surprisingly, “a number of important collieries continued to be financed directly by the landlords.”⁹⁹ Moreover, the expansion of coal mining mirrored enclosure and improvement schemes. As the gentry could take on and finance colliery operations on a larger scale, eventually, they evicted or absorbed smaller enterprises: “in every district where the market for coal increased considerably, the appearance of wealthier adventurers, who had an

⁹⁷ Hippolyte Taine, *The Ancient Régime* (New York: H. Holt, 1881), n.p.; Nef, 4.

⁹⁸ John E. Davies, “The Cawtors as Industrial Landowners.” In *The Changing Fortunes of a British Aristocratic Family, 1689-1976: The Campbells of Cawdor and Their Welsh Estates* (Boydell & Brewer, 2019), n.p.

⁹⁹ Nef names a series of landed families who financed and worked their own mines: the Curwens of Workington, the Fletchers of Distington, and the Lowthers of Whitehaven. The Lowthers “who established a virtual monopoly of the export of coal from Cumberland after 1650, were said to count more than thirty knights among their Westmoreland ancestors.” Nef, 7.

advantage [. . .] eventually drove out the small men.”¹⁰⁰ Throughout the poem Jago alludes to the fact that the “estate was viewed, and operated, as an integrated concern.”¹⁰¹

With this in mind, I argue that Jago seamlessly integrates the working coal mine into his topographical poem to illustrate the gentleman’s enlarging prospect during the second half of the eighteenth century, with coal as one of its essential features. Furthermore, in its unique depiction of the coal mine, Jago’s poem engages in what Colbert calls an “oscillating movement between taste and science.” The mine provides the gentleman with new forms of mineral wealth and brings him into contact with current technological innovations, like the steam engine. However, his possession and exploitation of mineral resources also requires the gentleman observer to acquire geological knowledge and to other scientific and visual discourses that help explain the processes and material composition of the very landscape upon which his estate is built.

Throughout *Edge-Hill*, Jago not only incorporates the subterranean mine as part of the estate’s entire visual and economic prospect, but he also illustrates that the mine is an important measure whereby the gentleman comes to have even greater visual and aesthetic command over his entire domain. The coal mine extends the spatial boundaries of the estate far beyond its surface topographical parameters and enlarges his entire prospect, far beyond what the eye can see. As a result, Jago’s gentleman viewer must use his powers of embellishment and imagination to fully comprehend and appreciate his industrializing estate.

In fact, his possession of mineral wealth and the capability to extract and exploit his estate’s “latent tracts,” increases not only the gentleman’s economic and material prospects, but it also expands his own “Royalty of Sight.” Jago’s poem evokes Young’s description of the

¹⁰⁰ Ibid.,9.

¹⁰¹ Michael Flinn, *The History of the British Coal Industry* (Oxford [Oxfordshire] : New York: Clarendon Press ; Oxford University Press, 1984), 207.

gentleman's eye that "commands every part of this bewitching landscape with ease and delight"¹⁰²; aided by prospecting and geology, he can now penetrate the surface and "see" into regions of the earth previously inaccessible to his limited vision. His power, taste, and capability for even greater aesthetic appreciation of his landscape grows in proportion to the expansion of his estate below ground and his ability to view it through frameworks of extraction, improvement, and speculation. If, as Guillory claims, within the topographical poem, "knowledge is a real form of property or wealth," then the gentleman's greater visual, intellectual, and economic command over his subterranean prospect helps restore his traditional, omnipotent sight and unbounded authority.

Finally, the depiction of the coal mine within *Edge-Hill* illustrates Jago's cognizance of a new form of intellectual labor in the topographical poem. The poet must draw upon their augmented powers of observation and description, when tasked with representation of subterranean space. Proper depiction of the mine now requires that the poet gain access to and employ new representational frameworks, such as geological and economic discourse. This engagement has far-reaching implications for the poet's own descriptive power. To represent the *entire* rural prospect, now replete with fossil capitalism and "complex industrial processes,"¹⁰³ the eighteenth-century prospect poet expands their reach far beyond traditional linguistic registers and customary representational frameworks. Instead, as the poet structures the mining landscape, they gain and utilize what Roy Porter calls a new "appreciation of the scenery" that is now "inseparable from that rich form of analysis of the Earth in terms of great antiquity, the

¹⁰² Arthur Young, *A Six Months Tour Through the North of England: Containing, an Account of the Present State of Agriculture, Manufactures and Population, ..* The second edition, corrected and enlarged (London: printed for W. Strahan; W. Nicoll; B. Collins, at Salisbury; and J. Balfour, at Edinburgh, 1770), I.131.

¹⁰³ Menely, 127.

majesty of slow and profound process, the investigation of subterranean depths, which is the geological way of seeing.”¹⁰⁴ There no longer exists a divide between “polite letters” and nascent geological and industrial discourses in the poet’s application throughout the poem. Instead, the language of geology and of mining produces the “linguistic sign of social distinction,”¹⁰⁵ and an original, poetic voice that, like the gentleman, is similarly omniscient and in command of its entire dominion.

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In the Preface to *Edge-Hill* (1767), Richard Jago states that his approach is to provide “The true Idea therefore of a local, or personal Composition”:

The writer’s Business was, first to select a Stock of Materials fit for his Purpose, and then to arrange them in the best Order he could. Both these Points he endeavoured to effect, not only by consulting his Eye, but also by considering the Character, Natural History, and other Circumstances of such Places as were most likely to afford Matter for Ornament, or Instruction of this kind; forming from the Whole, by an imaginary Line, a Number of distinct Scenes, placed in the most advantageous Light, and corresponding

¹⁰⁴ Porter, 143.

¹⁰⁵ John Guillory addresses Barrell’s claim that “proper” English is usually conceptualized from the perspective of the gentleman. Barrell asserts that the gentleman “was believe to be the only member of society who spoke a language universally intelligible; his usage was ‘common,’ in the sense of being neither a local dialect nor infected by the terms of any particular art.” I qualify Barrell’s claims for the gentleman’s universally recognized language, and instead, claim that geological and industrial discourse further distinguishes the gentleman and the poet as capable of acquiring knowledge. See Guillory, 16; see also Barrell, *English Literature in History*, 34.

with the different Times of the Day; each exhibiting an entire Picture, and containing its due Proportion of Objects, and Colouring.¹⁰⁶

Echoing the poem's opening epigraph--Addison's famous statement on the power of sight--Jago also highlights the crucial role played by the poet's "Eye." In conjunction with the poet's imagination, and his unique capacity for poetic language, Jago asserts that the Eye properly arranges and describes the scene before him. Moreover, like Addison, Jago's Eye works in concert with the distinct "Character, Natural History, and other Circumstances of such Places" to furnish the poem's scenes with "Ornament" and "Instruction." Jago's conception of the gentleman's eye, and the poet's art considers and engages with the multiple discursive structures, "Character, Natural History, and other Circumstances" that comprise "such Places." In this way, Jago illustrates that the landscape before him is a conglomeration of multiple material forms, and imbricated within various branches of knowledge, such as natural history.

Yet, the Poet remains in full control of the domain and of its poetic description: what he calls the "entire Picture" by "an Imaginary line." Jago uses the language of prospect to signal the poet's command over the scene before him. The terms "Order," "Whole," "entire Picture" not only denote the poet's capacious, wide-ranging view of Edge Hill, but the terms also reinforce his already, sizeable poetic authority. The poet possesses the power to see the entirety of the prospect laid before him, and his far-reaching eye penetrates the general view and separates the immediate "Whole" into subsequent "distinct Scenes." More importantly, Jago claims that the poet possesses the ability to arrange, color, embellish, and ornament the "Stock" of materials before him. Here, the poet's intellectual labor is akin to landscape improvement, as it transforms

¹⁰⁶ See Richard Jago, *Edge-Hill, or, the Rural Prospect Delineated and Moralized. A Poem. In Four Books. By Richard Jago, A.M.* (London: printed for J. Dodsley, in Pall-Mall, MDCCLXVII. [1767]), I.vi-viii.

rude, base nature, “Stock,”¹⁰⁷ into an aesthetically pleasing visual landscape complete with perspective, foreground, and decoration.

Jago commences his poem by addressing his patron, Lord Willoughby de Broke,¹⁰⁸ from a lofty prospect: “I sing; from that fame’d Hill, whose lofty Brow/Salutes thy Provinces’s contiguous Bounds.” Here, the poet’s sight is geographically situated firmly within a rural landscape, “Far from the circling Ocean,” as it takes in “Britannia’s rural Charms, and tranquil Scenes.”¹⁰⁹ Atop the hill, Jago’s inland landscape is characterized by circulation, flow, and “tranquil Scenes,” all of which point to the nation’s stable agricultural landscape, dependent on the natural cycles and seasons. The topography appears legible and contiguous, and the Province is, likewise, bounded. A few lines later, Jago reinforces the knowability of this stable prospect: “Thus, from the rural landscape, learn to know/ The various Characters of Time and Place./ To hail, from open Scenes, and cultured Fields,/Fair Liberty, and Freedom’s gen’rous Reign.”¹¹⁰ The landscape’s readability is predicated on its open, visible stability, and on the gentleman’s and poet’s proper oversight, as Jago connects the “open Scenes, and cultured Fields,” to the gentleman’s “gen’rous Reign,” and “polish’d Arts.” However, Jago also alludes to the rural Scene’s connection to other invisible processes of global movement and circulation of commerce. Menely sees in the opening lines, “the circulatory logic of locodescription”: what he

¹⁰⁷ It is important to note that “stock,” is the term Wrigley uses for coal and other non-renewable mineral sources.

¹⁰⁸ John Peyto-Verney, 14th Baron Willoughby de Broke, famously undertook improvements of the family seat, Compton Verney House in Warwickshire, between 1762-1769. The gardens were landscaped by one of the period’s most famous landscape designers, Lancelot “Capability” Brown, who restyled the grounds in a more naturalistic style, eliminating the formal gardens and planting cedars and over 2,200 oak and ash trees. He also built the “Ice House” during the extensive remodel. Robert Bearman, *Compton Verney: a History of the House and its Owners*. Stratford-upon-Avon: Shakespeare Birthplace Trust, 2000.

¹⁰⁹ Jago, I.1.

¹¹⁰ *Ibid.*, 414-418.

calls an “encompassing movement that follows the pathways of trade,” that is “instantiated formally in the poem’s principles of transition and association.” He further argues that the poem’s itinerary follows the rivers’ path: “Where Avon’s Silver Stream delight strays,/ With crooked Path, enlarging as it flows,/ Nor hastes to join Sabrina’s prouder wave.”¹¹¹ Sabrina’s [the Severn’s] wave joins Britain’s commerce, and its “rural Charms,” are tied into global pathways of trade.¹¹² From the start, the poem links topography and prospect with commerce and unseen, earthly processes and flows.

Indeed, the initial prospect taken from the “airy height” alludes to the joining of visible and invisible processes upon the landscape, what Jago calls an “Intermixture sweet.” The poet views this mix, what Menely calls a “vision of elemental confusion” with wonder and delight: “The Summit’s gain’d! and, from its airy Height,/ The late-trod Plain looks like an inland Sea,/ View’d from some Promontory’s hoary Head,/ With distant Shores environ’d; not with Face/Glassy, and uniform.”¹¹³ The poet further notes the “Ample, and various” elements of the landscape—its fields and groves, vales, towns, “Hills, on Hills”-- a long “Succession” of landscape features easily presented to his sight. However, Jago’s poet is not satisfied with mere topographical description; standing atop the prospect inspires him to ponder the estate’s geological origins.¹¹⁴ He exclaims,

O! listen, while, from sacred Records drawn,
My daring Song unfolds the Cause, whence rose,
This various Face of Things—of high, and low—

¹¹¹ Jago, I.17-19.

¹¹² Menely, 154.

¹¹³ Jago, I. 43-47.

¹¹⁴ *Ibid.*, I.53; 60.

Of rough, and smooth. For with its Parent Earth
Coeval not prevaile'd this awful Scene
Of fractur'd Hills, nor was its new-form'd Shape,
Like a smooth, polish'd Orb, a Surface plain,
Wanting the sweet Variety of Change,
Concave, convex, the deep, and the sublime
Nor, from old Ocean's watry Bed, were scoop'd
Its neighb'ring Shores; nor were they now depress'd
Now rais'd by sudden Shocks; but fashion'd all
In perfect Harmony, by Laws divine,
On passive Matter, at its Birth impres'd.¹¹⁵

Here, Jago references Erasmus Warren's *Geologia* (1690),¹¹⁶ and his theory of the earth before the Deluge.¹¹⁷ Warren's theory posits that there was "a Primitive Earth of another Form from the

¹¹⁵ Ibid, I.71-84.

¹¹⁶ Menely notes that in the 1784 edition of *Edge-Hill*, Jago amends his work to include Burnet's theory of the earth's origins, supplanting Warren's original inclusion. Roy Porter traces this controversial move, noting that Warren famously criticizes Burnet's more famous theory in *Sacred Theory of the Earth* with his *Geologia*, to which Burnet immediately replies in his *Answer to the late Exceptions* (1690). Warren then writes *Defence of his Exceptions*, which then led Burnet to write *Short Consideration of Mr. Erasmus Warren's Defence of his Exceptions* (1691). Importantly, Warren's *Geologia* attempts to show that "there were mechanical problems with Burnet's hypothesis and that the earth could not possibly dry out and crack in the manner he advocated." See Linda Hall Library, William B. Ashworth, and Bruce Bradley, *Theories of the Earth, 1644-1830, the History of a Genre: An Exhibition of Rare Books from the History of Science Collection* (Kansas City, Mo.: Linda Hall Library, 1984), 8. See also Menely, 156; Porter, 83-84.

¹¹⁷ A Biblical literalist, Warren's geological theory maintains that the earth was divinely created in its present form, and that the earth experienced a universal Deluge. However, in response to Burnet's *Sacred Theory of the Earth*, which claims that the Flood was universal, and that the globe was smooth and mountainless, Warren argues that there could not have been enough water in the oceans during the time of the Deluge, to cover existing mountains.

present, and inhabited by Mankind till the Deluge.”¹¹⁸ “[T]he Manner of the Earth’s Rise... is supposed to have proceeded thus. The whole matter of the Earth and sublunary Heavens being confusedly blended together, in one fluid Mass or Chaos; the grosser and heavier parts thereof sunk down to the middle of it (as to the Centre of their Gravity) and constituted and [*sic*] interior Orb of Earth.” Warren continues, “The rest of the Mass about it, by the same Principle of Gravity, was divided into two Orders of Bodies; the one Liquid, and the other Volatile.”¹¹⁹ Heringman notes that the inclusion of Warren’s geological schema is a mark of the of “topographical poetry’s increasingly scientific associations,” and the popular trend of “incorporating applied science into local poems.”¹²⁰ Indeed, Jago calls the intermixed scene before him, “fair Fields of Science wide display’d.”¹²¹ Here, the muse provides a geological explanation for the visual chaos described from the top of the hill. The poet’s inclusion of Warren’s geological theory strips away the visual confusion, and provides an explanatory mechanism for the earlier, metaphorized topographical landscape, in which “The late-trod Plain looks like an inland Sea,/ View’d from some Promontory’s hoary Head.” To the untrained eye, looking out across the entire prospect, the rural fields are easily confused for the ocean. However, acquired geological knowledge enhances the poet’s sight. Likewise, his recognition of the earth’s great, oceanic, antiquity corrects this delusion, and literalizes the “inland Sea.” The landscape is no longer “like” the Ocean. Rather, the poet possesses a geological literacy that informs him the rural plains, the “fractur’d Hills,” were created from the sea itself.

¹¹⁸ Erasmus Warren, *Geologia: Or, a Discourse Concerning the Earth Before the Deluge* (London: Printed for R. Chiswell, 1690), 46.

¹¹⁹ Warren, 46-47.

¹²⁰ Heringman, 229.

¹²¹ Menely, 155.

As the simile collapses into a geological account, the topography before the poet's eyes also begins to move and expand across spatial and time projections. Here the poet illustrates his command over geological discourse and description, and his capacity for what John Wilson Foster calls "*extensive* description, using the qualifier in the spatial sense."¹²² Foster asserts that in the topographical poem, the creation of a three-dimensional effect involves "the same precise location of detail" as a set of "stage directions." He provides the example of Pope's *Windsor Forest*, that uses the adverbs "here" and "there" as spatial points of reference, in addition to "midst" and "interspersed" that, likewise, create a foreground and background.¹²³ The detailed description is not simply to enrich the imagery, but rather, it is intended to create a physical pattern of a "canvas," and to communicate the poem's moral design and aesthetic unity, "conveyed by reference to plains, hills, fields, and heaths." The poet labors to describe the balance between the natural elements and to create a visual order indicative of a "harmonious, post-Civil War society."¹²⁴

Jago's inclusion of *Geologia* disrupts these formulaic motifs, as it introduces Deluge, upheaval, fracture, formation, "Shocks," the "deep," and the "sublime," to the stable physical topography. However, these forces do not simply disrupt the bucolic rural landscape; in fact, they comprise the historical and material origins of the scene itself. The bedrock of the estate is the material instantiation of ancient forces of upheaval and reformation. Similarly, Jago denotes that the gentleman's oversight of a landscape, marked by upheaval and Biblical Deluge, endows him even more omnipotent power. Under his control, the landscape has been brought into order and production. Similarly, the poet's ability for geological representation expands his epistemic

¹²² See Foster, "A Redefinition of Topographical Poetry," 396.

¹²³ *Ibid.*, 396.

¹²⁴ *Ibid.*, 397.

authority. As the poet's piercing eye penetrates below the landscape's surface, his descriptive ability becomes super-*extensive* in response. His eye, and his ability to versify the geological history of Edge Hill extends beyond the empirical "here," and "there," of the rural agricultural scene. Instead, he uses Warren's explanatory rhetoric to extend his powers of description into what Foster calls a "fifth dimension, the prehistoric."¹²⁵ The estate is now described as comprised of unseen processes, sublime depths, and geological time. Moreover, the poet's ability to depict the estate in such terms imbricates him within an exclusive explanatory system: one that demonstrates his enhanced knowledge of the rural prospect, and that showcases his extensive, scientific and narrative command.

However, Jago does not engage with poetic geology simply to indicate the poet's exceptional aesthetic response, vast knowledge, and unique spatial versification. Instead, he employs geology to later introduce commercially useful minerals --coal and iron--into the poem and to emphasize the minerals' utility upon the estate. Menely asserts that in *Edge-Hill*, coal plays an important role as part of Jago's wider "geological observations," that work to "sketch a prehistory of planetary cataclysm that not only explains the present variations in the Earth's surface and mineral depths," but which also provide insight in the conflagration yet to come.¹²⁶ Jago substantiates Warren's cataclysmic vision of the earth: "Such is the structure, such the wave-worn Face/ of Earth's huge fabric!/ And, to the searching Mind, with Wonders stor'd. [. . .] And, from Experience past,/ How great th' Almighty's Judgements are, how true!"¹²⁷ Menely

¹²⁵ Foster argues that the topographical poet has a choice of four "time-projections" in their representation. The poet may look and write in the present moment, reflect upon a recent historical past, use the classical past for comparison and explanation of origins, and finally, project his vision into the future. *Ibid.*, 399.

¹²⁶ Menely, 156.

¹²⁷ Jago, I.169-174.

argues that Jago's "rectilinear temporalty, this allegory of a conclusive ending" distinguishes sacred geology from later, secular forms developed by Buffon and Hutton, whose writings theorize the earth's origins as the result of cyclical process, rather than from a definite end, "th' Almighty's Judgements."¹²⁸

I contend, however, that Jago's scene of planetary cataclysm, upheaval, and chaos can be read in a different manner: that the prehistory reveals the subterranean world as a productive terrain. Like the agricultural landscape above, the geological earth is similarly characterized by continual improvement, as the primeval landscape of mountains, caverns, and fields are refashioned into modern, "Oyly"¹²⁹ forms through deluge, upheaval, and the reworking of its "passive Matter." Heringman claims that geological versification, such as we see in *Edge-Hill*, "authenticates a vision of nature that incorporates wildness and productivity, [. . .] The fusion of these categories—which now seems paradoxical—was crucial to industrialization and empire-building at a time when global resources seemed inexhaustible, and English productivity seemed natural."¹³⁰ Indeed, Jago connects prehistoric improvement with the later extraction schemes in the poem. Just as the Deluge violently reformed the ancient surface of the earth, modern estate improvement--prospecting and mining--now exposes and transforms the earth in equally dramatic ways. These industrial processes above ground are represented as a natural extension of

¹²⁸ Menely, 156.

¹²⁹ Warren claims that after the Deluge, the "Whole matter of the Earth and sublunary Heavens" were "confusedly blended together." The heavier parts sunk to the middle and created the earth's center, the remaining liquid divided into "two Orders of Bodies; the one Liquid, and the other Volatile." The liquid mass that circled above the earth was then further separated into two forms, containing all the "Liquors" originally belonging to the now dissolved earth: the lighter of which he characterizes as "oyly." Warren, 46.

¹³⁰ Heringman, 230.

the reformations and revolutions of the underground world, and serve to further establish the gentleman's inherent proclivity for improvement and production.

Jago's inclusion of Warren's *Geologia* thus illustrates the deeply interconnected relationship between estate development, extraction, and scientific discourse. Bruce Braun states of this interconnection that "the physical spaces daily transformed by mining were intricately intertwined with the epistemological spaces opened up by the discourse of geology,"¹³¹ as strata and ancient forms were exposed through mining and speculation, and explained through various technical and narrative means. Moreover, Warren's geology solves the issue of the poet's limited vision in the topographical poem. Elizabeth Miller identifies that extraction introduces "problems of knowledge and space." She also argues that concealment is "the perceptual problem of not being able to see underground, which makes mining and extraction difficult to represent and makes underground resources difficult to find."¹³² Indeed, John Holland identifies that in "exploring a country in search of coals, or even where coal fields are known to exist, arises from the great thickness of alluvial cover, which completely hides the crop or outburst of the strata." He then states that this concealment hides "fissures, dykes, and dislocations of the strata, which produce such material alterations in the coal fields, and are frequently the occasion of great loss to the mining adventurer."¹³³ Miller's and Holland's statements reveal that the gentleman's "eye," and the poet's art, are constrained in their viewing and depiction of surface topography. However, the poem transcends this limitation and expands not only the gentleman's domain, but his capability for viewing, as his prospect transforms from a stable, and limited prospect, into an

¹³¹ Bruce Braun, "Producing Vertical Territory: Geology and Governmentality in Late Victorian Canada." *Ecumene* 7, no. 1 (January 1, 2000): 14.

¹³² Miller 94-95.

¹³³ John Holland, *The History and Description of Fossil Fuel, the Collieries, and Coal Trade of Great Britain* (Whittaker, 1835), 175-176.

active form of “prospecting,” or searching for mining claims on his land. In the narrative shift from prospect to prospecting, Jago depicts the gentry’s concomitant expanding visual and economic power. He illustrates that the gentleman’s search for new spaces of extraction and profit¹³⁴ likewise, provides him with greater visual and imaginative capability. In this way, the shift from prospect to prospecting within the topographical poem solves issues of concealment that Miller mentions as a concern in the literary description of mining. Instead, the prospector, equipped with geological insight and hindsight and new forms of technology, can now read and recognize the landscape’s mineral features and their potential for future extraction. While simple, empirical observation is no longer adequate to survey his entire prospect, and his natural sight is a poor foundation for his estate’s expansion, with the introduction of prospecting, the landscape is no longer illegible.¹³⁵ Instead, to the gentleman trained in prospecting and aided by the boring device and the steam pump, land and valuable minerals are now viewable and discoverable. Indeed, Braun notes that “Armed with this new ability to ‘read’ rocks,” geologists and adventurers mobilized and interrogated nature in new ways.¹³⁶ Mineral geology provides the gentleman with guidance as he simultaneously acquires practical, working knowledge from prospecting and mining.¹³⁷

We see this transition from viewing a landed prospect, to gentlemanly “prospecting,” as the poet rushes the Muse from geological musings and from “fair Scenes,” directly into the scene of exploration: “With no licentious Boldness, to invade These peaceful Solitudes. So may they see/The Masters of the Scene, with gen’rous Care, Thy Commerce cherish, and their Toil

¹³⁴ Miller, 95.

¹³⁵ Flinn, 70.

¹³⁶ Braun, 20.

¹³⁷ Flinn, 70.

reward/Nor does the barren soil conceal alone/ The crumbly Rock. Oftimes more pond'rous Ore,
/ In Strata close, beneath its Surface lies.”¹³⁸ This is the first explicit mention of adventuring for
iron ore in the poem, and Jago names two gentlemen's rural seats, Aston and Edgbaston,¹³⁹ as
the sites for prospecting. Likewise, he characterizes the mining endeavor as a natural extension of
the gentry's responsibility and oversight of their prospect. Here, the gentlemen administer
production on their estates; serving as “Masters of the Scene,” they embody the stable, paternal
values of their landed station and survey the mineral operations “with gen'rous Care.”

Moreover, in these lines, prospecting is not simply a scene to behold, it is an extension of
the gentleman's powers of sight. In fact, the entire scene is dominated by the poet's moving
vision and by themes of concealment and exposure as the adventurers reveal what lies beneath
the barren soil through their commerce and toil: they discover that embedded within the earth
lies “more pond'rous Ore,” lying in strata close to the surface. This scene of prospecting is
remarkable, insofar as Jago mobilizes the poet from the stable scene of prospect, and places them
directly within the scene of industry. In fact, the poet plays the dual role of spectator and
prospector in these lines; their vision moves and penetrates into the strata as they discover the
iron ore: “Compact, Metallic; but with earthy Parts/Incrusted.”¹⁴⁰ Jago provides a full account of
prospecting in this scene, and illustrates how static observation is an inadequate measure for
discovering mineral wealth. This scene also provides a valuable historical insight into the state of
mining in this moment—as he appears to allude to the fact that surface measures and outcrops

¹³⁸ Heringman observes that “Jago's longer and more nationalist account moves from the
landscape around Birmingham to a step-by-step account of steel production, which incorporates
prospecting, mining, smelting, and forging into a grand heroic narrative.” Heringman, 220.

¹³⁹ Jago provides the names of the gentlemen in an explanatory note; Aston is the “Seat of Sir
Lister Holt, Bart.” And Edgbaston is the rural estate of “Sir Henry Gough, Bart.” See Jago, I.112.

¹⁴⁰ Jago, III. 404-405.

are no longer visible and accessible. Instead, the gentleman prospector must go deeper into the earth in order to find and draw up valuable minerals. In order to do this, he must also deploy other kinds of discourses and technologies to access his mineral wealth.

As the poet enters the scene of coal mining, there is a similar mobilization of the and the introduction of a coal-inflected atmosphere, coal measures, and industry within the serene, pastoral landscape:

The Muse pursues her Solitary way; [. . .]
YET e'er her Song describes the smoaky Forge,
Or sounding Anvil, to the dusky Heath
Her gentle Train she leads. What? Tho'no Grain,
Or Herbage sweet, or waving Woods adorn
Its dreary Surface, yet it bears, within,
A richer Treasury. So worthy Minds
Oft lurk beneath a rude, unsightly Form.
More hapless they! That few Observers search,
Studious to find this intellectual Ore,
And stamp, with gen'rous Deed, its current Worth.
Here many a Merchant turns Adventurer,
Blessing th' uncouth Prognostics. Int'rest thus,
On sordid Minds, with stronger Impulse works,
Than Virtue's heav'nly Flame. [. . .]
When likely Signs th' adventrous Search invite,
A cunning Artist tries the latent Soil:

And if his subtle Engine, in Return,
A nitrous Mass contains, brittle, adust;
Strait he prepares th' obstructing Earth to clear
And raise the sable Rock, A narrow Pass
Once made, wide, and more wide the gloomy Cave
Stretches its valuted Isles, by num'rous Hands,
Hourly extended. Some the Pick-Axe plie,
Loos'ning the Quarry from its native Bed. ¹⁴¹

As we see in the previous scene of prospecting, the scene transitions once again from a rural landscape characterized by “Grain” and “Herbage sweet” to a “dusky Heath,” with a “richer Treasury” that lies below its surface. Just as we see in Jago’s earlier geological versification, the poet uses his penetrating eye to see below the surface topography and familiar topoi characterized by crops and woods, down into the coal pit. Menely reads this scene as a concerted “turn from the organic economy to the ‘consumptable’ subterranean” world ¹⁴² He further sees in the strange interjection “What?” the “oddity of this transition” from the familiar agricultural landscape to the scene of coal mining. ¹⁴³

Jago continues this theme of transition between viewing and prospecting in the lines, “few Observers search,”/Studios to find this intellectual Ore,/ And stamp, with gen'rous Deed, its current Worth.” The narrator alludes to the fact that the landscape does not reveal its mineral wealth to the gentleman’s empirical sight. Instead, it is necessary to employ other forms of observation and study in this passage: namely, coal-viewing. Michael Flinn contends that as

¹⁴¹ Jago, III.106-108.

¹⁴² Menely, 158.

¹⁴³ Menely, 157.

surface coal reserves were exhausted in the eighteenth century, the coal mining industry sought to penetrate deeper into the earth to access valuable veins. Thus, there arose the need not only for new technologies to do so, but also for efficient and effectual means for planning and working collieries and individual mines based on accurate topographical and geological knowledge.

Professions such as colliery viewing came to the fore, and mine viewers, such as John Buddle, Sr., and his more famous son, John Buddle, Jr. represented a new professional class of men whose geological knowledge served practical ends. As “General Viewers,” figures like the Buddles fulfilled many different roles such as mine manager, surveyor, accountant, and land agent. In addition, they organized mine maintenance, repairs, and alterations, conducted safety checks, and made surveys and plans. While they did not often participate in day-to-day management of individual pits, they served as a kind of middleman between the landowner and the miners, going down into the mines to assess creeps, damp, continuity of a seam, and advantageous locations for drainage. While John Buddle, Senior obtained many of these skills as a miner, this was a system of apprenticeship and field education. Viewers fulfilled an important practical role, as they relied on both simple, empirical observation and geological principles to locate faults, the laying-down of strata, folding and weathering, geomorphology, and the chronology of geological periodization. Surface observation was inadequate for accurate representation of this kind of data. Instead, viewing, informed by geography, geology, and other practical and intellectual fields, provided “an expert opinion for forecasting” the success of a colliery. In possession of a wide range of knowledge and practical skills, they negotiated all aspects of the mine’s success, including the costs of winning and working a mine, the possible extent and value of coal reserves, and arbitrating gentlemanly disputes over the value of a pit.¹⁴⁴

¹⁴⁴ Flinn, 68.

Jago introduces coal-viewers, or what he calls “Observers” within the scene, to illustrate the diversification of the gentleman’s prospect and of the types of professional “vision” necessary to see and extract coal deep below the surface. We witness yet another shift in prospect and prospecting, as Jago now introduces economic “prospects” and future financial returns into the poem. For instance, the Observer not only “search[es]” for valuable coal seams and the advantageous site to sink a pit, but more importantly, they “stamp, with gen’rous Deed, its current Worth.” Jago indicates that the gentleman relies on this figure’s “Studios” nature, to determine the mine’s “Worth,” which then determines the gentleman’s outlay of capital in his pursuit of the “intellectual Ore.” Jago’s introduction of the Observer not only highlights the key role of the professional coal-viewer within the scene of mining, he also illustrates that the Observer is a figure who, in fact, mediates the relationship between a gentleman and his landscape, and between the landed classes’ prospect and their potential fortune.

However, this scene also introduces themes of professionalization and class mobility to the poem, as the landed and middling classes are shown to be tightly connected through industrial development, geological studies, and mining. Jago’s earlier characterization of upheaval and instability within the serene, stable landscape and the transition between the organic world and the world of prospecting signals other upheavals and transitions, such as financial instability incurred through prospecting, financing, and sinking mines upon the rural estate. Additionally, Jago highlights the important presence of the commercial class within the gentleman’s landscape in the line “Here many a merchant turns adventurer.” This is the poem’s singular reference to speculative investment and represents what Menely calls “the nascent model of futurity, of risk and return, that underwrites capital ventures.”¹⁴⁵ However, what is

¹⁴⁵ Menely, 157.

similarly remarkable about this statement is that it illustrates the joint presence of the merchant and landed classes within the mutual endeavor of prospecting. Not only do the middle classes provide the professional viewer, the “cunning Artist,” who assists and guides the gentry in prospecting, the intertwining of the gentleman, the Observer, the merchant, and the Adventurer in the same scene illustrates the close and often overlapping economic and social ties between the middle and landed classes. Nef reveals that the gentry experienced a great deal of financial risk and dependence on the commercial classes during this period, as “the number of landed families, including some noblemen, were brought into financial dependence upon money lenders and traders because their investments in mines was considerable.”¹⁴⁶ However, while Jago alludes to the financial and social precarity of prospecting, he also connects speculation and adventuring with a shared imaginative process and mental ingenuity. While the figure of the “cunning Artist” appears to be partly an indictment of the commercial classes’ guileful ways, and of the way prospecting forces the gentry’s reliance on a new professional class of men trained in the art of viewing and speculating, “cunning Artist” also hearkens back to Jago’s opening statement, where he likens the poet’s art to clever landscape manipulation. Moreover, the coal itself is described as “intellectual Ore,” situated within the “richer Treasury. So worthy Minds/Oft lurk beneath a rude, unsightly Form.” In this latter line, Jago mixes material, economic and intellectual metaphors to describe the creative potential of the hidden coal, and the kind of signals the prospector must read in the landscape in order to access the seams: the “likely Signs th’ adventurous Search invite.” Indeed, he claims that the refined and “worthy Mind” trained to read the landscape can see past coal’s rude material form and can interpret the landscape’s hidden potential--its future profit, or “Int’rest.” While the poet claims that “uncouth

¹⁴⁶ Nef, 5.

Prognostics” and dreams of “Int’rest” corrupt the more sordid classes of prospectors, with a power greater than “Virtue’s heav’nly Flame,” in fact, Jago points to a more seamless and peaceful social order between the classes in these prospecting scenes. Each of the figures plays a role in viewing, financing and eventually drawing the coal out of the ground, and his depiction of prospecting and extraction is one of mutual reliance, cooperation, and orderliness between the “num’rous Hands” rather than a scene marked by chaos, threat, and upheaval.

However, despite the mutual cooperation above ground, and the stable relations between the various classes of men, Jago describes coal itself as endowed with unstable and dangerous properties. The coal is a “fiercer Element” amidst the “nitrous Cave, the kindling Flame,” which feeds underground mine explosions. Coal has the capability to overpower the speculator with dreams of future profit, and it also possesses immense destructive material power below ground. The mine is a world characterized by “sable Rock, a narrow Pass,” and gloomy caves as well as subterranean volcanos and a self-sustaining conflagration fed by coal vapors.¹⁴⁷ Yet, despite the mine’s destructive and poisonous characteristics, Jago also notes that the danger in prospecting and mining for coal gives rise to ingenuity and technological progress. He alludes to coal’s key role in the development of scientific instruments such as the air pump and steam engine, seen for example in his phrase, “And if his subtle Engine, in Return, / A nitrous Mass contains, brittle, adust; / Strait he prepares th’ obstructing Earth to clear / And raise the sable Rock.” “Subtle Engine” denotes a Newcomen engine--an early, coal-fired atmospheric engine used to draw up water to mine deeper coal reserves. Moreover, the phrase “subtle engine” also symbolizes the mind itself, highlighting that in the attempt to reach the deeper seams, the gentleman prospector

¹⁴⁷ Menely asserts that Jago is referring to firedamp here: a vaporous mixture of coal dust and methane which was highly explosive and often the cause of many mining disasters. Menely, 159-160.

must utilize inventions to see and to access the coal.¹⁴⁸ In this connection between human ingenuity and mining devices, Jago takes the reader not only into the depths of the mine, but into the world of technological innovation,. He depicts pneumatics and the attendant technologies deployed by the gentleman to contend with an underground atmosphere tinged by coal fires and poisonous vapor. He alludes to Stephen Hales’s ventilation bellows, “To drain th’ imprisoned air, and in its place,/More pure convey, or, with impetuous force, /” and again, to the Newcomen engine employed at Coneygree Coal Works used “To raise the gath’ring torrents from the deep.”¹⁴⁹ In his depiction of the processes of boring, pumping and ventilation, Jago subtly alludes to the fact that coal is no longer visible on the surface and that prospecting now requires the landed classes’ capitalization, specialized technology, and skilled professionals to find and extract the coal. Here, the gentleman’s eye is aided, and even supplanted by the mining technologies, as they demonstrate that machinery provides a deeper and more capable reach into unknown, subterranean regions. In this way, Jago’s description of the material inventions such as pumps and bellows used to draw more coal out of the ground reveals yet another form of

¹⁴⁸ In fact, this phrase appears throughout literature in the eighteenth century. An early instance is Samuel Pufendorf’s religious tract to King George in 1714, where he observes that nowhere in the Bible does there exist a “laborious and subtle engine of an Absolute Decree recommended by the Synod.” The most notable instance of the phrase, in relation to the mind occurs in Francis Gentleman’s adaptation of Ben Jonson’s “Sejanus,” first printed in 1752, in which the main character, Sejan articulates his revenge: “For if the subtle engine of my brain,/Can work a table to ensnare they life,/By great Revenge though shalt not live a day.” Interestingly, Freud, two centuries later, describes the mind like a steam engine, and the buildup of psychic pressure as the cause for aggression. See, respectively, Samuel Pufendorf’s *A view of the principles of the Lutheran churches; shewing how far they agree with the Church of England: being A Seasonable essay towards the Uniting of Protestants upon the Accession of His Majesty King George to the Throne of these Kingdoms. The second edition. Translated from the Latin of Baron Pufendorf, by Theophilus Dorrington, M. A. Rector of Wittresham in Kent.* London: printed for John Wyat, at the Rose in St. Paul’s Church-Yard, 1714 and Gentleman’s adaption, *The favourite, an historical tragedy* (London: printed for John Bell at his Circulating Library near Exeter-Exchange in the Strand; and C. Etherington, at York, M.DCC.LXX. [1770]),15.

¹⁴⁹ Jago, III.447-50.

prospect within the poem: a looking-forward into a world unseen and unknown, aided by imagination and invention, rather than by sight.

In sum, what we see throughout *Edge-Hill* is that the gentleman's prospect in the second half of the eighteenth century is one now comprised of immense geological timescales, vast depths, and future economic speculation. As the prospect transforms from a generalized view to a shifting and industrializing landscape, the gentleman viewer cannot simply view his prospect from atop a hill, but instead, he must immerse himself within novel geological discourse and with the middling class to preserve and bolster his own authority, and to properly read and interpret his own prospect.¹⁵⁰ In Jago's topographical poetry, it is not simply the human subject who perceives prospect with a raunging Eye and heightened sensibility, but rather, the shifting and industrializing landscape allows the poet and the gentleman greater visual and material access to the invisible attributes of his current prospect, and those yet to be discovered.

¹⁵⁰ Adelene Buckland argues that the illuminating powers we see in John Sargent's and Erasmus Darwin's geological poems are "replaced with the Davy lamp, which lights up the darkness in a literal rather than metaphorical sense." See Buckland's chapter, "The World Beneath our Feet," in *Time Travelers: Victorian Encounters with Time and History*, Eds. Adelene Buckland and Sadiah Qureshi (Chicago: University of Chicago Press, 2020), 58.

Chapter 2. The Fourth Most Common Element and Its Uncommon Properties: Iron Taxonomy and the Exploited Estate in Austen's Realist Novel

In *The Rise of the British Coal Industry*, John U. Nef relays the story of “Sir William Gascoigne,” a “man of great wealth” and a member of the powerful Yorkshire family of Gascoigne, descendent of the famous judge, Sir William Gascoigne. Sir William divided his time between his coal pits in the West Riding, and those of his estate at Ravensworth, which included the manors of “Ravenshelme and Lamesley.” Situated close to the river Tyne, the estates contained rich mineral resources. He formed a useful connection with the nearby Newcastle merchants, who controlled the entirety of the Tyne valley coal trade, by marrying the daughter of Henry Anderson, “then the leading local mine owner and coal trader.” In partnership with a “local landlord, two Newcastle merchants, and a Yorkshire relative,” Gascoigne exploited coal mines under the extensive wastes of Chestle-Street until 1607, when he liquidated his assets, sold the Ravensworth estate to his wife’s brother-in-law, Thomas Liddell, a wealthy Newcastle merchant, whose descendants retained the property and who enjoyed social prestige as the Earl of Ravensworth.¹

The story of Gascoigne’s acquisitions, rural estates, and the favorable marriage between a daughter of the middling class and a gentleman, reads much like a Jane Austen novel. Undergirding Gascoigne’s rich history is the acquisition and improvement of his rural estates through mergers and marriage. However, what becomes clear in Gascoigne’s tale is the important role coal extraction and mineral development plays in bringing the gentry into relations with the trading class. The picture of his life illustrates his need for merchants’ capital, and for financial interdependence between the classes, as the landed classes sought

¹ Nef, 10-11.

out investment and a market for their mineral produce. Nef asserts that such interdependence undoubtedly encouraged the merchant class to “work their way into the nobility,” a movement which “aroused such enthusiasm in Defoe.”² Indeed, this is true in Gascoigne’s case, as he sells his estate to his merchant brother-in-law, whose descendants then rise to the status of aristocracy.

While perhaps insensible to the history of Gascoigne, Austen, in *Sense and Sensibility*, is similarly fascinated by the increasingly fluid social organization of rural gentry life, and of the new country gentleman—a figure whose power and social position is increasingly based on their commercial success, rather than on their ancient rank. Indeed, Austen addresses the interconnected themes of social mobility, enclosure, and the industrialization of the estate throughout her novels. She examines upstart commercial interests and characters in her works, and how the British rural estate is both threatened and bolstered by resource development and improvement schemes. I build on Barrie Trinder’s assertion that “Mines and manufactories were but one part of civilization, and they influenced all aspects of the landscape directly or indirectly,”³ showing how the Regency estate was often capitalized with money from mineral royalties and the kinds of social encouragement placed on mining as a gentlemanly endeavor. British farmsteads and estates were logically planned and maintained through the extraction of minerals and the manufactory of metal objects, fields were drained by mass-produced pipes manufactured in coal-fired kilns, large gates signaling property and proprietary boundaries hung on wrought-iron hinges: these were all visible markers of the landed gentry and were part of the same

² Ibid., 5.

³ Trinder, 5.

extractive economy as the coal pit or iron forge. In this chapter, I explore Austen's particular use of prospect and how it encompasses themes of environmental exploitation, a changing populace, and extractive commerce in her Regency-era novels.

More specifically, in considering the visible "estate above ground,"⁴ and its relationship to its mines and manufactories, this chapter first considers Jane Austen's intertextual derivations of iron and steel nomenclature and how land ownership shaped coal and iron mining landscapes. We see these concerns come to the fore in Austen's novels, spanning her oeuvre from *Sense and Sensibility* (1811) and *Mansfield Park* (1814) to her last unfinished work, *Sanditon* (1817). Looking more closely at the first two of these novels, I examine how Austen registers the Regency-era landscape transformed by mines and manufactories. The novels' narratives portray larger changes associated with transformations in land use, such as the introduction of new classes of citizens, as well as the economic stakes of the landed gentry moving from organic agricultural "flow" economies to ones based on mineral "stock."

With this in mind, and taking seriously Corinne Fowler's claim that "close attention to character and place rewards the active reader,"⁵ I argue that Austen uses iron and steel appellations, as well as characters' interactions with metal objects, to create a distinct cultural taxonomy—one that offers a subtle critique of late eighteenth-century British society, which was undergoing swift and disquieting changes in its evolution toward the industrial revolution. I will also illustrate that these aesthetic tropes assist in further

⁴ This is Adam Smith's phrase in his 1776 *The Wealth of Nations*, connecting the rent of an estate above ground to proportions of gross agricultural produce.

⁵ Corinne Fowler, "Revisiting *Mansfield Park*: The Critical and Literary Legacies of Edward W. Said's Essay 'Jane Austen and Empire' in *Culture and Imperialism* (1993)." *Cambridge Journal of Postcolonial Literary Inquiry* 4, no. 3 (2017): 366.

understanding and expanding the critical dialogue about her fictional estates. I first investigate how Austen uses subtle, ferrous terminology in her characterization of John Dashwood. Second, I analyze the ways in which Willoughby's name, in recalling a famous family who created a dynasty in the iron industry, and the ways in which his interaction with iron rifles illustrate the gentry's potential for exploitation. Finally, Edward Ferrars' ancestral name and his dramatized interaction with steel "scissars" provide the opportunity to analyze his own relationship to iron, one which, I will argue, illustrates the fractured estate and amplifies his complicated role as the novel's moral protagonist. These arguments will demonstrate that iron tropes, hovering between historical context and symbolic "dilation," simultaneously function as moments of ontological slippage for Austen, while situating her narrative voice within a historical, materially based context, centered on modes of production and consumption and the interplay of the landed gentry and commerce.

While Austen's formal expression of her new society excludes overt references to the rapidly industrializing countryside, her cognizance of this is expressed through her use of iron and steel metaphors, which offer subtle notice of new forms of land speculation. Markman Ellis carefully historicizes the time in which "Jane Austen wrote, and was published, [as] a period of profound economic transition in Great Britain, characterized by revolutions agricultural and industrial," yet he is as careful to distinguish Austen's novels from those that might "depict factories belching smoke" and to assert that "her characters express no enthusiasm for innovative industrial wonder."⁶ William Galperin also addresses Austen's complicated historicity, first asserting that while temporally based material elements in

⁶ Markman Ellis in Deirdre Le Faye, et al., *Jane Austen in Context* (Cambridge, UK; New York: Cambridge University Press, 2005), 415.

Austen's fiction "remain anchored in certain hard facts from which Austen's writing is in many ways inseparable, they are also limited to these facts and to the conclusions on which their modes of contextualization weigh."⁷ However, while Galperin rightly recognizes and "limits" certain material elements within Austen's fiction to their prototypical milieu, he also argues that

in making Austen's oeuvre a social or political text permeable to elements or influences from which it can no longer beg severance, historical readings invariably make Austen's writings answerable to a given context instead of appreciating the degree to which the novels are just as much a context *in themselves* where matters of history, ranging from the literary to the social to the very reality on which the narratives dilate, work to complicated, if often antithetical ends.⁸

Galperin's thoughts provide an important entry into the scholarly conversation on historical elements and the estate in Austen's novels, in which we find a tendency toward a conservative reading. Alistair Duckworth, for example, characterizes the estate in Austen as an "ordered physical structure" and as a "metonym for other inherited structures--society as a whole, a code of morality, a body of manners, a system of language."⁹ Other critics agree: Marilyn Butler sees Austen's portrayal of the landed classes as demonstrating the author's "lineaments of the committed conservative,"¹⁰ and Ellis likewise discovers that in her novels "the estate is a synecdoche for a gentleman's virtue."¹¹ These arguments lead, in my opinion, to a

⁷ See William H. Galperin, *The Historical Austen* (Philadelphia: University of Pennsylvania Press, 2005), 1.

⁸ *Ibid.*, 1.

⁹ *Ibid.*, ix.

¹⁰ Marilyn Butler, *Jane Austen and the War of Ideas* (Oxford : New York: Clarendon Press ; Oxford University Press, 1990),165.

¹¹ Ellis, 417.

schematic taxonomy in which Austen is said to associate moral characters with prudent estate management and unscrupulous aristocrats with exploitation of the estate. These readings codify Austen's observations of the estate as a microcosm of social stability and familial arrangement, albeit one under constant external threat from radical, capitalistic forces, driven by new forms of wealth and acquired prestige. Indeed, Juliet McMaster contends that Austen's "apologetic" portrayal of industry and commerce illustrates how the gentry and professional classes "felt somewhat threatened by the large changes that were coming with the Industrial Revolution, and tended to close ranks against the newly powerful and the *nouveaux riches*."¹²

I argue instead that the instances of iron names and objects in *Sense and Sensibility*, too frequent to ignore, invite us to rethink a reading of Austen's estates as wholly conservative markers for social stability and individual virtue. In analyzing material culture in Austen, Galperin notes that her inclusions are "troubling"; though he does not discuss iron and steel specifically, his observations are helpful here insofar as they illustrate the tension between historical and aesthetic representations within her novels. I will suggest that this tension is found in Austen's examination of the landed gentry's exploitation of mineral rights and in their creation and maintenance of the estate as a way to measure and expand earnings. Moreover, through iron terminology, in conjunction with her male characters' participation in enclosure, Austen reveals that we should acknowledge the notion that the landed gentry's estate management is a measure of their morality, but in reverse to how other critics have done so: that is, Austen uses this class's association with iron to refute the spurious mythology that England's rural gentry was solely an agrarian one, under constant threat from outside

¹² Juliet McMaster, "Class," in *The Cambridge Companion to Jane Austen*, Cambridge, eds. Edward Copeland and Juliet McMaster (Cambridge: Cambridge University Press, 1997), 123.

industrial forces. Instead, she resituates industry's origins within the estate and questions how this particular form of exploitation serves to complicate her characters' moral inclinations. Ferrous metaphors were prevalent in a myriad of texts Austen read. "Iron" and "steel" functioned as abundant literary tropes in the bible, in influential works of literature, such as those by Shakespeare (*Romeo and Juliet* and *Henry VIII* in particular),¹³ Johnson, Pope, Cowper, and Goldsmith, Hume and Robertson; the last three writers, Austen's nephew, Edward Austen-Leigh, tells us, were favorites of his aunt.¹⁴ Given that she parodied Goldsmith's *History of England* in her own juvenilia, we can surmise that she was, indeed, "sensible" of *The Traveller* and its lines: "Luke's iron crown, and Damien's bed of steel, /To men remote from power but rarely known, /Leave reason, faith and conscience all our own."¹⁵

However, while Goldsmith may have intended these metaphors to reify the need for a secure domestic joy, instead the iron and steel metaphors expose the viewer to painful political

¹³ Austen would have encountered "iron" and "steel" metaphors in the Shakespeare, a perennial favorite of the young author, whose sonnets, *Hamlet* and *King Lear* she references throughout her canon, from her early juvenilia to her later works. This Shakespearean intertextuality is found in *Sense and Sensibility*, as the author employs a well-known trope, Queen Mab, from *Romeo and Juliet*. See Jillian Heydt-Stevenson, *Austen's Unbecoming Conjunctions: Subversive Laughter, Embodied History* (New York: Palgrave Macmillan, 2005), 58. Iron, as a symbol of emotional callousness and confinement appears throughout Shakespeare's works. In *Henry VIII*, from which Austen later draws material for *Mansfield Park*, iron acts as a metaphor for cruelty: "Beare witnesse, all that haue not hearts of Iron" (iii. ii. ln. 425). *Hamlet*, in particular, mentions iron shackles, "bilboes," and specifically, "steel," in Polonius' speech to Laertes upon his departure.

¹⁴ William Austen-Leigh, Jane Austen, and Richard Arthur Austen-Leigh *Jane Austen, Her Life and Letters: A Family Record*. 2d ed. (New York: E.P. Dutton, 1914), 71.

¹⁵ Goldsmith, *The Traveller: A Poem. By Dr. Goldsmith* (London: printed for the booksellers, in town and country, 1780), 4:269; 431-38. Christopher Flint argues that *The Traveller* espouses Goldsmith's vision of a Britain, "untouched by history, power, torture, or storm [. . .] 'consign'd' to a state where the devious uses of the ax, wheel, crown, and bed are 'rarely known.'" See Christopher Flint, "The Family Piece": Oliver Goldsmith and the Politics of the Everyday in Eighteenth-Century Domestic Portraiture." *Eighteenth-Century Studies* 29, no. 2 (1995): 127.

realities and introduce revolutionary hyperbole into his tidy verse.¹⁶ In her characterization of John Dashwood, who embodies the archetypal self-interested gentry, obsessed with profiting from his land through enclosure, Austen adopts a position similar to Goldsmith's own: one that is persistently apprehensive and critical of landlords for exploitative estate management. According to Nathaniel Kent's 1775, "Hints to Gentlemen of Landed Property," farm engrossment was a "destructive practice" in which ignorant or negligent landlords engaged, persuaded "by the specious inducements" of greedy farmers and land-agents.¹⁷ To link themes of land acquisition and resource exploitation early in the novel, Austen addresses such destructive practices and the use of "natural factors"-- in the form of trees--revealing that cutting them down simultaneously signals exploitation and the creation of a more diversified, industrialized estate: one contingent on enclosure of common lands and wastes and the harvesting and coppicing of trees to drive new forms of industry and technology. As I mention in the introduction, T.S. Ashton connects the iron industry's early beginnings on the English estate with its abundance of forest land: it was the "presence of trees, rather than of iron ore, that determined the location of ironworks" subsequently, by the late eighteenth century, the iron industry moved to parts of the country where "woodlands still remained or new coppices could be planted."¹⁸ Thus, by 1787, at the start of the British Industrial Revolution,

¹⁶ E. Cobham Brewer, in his comprehensive *Dictionary of Phrase and Fable* illuminates the historical precedence behind "Luke's iron crown": Luke Dosa headed an unsuccessful revolt against the Hungarian nobles and subsequently underwent the torture of the red-hot iron crown, as a punishment. *Smollet's History of England* further elucidates the events behind the second metaphor, "Damien's bed of steel": "R. F. Damiens, in 1757, attempted the life of Louis XV. He was taken to the Conciergerie; an iron bed, which likewise served as a chair [. . .] and to this he was fastened with chains." See Ebenezer Cobham Brewer and Ivor H. Evans, *Brewer's Dictionary of Phrase and Fable*. 14th ed. (New York: Harper & Row, 1989), 39.

¹⁷ Nathaniel Kent, *Hints to Gentlemen of Landed Property: By Nathaniel Kent*. The second edition (London: printed for J. Dodsley, 1776), 218-219.

¹⁸ Ashton, 39.

“ironmasters who built blast furnaces would have been wise enough to ensure their fuel supplies by owning their woodlands and obtaining continuous supplies by coppicing.”¹⁹ Austen points out that Mr. Henry Dashwood’s will contains no provision to divide the land into parcels for his daughters, nor “any sale of its valuable woods.”²⁰ indicating that the estate’s income is dependent, at least partially, on the harvesting of its trees. Yet, the Dashwood women are denied the right to exploit the trees, as the estate cannot be divided, nor its resources sold for their benefit. Instead, Norland Park, newly inherited by his son from his previous marriage, John Dashwood, until John’s infant son is of age, is quickly reconfigured as a locus for exploitation of land rights. In her farewell to Norland, Marianne articulates her estrangement from the estate and its valuable woods:

And you, ye well-known trees! but you will continue the same.--No leaf will decay because we are removed, nor any branch become motionless although we can observe you no longer!--No; you will continue the same; unconscious of the pleasure or the regret you occasion, and insensible of any change in those who walk under your shade!-- But who will remain to enjoy you?²¹

Marianne’s apostrophe denotes a sense of anxious foreboding regarding the new tenants’ use for the trees, and subsequently, for the estate. While attempting to forestall their demise by acknowledging their aesthetic worth, she unwittingly portends the trees’ future death while

¹⁹ R. F. Tylecote, *A History of Metallurgy* (London: Metals Society, 1976), 206-207. In fact, the greater part of the iron industry was situated in a “semi-rural setting” its power supplied by streams and woodlands; T.S. Ashton notes that the thriving iron industry began in the Sussex Weald due to its extensive woods.” See also Ashton, 34; 42.

²⁰ Jane Austen and James Kinsley, *Sense and Sensibility* (Oxford; New York: Oxford University Press, 1998), 4.

²¹ Austen, 21.

prizing permanency and the maintenance of the uninterrupted, intact estate, since the trees will not, of course, “continue the same.” Thus, “continue” is negated by the specific terms, “decay,” and “motionless,” signaling that this continued state is temporary; despite Marianne’s effort to fix their endurance, the trees will eventually become motionless, through their half-brother’s occupation of his father’s estate, and his harvesting of the woods. Her use of the word “enjoy” furthers this irony given that, for John Dashwood, the word is synonymous with “use,” a meaning that is borne out when John later tells Elinor,

The inclosure of Norland Common, now carrying on, is a most serious drain. And then I have made a little purchase within this half year; East Kingham Farm, you must remember the place, where old Gibson used to live. The land was so very desirable for me in every respect, so immediately adjoining my own property, that I felt it my duty to buy it. I could not have answered it to my conscience to let it fall into any other hands. A man must pay for his convenience; and it has cost me a vast deal of money. [. . .] the old thorns” were “cleared away” to make room for his wife, Fanny’s, new greenhouse.²²

What may not be immediately apparent to contemporary readers, however, though it would have been to Austen’s audience, was that the Parliamentary Enclosure Acts, which consolidated and privatized the English countryside, drove the iron industries, and provoked the British Industrial Revolution to “gather pace.”²³ Thus, with enclosure went a number of other developments, such as drainage and flood control, in order to utilize fully the enclosed land. Moreover, Dashwood’s hyperbole regarding the “purchase” of small land for which he

²² Austen, 169-170.

²³ While the process of enclosing common land disempowered smallholders who worked small parcels, enclosure also enormously increased the nation’s agricultural and mining capabilities, as the landed gentry sought to exploit the natural resources on their consolidated tracts.

must “pay” a “vast deal of money” illustrates the fact that during the late eighteenth and nineteenth centuries, “Investment was especially heavy in the period when parliamentary enclosure” and “the enthusiasm for under drainage” were popular. Under-drainage, the practice of installing drains below the surface to remove excess alkaline water, was a common, yet “costly form of improvement.”²⁴ The connection between the “inclosure of Norland Common” as a “most serious drain,” thus acts as a pun on the practice of draining waste land to increase the enclosed property’s value, as well as the considerable expense for its undertaking. “Drain” dually signals John Dashwood’s investment into and exploitation of the Commons, for his personal financial gain.²⁵ Here, he embodies not a responsible, but a scheming landlord, concerned with his own financial wellbeing over equity for his tenants, who just happen to be his own family.

John Dashwood’s “almost immediate improvements” are reminiscent of William Cobbett’s later classification of the class of landed gentry who regarded the estate as an object of speculation and exploitation. Dashwood embodies the figure of the greedy landlord, espousing what Duckworth deems the “economic cancer” spreading from the city to the country estate; the mark of the Common’s enclosure and his subsequent land purchases for his own financial benefit signifies his “vicious expression of a totally economic outlook.”²⁶

²⁴ G.E Mingay, *The Gentry: The Rise and Fall of a Ruling Class* (London ; New York: Longman, 1976), 94.

²⁵ Indeed, Mingay contends that in areas such as Sussex, “Large areas were deforested, drained and ploughed up in this period. ” He further argues that “much profit could be made from exploiting the resources of timber, stone, and minerals to be found on many estates. Timber became very profitable with the growing demand for wood for building purposes and for industrial uses, especially the making of charcoal in the expanding iron industry.” Ibid., 43.

²⁶ Duckworth's classification of enclosures upon Norland fails to fully address the fact that during *Sense and Sensibility's* composition, as enclosure was viewed as an essential measure of “balanced estate policy for the landed gentry and their agents to create larger farm units--which were more easily administered, conveniently-worked, and more profitable.” See Alistair

Austen further reconfigures the estate as a vehicle for economic and industrial exploitation in John Dashwood's vision that in his tenure at Norland, he "might reasonably hope to live many years, and by living economically, lay by a considerable sum from the produce of an estate already large, and capable of almost immediate improvement."²⁷ Here, she signals the inevitable expansion of his inheritance through enclosure and "improvement." His hope to "live economically" signals the dual meaning behind the new landowner's use of capital. In living economically, he envisions management of the estate's agricultural natural resources, and it is inferred, aims to create and reinvest his capital into industrializing his new estate. Consequently, Dashwood embodies the gentry Karl Marx later came to describe as a group that "cast off its feudal character and adopted an industrial character in so far as it is aiming to make as much money as possible."²⁸ With his income already supplemented by earnings from the estate's crops, the estate's capability for "almost immediate improvement," in conjunction with "produce," signals the idea that "Where an estate's woodlands were extensive and well managed the *produce* formed a major item of revenue."²⁹ Dashwood's cognizance of the estate's capability for quick expansion appears to illustrate what Mingay registers as the burgeoning eighteenth-century consciousness regarding industrial development within the

M. Duckworth, *The Improvement of the Estate: A Study of Jane Austen's Novels* (Johns Hopkins paperbacks ed. Baltimore: Johns Hopkins University Press, 1994), 90. Moreover, Ashton argues that enclosure was "thought of as a part of a movement which contemporaries spoke of as 'Improvement'" and that estate owners, such as the Duke of Bedford, Lord Penrhyn and others, considered estate's "soil as a continuing family asset," while the country house acted as a "social and administrative centre as well as family seat" in which the "farms woodlands, quarries, and mines" were operated. See Ashton, 13; 41-42; 122.

²⁷ Austen, 4.

²⁸ See Karl Marx, *Economic and Philosophic Manuscripts of 1844* (New York: International Publishers, 1964), 65.

²⁹ My emphasis; G.E. Mingay, *English Landed Society in the Eighteenth Century* (London: Routledge and Paul, 1963), 98.

estate: “The industrial involvement of so many members of the landed interest necessarily influenced their attitudes towards the declining status of agriculture.” Instead, Mingay contends that many of the landed gentry turned toward “mining, transport and iron production in the vicinity of their estates” to reap full financial benefit from the land.³⁰

While we cannot know for certain if Dashwood indeed would have further industrialized the estate—though we see no effort on his part to control his ambitions—I would like to explore the ramifications of the possibility. Indeed, Mingay attests that one of the primary advantages of the acquisition and improvement of land through primogeniture was the inheritor’s “freedom to exploit it for private industrial and commercial purposes as well as for agriculture: for timber, stone, coal, iron, canal building and the rest.”³¹ Dashwood has utilized the “valuable woods,” and now, if he resembles the trajectory many of the gentry took, we could postulate that he would seek to take advantage of the estate’s other resources. Mingay further explains that many estates offered possibilities of exploitation for industrial purposes: “Throughout the centuries numerous enclosures of commons and waste were undertaken with minerals rather than farming in mind.”³² Dashwood’s hope for improvement embodies enclosure for the purpose of developing non-agricultural resources; Austen makes obvious that the income from the estate’s farms is already established and “considerable.” As a result, he has no need to specifically expand the agricultural capabilities to generate more

³⁰ Mingay further contends that the pre-nineteenth century economy was one in which trade and industry had long been developed and by all accounts, “was still firmly rooted in the countryside. The larger part of 38 million acres of England and Wales was by the seventeenth century in the hands of the gentry.” See Mingay, *The Gentry*, 80.

³¹ *Ibid.*, 191; 167.

³² *Ibid.*, 97.

“produce,” in the form of crops. Instead, the term connects him to “production,” potentially such as mining, fueled by Norland’s timber.

Consistent with his exploitative characterization, he appears to recognize and develop the estate’s industrial potential to increase income. In effect, Austen reveals that Dashwood hopes for a vastly different type of “improvement.” He embodies the eighteenth-century concept of industrial, rather than aesthetic or picturesque classification of the term. In the late eighteenth century, an “improving” landlord often bought estates with the explicit intention of developing its iron resources. Improvement did not solely signify aesthetic improvements, such as those directed by the picturesque theorists. Instead, the term signified that landowners’ “interest in improvements was confined in the main to ways and means of improving the value of land as a capital asset. They found that this could best be done by ensuring that it was put to that use in common fields.”³³ Austen’s characterization of John Dashwood as an insatiable improver intimates a particular species of eighteenth-century landowner, concerned with the business of developing the estate’s production and commerce to increase capital. His exaggerated classification of the estate in terms of currency, resources, and potential exemplifies Norland as a prolific economy and expands the estate’s dimensions beyond the agrarian realm, into a modern and industrial one.

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The novel uses more explicit “iron” tropes to expose the exploitative nature of the landed gentry in its portrayal of Willoughby, who illustrates the widespread economic

³³ Ibid.

motivation that disrupted the stability of this class. Indeed, in Willoughby's characterization, Austen addresses how many landowners acquired dignity through profits gleaned from exploitation, rather than from merit or lineage. The novel introduces him immediately following his initial acquaintance with the Dashwood women: "His name was good."³⁴ This phrase signifies that "Willoughby" is an established and recognized moniker, carrying the influence of a landed family; I would like to suggest that the name is potentially associated with "The Willoughbys of Wollaton," who were deeply involved in the iron industry, one of the many prominent landed families who owed their rise to coal and iron.³⁵ This association is significant, insofar that Janine Barchas asserts, "Austen selects so many of her prominent surnames for their evocative family histories."³⁶ Maggie Lane also suggests in *Jane Austen and Names* that Austen was aware of the cultural connotations invoked by names.³⁷ We understand that Austen's knowledge of prominent British family names was extensive; moreover, her mindfulness of the "pedantry & affectation" of novelistic names was of great concern. Barchas further asserts that Austen's fictional names illustrate how her "realism

³⁴ Austen, 32.

³⁵ Mingay, *The Gentry*, 166. John U. Nef further notes that two families, the Willoughbys and the Delavals, whom Mr. Tawney has selected as typical of a new type of landlord-- 'a laborious and acute man of business'--which emerges in the sixteenth-century England were both interested in coal mines within their own estates." See Nef, 4. While Austen's Willoughby is neither laborious nor acute, it is worth noting that her characterization reveals the dangers of extractive capitalization to the ancient estate, and the moral decay that follows.

³⁶ See Janine Barchas *Matters of Fact in Jane Austen: History, Location, and Celebrity* (Baltimore: The Johns Hopkins University Press, 2012), 201. For example, in her exchange with Cassandra about Hannah More's novel *Coelebs in Search of a Wife* (1809) Austen comments on the virtues of "unpretending names": I am not at all ashamed about the name of the Novel, having been guilty of no insult towards your handwriting; the Dipthong I always saw, but knowing how fond you were of adding a vowel wherever you could, I attributed it to that alone--& the knowledge of the truth does the book no service;--the only merit it could have, was in the name of Caleb, which has an honest, unpretending sound; but in Coelebs, there is pedantry & affectation.--Is it written only to Classical Scholars? (30 January 1809).

³⁷ Maggie Lane, *Jane Austen and Names* (Bristol: Blaise Books, 2002), 11.

modestly veils a steady habit of smart cultural allusion” and thus, the author habitually scrutinized the names and characters of those around her for novelistic material.³⁸ Though we cannot specifically say she knew of the historical Willoughby family, given how unusual the name is, and her sardonic consideration of even fictional appellations, it is a path worth following since the historical Willoughbys represented a class of English landowners eager to buy their way into the gentry with the spoils from iron and industrial exploitation, highlighting the instability of estate and gentry status.³⁹ Austen’s characterization of Willoughby appears to uncannily parallel this precedent. For example, Willoughby’s assumed aristocratic provenance is also seen in his estate’s name, “Combe Magna,” which illustrates the common practice of assigning a Latin denomination to the English estate to denote the family’s “ancient” origins and indicate its sizeable grounds.⁴⁰ “Combe Magna” thus further pegs Willoughby as an impersonator within the ranks of the gentry. In addition to his name, several images also associate Willoughby with iron; for example, iron hunting rifles act as signs of his gentry status and signify the “passion for shooting and hunting which in the early decades of the nineteenth century became an obsession with many aristocracy and gentry”⁴¹

³⁸ Barchas, 145.

³⁹ Penelope Corfield further addresses the nouveaux riche, “Indeed, friction over the claims of ‘new money’ tended to heighten over time, because society’s power structures were under continuing pressure to accommodate new business and industrial fortunes. [. . .] Amongst such complexities, the gentlemanly ideal was pushed and pulled in rival directions by the overlapping claims of land, wealth and virtue.” See Penelope J. Corfield, et al., *Land and Society in Britain, 1700-1914: Essays in Honour of F.M.L. Thompson* (Manchester [England]; New York: Manchester University Press : distributed exclusively in the USA and Canada by St. Martin’s Press, 1996), 17.

⁴⁰ Originally the Bugge family, upon amassing their fortune, changed their name to “the more aristocratic Willoughby.” The building of a “fussy Italianate mansion” signaled their entrée into the ranks of the gentry. See Margaret Anne Doody. *Jane Austen’s Names: Riddles, Persons, Places* (Chicago: The University of Chicago Press, 2015), 43-44; 311.

⁴¹ Mingay, *The Gentry* 132. Peter Knox-Shaw contends that Willoughby also represents Adam Smith’s idea that the “more exalted ranks of society naturally attract admiration and that social

Austen first introduces Willoughby “passing up the hill within a few yards of Marianne” after her fall, “A gentleman carrying a gun, with two pointers playing round him [. . .]. He put down his gun and ran to her assistance”⁴² This introduction signals his membership in landed gentry, which “stood proxy for the values of a traditionalist aristocracy. He is taken to be the heir to feudal values, landed, glorying in his estates, contemptuous of business routines, proud of his hereditary rights, hostile to wealth creation, uninterested in city life, and devoted to ornamental idleness and sports.”⁴³

Moreover, Austen’s conflation of the gun with the figure of the gentleman, wandering the estate in pursuit of “sport,” delineates Willoughby’s particular brand of estate exploitation, distinct from John Dashwood’s obsessive property enclosure. Here, the iron “gun” emblematically represents that Willoughby is less interested in the development of the estate’s resources for economic gain, and more so in using the past exploitations and his “ancestral” name so he can “glory” in its diversions. Willoughby’s association with iron rifles signals another form of estate instability, in the form of non-productivity and the gentry’s refusal to responsibly develop their estates’ resources.⁴⁴ Patrick Colquhoun, in his 1814 *A*

stability is born of such instincts. But though Smith stood by this view, he was increasingly struck by the corruptive effects of imitation.” See Peter Knox-Shaw, *Jane Austen and the Enlightenment* (Cambridge, UK: Cambridge University Press, 2004), 149.

⁴² Austen, 32.

⁴³ See Penelope J. Corfield’s “The Rivals: Landed and Other Gentlemen.” In *Land and Society in Britain, 1700-1914: Essays in Honour of F.M.L. Thompson* (Manchester [England]; New York: Manchester University Press: distributed exclusively in the USA and Canada by St. Martin’s Press, 1996), 22.

⁴⁴ Advocates for laissez-faire capitalism, like N.W. Senior and David Ricardo, criticized the landowners’ passive role in the economy. Landlords produced neither capital nor labor and political economists attacked the figure of the “Country Gentleman” on the grounds that the landlord was non-productive and therefore superfluous and parasitic. See Beth Fowkes Tobin, *Superintending the Poor: Charitable Ladies and Paternal Landlords in British Fiction, 1770-1860* (New Haven [Conn.]: Yale University Press, 1993), 247.

Treatise on the Wealth, Power, and Resources of the British Empire, describes a sub-chapter of the gentry as “unproductive labourers, whose exertions do not create any new property.”⁴⁵ Austen employs a similar criticism of Willoughby as an unproductive landlord in the huntsman/gentleman pun when he tries to give Marianne Queen Mab, a horse “he had bred himself on his estate in Somersetshire.”⁴⁶ Here, the “bred” mare conflates Willoughby’s lack of utility, save for hunting, with his estate and his quasi- aristocratic pedigree. His estate’s only productive measure, the breeding of horses, simply compounds his identity as an idle, country gentleman, unconcerned with more industrialized forms of utility.⁴⁷

In contrast to Austen’s derisive characterizations of John Dashwood and Willoughby, she presents the “morally founded” protagonist, Edward Ferrars, “a gentleman-like and pleasing young man,” who was “the eldest son of a man who had died very rich.”⁴⁸ Like Dashwood, Edward is also first in line to inherit the family estate, though there the similarity ends since the novel contrasts him to his scheming (soon to be) brother-in-law and the idle Willoughby. In Edward, Austen appears to construct a tidy binary extant between the

⁴⁵ Colquhoun continues to argue that landlords do not produce capital; “It is only those who pass their lives in vice and idleness, or who dissipate the surplus labour acquired by inheritance or otherwise in gaming and debauchery,” and “who live upon the land and labour of the people, without filling any useful stations in the body politic, or making the smallest return or compensation to society for what they consume.” See Patrick Colquhoun, *A Treatise on the Wealth, Power, and Resources of the British Empire, in Every Quarter of the World, Including the East Indies ...* (London: Printed for J. Mawman, H. Bryer, 1814), 109;33.

⁴⁶ Austen, 44.

⁴⁷ Throughout the novel, Willoughby appears to simultaneously embody Colquhoun’s criticism: he glories in Combe Magna, he does not engage in speculation or development of the estate’s resources through enclosure, and is devoted to “ornamental idleness,” which eventually, serves as his economic downfall. In essence, Austen’s portrayal of Willoughby subtly derides what Penelope Corfield classifies as “The imaginative hold that the chivalric ideal and the lure of the decorative ‘idleness’ exercised over England’s socially-ambitious bourgeoisie.” See Corfield, *Landed Gentlemen*, 12.

⁴⁸ Austen, 12.

exploitative figures and the moral estate owner, whereby he effects the dialectical resolution between exploitation and idleness, embodying what Juliet McMaster classifies as “The country gentleman, who leads a leisured existence and who subsists on income from land and inheritance, is at his best the moral and social ideal as a partner for a heroine.”⁴⁹ His name and his “gentleman-like” demeanor, with its associations of familial consequence and his landed inheritance, configures him as such a country gentleman who embodies the “implicit distinction between a morally based and an economically based society.”⁵⁰

However, like her portrayal of the scheming men, Austen subtly employs iron terminology to complicate this binary⁵¹ and to endow Edward Ferrars with characteristics identical to those of John Dashwood and Willoughby, thus repudiating his antithetical position as a morally based landowner and further illustrating the gentry’s multifarious nature as *simultaneously* exploitative and idle. Moreover, iron tropes work to circumvent Edward’s purportedly stable configuration as the dialectical resolution to the other masculine characters and instead, symbolize him as an ambivalent subject within the unsound estate. The novel first avoids this binary characterization of Edward Ferrars as a moral, staid country gentleman--the antidote to the immoral landowners’ speculation and indolence--through his

⁴⁹ McMaster, 114.

⁵⁰ Duckworth, 91.

⁵¹ Edward Neill addresses the novel’s avoidance of uncomplicated comparison: “*Sense and Sensibility* undoes binary oppositions remarked upon as ‘vicious’ by writers like Derrida and Jameson, and has an Adorno-like awareness of how the falsities of society prevent unironized narrative ‘solutions’ to the problems it seems to propose.” See Edward Neill, *The Politics of Jane Austen* (Basingstoke: New York: Macmillan ; St. Martin’s Press, 1999), x. Barbara Seeber further notes, regarding Austen’s eschewal of unironized narrative, “to settle on one meaning is an act of authority that the text continually defies.” Seeber quoted in Alice Drum, “Pride and Prestige: Jane Austen and the Professions.” *College Literature* 36, no. 3 (2009): 93. Indeed, Marilyn Butler even acknowledges, “The sole element of unorthodoxy in *Sense and Sensibility* lies in the execution, and especially in the skillful adjustment of detail which makes its story more natural.” Butler, 194, 195.

metaphorical, ferrous surname. For example, like Willoughby, Edward is also linked to iron through his appellation. The *Oxford English Dictionary* denotes the British derivation of “Ferrars,” from the Latin “ferreus,” as “of or pertaining to iron,” “hard as iron,” as well as “a worker in iron.”⁵² While the “Ferrars” definition appears cursory on a purely metaphorical basis, its connection to iron and enclosure is significant, insofar that the Ferrars name and its association allows Austen the narrative space in which to explore themes of feeble masculinity and the insecure foundations of estate inheritance. This instability is first evident as the novel introduces him through a series of negative terms, save for his surname:

Edward Ferrars was not recommended to their good opinion by any peculiar graces of person or address. He was not handsome, and his manners required intimacy to make them pleasing. [. . .] But he was neither fitted by abilities nor disposition to answer the wishes of his mother and sister, who longed to see him distinguished—as—they hardly knew what.⁵³

Austen initially presents Edward as a set of repudiations--”not,” “neither” and “nor”-- to signal his lack of independent character, thus allowing for his later comparison to John Dashwood and Willoughby. Here, Edward only possesses his identity as a Ferrars and all the consequence that supposedly devolves from it. In this manner, he is initially linked to Willoughby, who also relies solely on his name and its consequence. We see an instance of his “blurry” character when he appears indistinguishable to Marianne and Elinor as they view him from afar: The Misses Dashwood observed “amongst the objects in the scene” a gentleman on

⁵² While Jillian Heydt-Stevenson asserts, “Austen usually avoids allegorical names” such as “Lucy Steele,” she later acknowledges that the name possesses connotations that link it to national identity, “Englishness,” and the industrial revolution. Heydt-Stevenson, 49.

⁵³ Austen, 12.

horseback, quickly approaching. While Elinor could not fully make out the person, Marianne discerned the figure to be that of the returned Willoughby; yet,

They were soon within thirty yards of the gentleman. Marianne looked again; her heart sunk within her; and abruptly turning round, she was hurrying back, when the voices of both her sisters were raised to detain her, a third, almost as well known as Willoughby's, joined them in begging her to stop, and she turned round with surprise to see and welcome Edward Ferrars.⁵⁴

This scene further highlights the unresolved nature of Edward, as he is indistinguishable, in his gentlemanly attributes--"his air, his coat, his horse"--from Willoughby. His description here matches, almost identically, that of Marianne's lover as he is signified as a hunter, through his riding coat and horse; the only element that appears to be missing is the iron gun.

Moreover, true to Austen's form, the definition of "Ferrars" as an "ironworker" additionally expounds upon this connection to Willoughby and plays upon the irony that while his title signals otherwise, in fact, Edward engages in no "work"; like the young man, he is dispossessed of any utility in conjunction with his estate. Moreover, like Willoughby, he is only sustained by an aristocratic family name, one that is also associated with iron. This is further expounded as Edward states, "I have no necessary business to engage me, no profession to give me employment, or afford me any thing like independence. [. . .] I am, an idle, helpless being."⁵⁵ Here, he does not self-identify as a "Ferrars," with its implications of "iron" and "work"; instead, he refers to himself as a "being" dispossessed of meaning or identity. His ferrous surname thus complicates Edward's signification and his significance. It

⁵⁴ Ibid., 65-66.

⁵⁵ Ibid., 77.

denotes his association with a “hard as iron” familial legacy, yet it also ironically highlights the fissure between his appellation and his weak, almost porous character. He does not possess “any thing like independence” in his living nor in his depiction. Hence, while he is recognized as a “Ferrars,” paradoxically, he is “any thing”: undistinguished and consequently, undistinguishable from the other male characters as the result of this name.

Austen further signals Edward’s lack of independent character later in the novel, intimating that Edward’s interest in the land’s “utility” also points to his implicit connection to John Dashwood’s estate development. For example, after returning from the visit to his town stables, in which “he had seen many parts of the valley to advantage,” he apprises Marianne of his view of the Devonshire countryside: “I call it a very fine country-- the hills are steep, the woods seem full of fine timber, [. . .]. It exactly answers my idea of a fine country, because it unites beauty with utility--.”⁵⁶ Here, Edward resembles the industrial magnate: he eschews the picturesque classification of the scene instead commenting on the land’s “utility” and its propensity for exploitation.⁵⁷ This is also seen in

⁵⁶ Ibid., 72-73. Edward’s description is later matched, almost identically, in James Austen’s “Lines Written in Autumn 1817.” After Jane’s death, her brother composed the poem on his tour through the south-west England: “But most I prize/And cultivate that taste for nature’s charms/Which teaches me to view her simplest scenes/With high & indescribable delight./This makes me Lord of all I see around:/My neighbour’s lawns, & fields, & woods are mine;/Mine, by the title deeds of genuine taste.” James Austen quoted in Knox-Shaw, 74,75.

⁵⁷ John Barrell notes in “The Public Prospect,” that landscape and landscape art was used in this period to legitimate political authority. He further states in his argument that “because that social order is perceived as a natural order, the limitations on what may be developed by nurture is sanctioned as, after all, natural.” Barrell interestingly notes the connection between the natural domain and governance, stating that there needs to be opportunity for a generalising and abstracting rationality: the successful exercise of the mechanical arts requires that material objects be regarded as concrete particulars, and not in terms of the abstract or formal relations among them. The man of independent means, on the other hand, who does not labour to increase them, will be released from private interest and from the occlusions of a narrowed and partial experience of the world, and from an

his qualification of the woods full of “fine timber.” His view of the country estate is indistinguishable from the latter character, in which the woods offer an abundance of resources to be used and developed, perhaps even for mining.

While Edward’s iron name and his inclination for utility connect him to the calculating male characters, Austen then obliterates Ferrars’ firm link to Dashwood and Willoughby through his final, dramatized interaction with yet another ferrous object: the “scissars.”⁵⁸ The scissars help Edward manifest as an individual, distinct from the other men and his own exploitative family. In a singular, exaggerated act, Edward uses the steel scissars to represent his severed engagement, the disruption of his former identity, and the introduction of agency, in the form of a profession:⁵⁹ Edward explains to Elinor Dashwood that his former fiancée, Lucy Steele, has married his younger brother, Robert, who now stands to inherit the Ferrars estate. As he speaks, Edward, “Apparently from not knowing what to do; took up a pair of scissars that lay there, [...] spoiling both them and their sheath by cutting the latter to pieces as he spoke.”⁶⁰ Here, the cutting of the sheath “to pieces” denotes the future of the Ferrars family and its estate. Much like John Dashwood’s cutting of the woods or parceling of land to

experience of the world as material. He will be able to grasp the public interest, and so will be fit to participate in government.

See Barrell, 16.

⁵⁸ Darryl Jones explains of the scissars’ import, “The novel’s doubleness is displayed symbolically through the image of the scissars which Edward Ferrars destroys in frustration shortly before he proposes to Elinor.” See his work, *Jane Austen* (Basingstoke, Hampshire ; New York: Palgrave Macmillan, 2004), 69. Margaret Anne Doody further states that “perhaps the story might also be compared to the ‘scissars.’” See the Preface in Austen, *Sense and Sensibility*, xxxv.

⁵⁹ Critics also mention scissars as signs for a profession. Ronald Paulson suggests that scissars indicate the seamstress profession in *Moll Flanders*. Indeed, Hogarth further uses scissars in reference to barbers in *Hudibras* and *The Adventure of Mambrino’s Helmet*. See Aaron Santesso, “William Hogarth and the Tradition of Sexual Scissars.” *SEL Studies in English Literature 1500-1900* 39, no. 3 (1999): 501.

⁶⁰ Austen, 272-273.

industrialize Norland for economic benefit, Edward's act appears to signal his similar, exploitative nature. However, the object—the scissars—weakens this association. In fact, Edward's sheath cutting signifies the exchange of Ferrars; here, primogeniture is subverted and the marriage of Lucy Steele to his younger brother forces Edward, previously an ambivalent subject in landed estates and exploitation, to become what Marx calls an “independent being endowed with life.”⁶¹ Therefore, the cutting of the sheath effects a symbolic excision in this fraternal exchange, signifying the “promise of lands and offspring” as a token of covenant membership⁶² yet ironically, the lands will be bestowed upon Robert, as Edward has excluded himself from this covenant. Here, the scissars represent the two halves of the Ferrars men; the shared etymology of the iron family name and the steel object are semantically and symbolically combined through the ferrous object. However, while the scissars signal the family's construction, they also symbolize the object—Lucy Steele—that precipitates the Ferrars' unraveling. Edward's connection to Lucy literally cuts him off from his own inheritance and emblematic family name. Moreover, true to Austen's irony, the feudal domain does not experience stable resolution through Edward's symbolic act. Instead, this breakage passes it on to the most idle, manipulative, and capitalistic figures within the entire novel: Robert and Lucy.

This peculiar encounter with the scissars exposes Austen's final link between iron and new forms of wealth. The scissars also illustrate iron's role as a “multivalent material” existing between historical and material spheres,⁶³ softening the rigid ideology regarding eighteenth-century estate development and further calling into question the classification of Austen's

⁶¹ Marx quoted in Galperin, 53.

⁶² *Gen* 17:10

⁶³ Galperin, 31.

domains and its inhabitants as conservative or “resolved.” Iron, in its subtle, fictional form, calls attention to the ontological slippage present in the very idea of the estate, as well as to the tension between Austen’s historicity and aesthetic concerns.⁶⁴ In *Sense and Sensibility*, it is precisely this manner of skillful detail--in the form of ferrous names, schemes and objects--that allows for an expansion of the critical discourse on Austen’s narrative ciphers and the manner in which these “troubling” elements oscillate between the historic and aesthetic “in their *inability* to uphold any firm distinction between the probable and the possible.”⁶⁵ This instability is most evident at the end of the novel, as Robert Ferrars, an idle consumer and consummate capitalist, is concerned less with productive development of his inherited land and more so with his new “Steele” wife and with purchasing metal consumer goods: the infamous toothpick case.

Additionally, Edward is relocated to Colonel Brandon’s property, Delaford, where he will serve as the estate’s curate. Yet, even this resolution is unsatisfactory, as Brandon’s manor is connected to its own form of exploitation, supported by East Indian trade and capital gleaned from “nabobs, gold mohrs, and palanquins.”⁶⁶ Thus, while Austen uses iron to highlight the synthetic character of the landed gentry, she also employs ferrous language to dispel a major myth regarding rural British identity, situating the burgeoning industrial revolution within the country estate surrounded by “valuable woods” and hidden ore. More importantly, as the example of Edward Ferrars indicates, iron names and associations provide Austen the narrative

⁶⁴ D.A. Miller further points to the resistance of such particular details, stating, “the drift of the sign, producing other signs as it moves toward--or away from--a full and settled meaning. Whether in its erotic or semiotic dimension, the narratable inherently lacks finality.” See D.A. Miller, *Narrative and Its Discontents: Problems of Closure in the Traditional Novel* (Princeton, N.J.: Princeton University Press, 1981), xi.

⁶⁵ Galperin, 4.

⁶⁶ Austen, 39.

space to explore questions of masculine autonomy and selfhood in an increasingly complicated, modernizing Britain. Austen's iron taxonomy thus illustrates that even the most "stable" elements in her fiction--her moral characters and native homesteads--much like the metal itself, are inherently malleable, loosely bound and ultimately, markers for catalytic change.

It is finally important to return to Marianne's mournful apostrophe to the trees, at the start of the novel, to understand the ways in which Austen is registering this new industrial reality, and the transformation in literary forms that represent extraction. Austen's use of apostrophe in this scene is particularly notable, as it indicates a transition from older, pastoral literary modes to novelistic representation.³ Tobias Menely asserts that "Apostrophe is an insistently literary convention, as much an invocation of the poetic past as an addressed other."⁶⁷ Indeed, the fluid temporal and literary registers of Marianne's apostrophe draw upon the ancient and the elegiac; in her mournful address, she moves between a stable, almost static imagined future for the estate's trees predicated on their venerable past: "but you will continue the same," knowing full well, that they will not.

Part II. The Estate Underground: *Mansfield Park* and Extractive Wilderness

We see the British estate in transition, and the multivalent use of prospect, in Austen's later novel, *Mansfield Park* (1814)--another work that considers how extractive landscape change both confers and de-legitimizes the gentry's authority and industry, and complicates what Elizabeth Miller notes as the extant discussion in the nineteenth century "around extraction itself" as well as the "broader network of nineteenth-century extractive industries—a global

⁶⁷ Menely, 4.

infrastructure of labor, capital, and material devoted to the unearthing of buried treasure.”⁶⁸ Edward Said famously states in *Culture and Imperialism* that throughout the nineteenth century, allusions to empire are ubiquitous in British and French cultural productions, “perhaps nowhere with more regularity and frequency” than in the British novel.⁶⁹ He further notes that Austen’s work “carefully defines the moral and social values informing her other novels, references to Sir Thomas Bertram’s overseas possession are threaded through; they give him his wealth, occasion his absences, fix his social status at home and abroad, and make possible his values, to which Fanny Price (and Austen herself) finally subscribes.”⁷⁰ Said argues that the novel promotes “a domestic imperialist culture without which Britain’s subsequent acquisition of territory would not have been possible.”⁷¹ The connection between landed possessions and British domestic moral and social order is echoed throughout the critical canon. Alistair Duckworth famously comments that the crucial role of land in *Mansfield Park* is to establish Austen’s concern with “defining a proper relation between the individual and society,” where estates “function not only as the settings of action but as indexes to the character.”⁷² It is well known that Austen’s oeuvre is preoccupied with the homeland and its character and the “experiences and conditions” that center the British estate as not only the moral center of the nation, but of the world. However, Said’s point regarding the “right to colonial possessions” in relation to a sense of “home” is crucial in understanding the dual role of mineral extraction upon the British estate and its connections to landed holdings abroad, such as we see in Sir Thomas Bertram’s Antigua plantations in *Mansfield Park*.

⁶⁸ Miller, 35.

⁶⁹ Said, 62.

⁷⁰ Ibid.

⁷¹ Ibid., 95.

⁷² Duckworth, 36-37.

In this section, I argue that *Mansfield Park* illustrates the relationship between mining development and improvements upon the estate, and the way profits from domestic industrialization provide the capital necessary to invest in landed schemes abroad. In turn, profits from plantations were reinvested into the domestic British estate, funding improvement schemes and enhanced agricultural production at “home.” I note the historical precedent way Austen tracks the respatialization and expansion of the estate in relation to mineral development, to better understand the disorienting relationship between what Tobias Menely calls “outward and downward expansion”⁷³ of the rural estate, and the social costs that result from such expansion.

In *Mansfield Park*, the notion of prospect moves fluidly between extractive capital and reinvestment into the natural beauty of the estate. Elizabeth Miller argues that the rise of mining practices “occasioned a complex reckoning with prevailing ideas of time and futurity; it saw the imagining of a new future,” one that was “undetermined and indeterminable—in other words, open.” Miller connects this notion of open time, which brought both promise and anxiety, as the “cyclical comforts of a stable, predictable natural system” were replaced by a “nonrenewable material base that was depleting towards exhaustion.”⁷⁴ While Austen cannot be aware of the trend towards coal exhaustion, an idea that is not articulated until well into the latter half of the nineteenth century, I assert that she picks up on many ways in which resource exploitation upon the British estate opens up the temporal aspects of stable, predictable systems towards speculative, and future-oriented thinking. If we are to accept Miller’s premise that social life in the nineteenth century is premised on changing forms of land ownership and diversified earnings from mining, we start to understand the way “prospect” changes the idea of the conservative,

⁷³ Menely, 7.

⁷⁴ Miller, 30.

stable estate, and the continuous future of the landed gentry itself.

Moreover, in conjunction with new extractive temporalities and material realities, this part takes as its subject the early convergence of “industrialization, imperialism, and global capital, which together produced a new stage of environmental history: the age of industrial extraction.”⁷⁵ While the novel does not bear witness to large-scale extractive schemes, it provides a glimpse into the other aspects of the extractive matrix upon the estate, both at home and abroad. Barri J. Gold notes how the tension in *Mansfield Park* between the “domestic and the international” lies in the way the novel considers and complicates notions of nature and prospect in relation to “underlying chains of what we can call (but Austen could not) energy exchange, as well as the way these may be narratively obscured.”⁷⁶ In *Sense and Sensibility*, we see allusions to mining improvements that supplement the agricultural economy upon the estate; in *Mansfield Park*, extraction is part of a larger global network of energy forms and exchanges in which landed and trading interests were collectively considered and in which “country gentlemen and planters [promoted] the benefit of their estates, in conjunction with that of the nation,” through extractive endeavors.⁷⁷

⁷⁵ Ibid., 31.

⁷⁶ Gold asserts that *Mansfield Park*, the most “Victorian of Austen’s novels,” illustrates the early “emergence of energy principles,” which is characterized by suppressed anxiety around scarcity, a “profound ambivalence regarding closure,” and the habits of circumlocution that will dominate the Victorian discourses of energy,” which enabled later Victorian misinterpretations of energy and resource flow. For more on this, see *Energy, Ecocriticism, and Nineteenth-century Fiction: Novel Ecologies* (Basingstoke: Palgrave Macmillan, 2021), 84-5.

⁷⁷ This statement comprises the frontispiece to *Dissertation X* of Malachy Postlethwayt’s 1757 treatise, *Britain’s commercial interest explained and improved*, which I will address at length in this chapter. See *Britain’s commercial interest explained and improved; in a series of dissertations on several important branches of her trade and police: Containing A Candid Enquiry into the secret Causes of the present Misfortunes of the Nation. With Proposals for their Remedy. Also The great Advantages which would accrue to this Kingdom from an Union with Ireland. By Malachy Postlethwayt, Esq; Author of the Universal Dictionary of Trade and*

Gold argues that within the novel, Austen both employs and critiques the depiction of the traditional rural estate and pastoral nature prospects which “elevate the human mind and human morals” in a highly romantic vein.⁷⁸ As the moral protagonist of the novel, Fanny Price, a “good representative of romantic sensibility,” a “keen and sensitive viewer of rural nature,”⁷⁹ appears to engage prospect in its most scenic, panoramic sense, in her unmediated observations of the countryside. This is first seen in what Gold describes as a particularly “Wordsworthian” moment of rapture, as Fanny looks down upon a night scene from the window above, taking in the “scene without, where all that was solemn, and soothing, and lovely, appeared in the brilliancy of an unclouded night, and the contrast of the deep shade of the woods.” Fanny’s response to her natural world illustrates her elevated romantic sensibility, delicacy of thought, and lively feeling:

Here’s harmony!” said she; “here’s repose! Here’s what may leave all painting and all music behind, and what poetry only can attempt to describe! Here’s what may tranquillise every care, and lift the heart to rapture! When I look out on such a night as this, I feel as if there could be neither wicked- ness nor sorrow in the world; and there certainly would be less of both if the sublimity of Nature were more attended to, and people were carried more out of themselves by contemplating such a scene.⁸⁰

Here, Fanny is the idealized “viewer” of prospect: like Pope’s St. John, her elevated sensitivity to nature’s domain exceeds human art: “leave all painting and music behind, and what

Commerce, &c. ... Vol. 1. (London: printed for D. Browne, without Temple-Bar; A. Millar, in the Strand; J. Whiston and B. White, and W. Sandby, in Fleet-Street, MDCCLVII. [1757]), 245.

⁷⁸ Gold, 86.

⁷⁹ *Ibid.*, 87.

⁸⁰ Jane Austen and James Kinsley, *Mansfield Park* (Oxford; New York: Oxford University Press, 1998), 80.

poetry can only attempt to describe!” Instead, “look[ing] out” from above, Fanny possesses the kind of oversight necessary to connect the prospect before her, Nature’s general “sublimity,” to the elevation of the human condition. The temporal registers of this scene denote Fanny’s elevated position as an idealized “viewer,” as well as an opening out of the estate from its concrete and bounded knowability to more sublime registers, seen in the way she moves from the immediate and the present to the general and subjunctive-inflected tense in her description: “Here’s harmony! [. . .] here’s repose! Here’s what may leave [. . .] Here’s what my tranquillise,” to “I feel as if there could be, “ there certainly would be.” Yet if we are to take seriously Duckworth’s contention that the estate functions metonymically in Austen’s novels, as a kind of British moral code, “the focal point of a cosmic structure,”⁸¹ we later see how Austen later critiques the ability to maintain this kind of unmediated, moral appreciation of prospect, amidst the “improving,” estate, as the domestic pastoral scene is simultaneously the means for industrialization, as well as for artifice, worldliness, and exploitation of both natural and human resources. The shifting tenses illustrate that despite what Fanny sees of her immediate prospect, that the relation to the extractive estate opens to unknown boundaries and futurity.

Austen sets up the improving, industrializing estate most notably in the prospect at Sotherton, Mr. Rushworth’s family seat. Here, the novel moves in and out of scenes of natural, artificial, and temporal boundaries, symbolically marked by a tree plantation, iron gates and

⁸¹ This is Yi Fu Tuan, in his groundbreaking 1977 work, *Space and Place*. Tuan notes that identity is the function of spatial centrality: “Human groups nearly everywhere tend to regard their homeland as the center of the world. A people who believes they are at the center claim, implicitly, the ineluctable worth of their location.” Tuan continues that if one’s homeland is the center of a cosmic structure, then “Such a conception of place ought to give it supreme value; to abandon it would be hard to imagine. Should destruction occur we may reasonably conclude that the people would be thoroughly demoralized.” See *Space and Place: The Perspective of Experience* (Minneapolis: University of Minnesota Press, 1977), 149.

palisades, to signal how “prospect,” when connected to extractive capitalistic schemes, is exploitative, immoral, and opens the conservative estate and its inhabitants up to dysfunction and chaos. Austen first introduces this framework on the ride to Sotherton, as Fanny and Mary Crawford take in the same pastoral scene: “In observing the appearance of the country, the bearings of the roads, the difference of soil, the state of the harvest, the cottages, the cattle, the children, she found entertainment that could only have been heightened by having Edmund to speak to of what she felt.” Here, Fanny’s apprehension of the tranquil pastoral scene further illustrates her appreciation for rural prospect in all its elements: the soil, harvest, cottages, cattle and children all provide Fanny with heightened visual “entertainment” and promote her natural sensibility and feeling in response to a bucolic, agricultural scene. Here, the social and natural appear naturally harmonious and part of the same prospect; Gold notes that Fanny’s view suggests “a potential indistinction between the natural and the cultural.”⁸² However, her carriage companion, Mary Crawford, is highly indifferent to the pastoral scene; possessing none of “Fanny’s delicacy of taste, of mind, of feeling, “she saw Nature, inanimate Nature. [. . .] In looking back after Edmund, however, when there was any stretch of road behind them, or when he gained on them in ascending a considerable hill, they were united, and a ‘there he is’ broke at the same moment from them both, more than once.” Likewise, Austen notes that

For the first seven miles Miss Bertram had very little comfort: her prospect always ended in Mr. Crawford and her sister sitting side by side, full of conversation and merriment; and to see only his expressive profile as he turned with a smile to Julia, or to catch the laugh of the other, was a perpetual source of irritation, which her own sense of propriety could but just smooth over. When Julia looked back, it was with a countenance of delight,

⁸² Gold, 87.

and whenever she spoke to them, it was in the highest spirits: ‘her view of the country was charming, she wished they could all see it,’ etc.; but her only offer of exchange was addressed to Miss Crawford, as they gained the summit of a long hill, and was not more inviting than this: ‘Here is a fine burst of country. I wish you had my seat, but I dare say you will not take it, let me press you ever so much;’⁸³

Austen engages in an interesting rhetorical move here, where she evokes “prospect” in relation to the Edmund’s position on the road, Miss Bertram’s compromised view from within the carriage, the anticipation of the indiscretion between Julia and Mr. Crawford,⁸⁴ the sweeping and extensive countryside, the “summit of a long hill,” and the commanding vista of the “fine burst of country.” Prospect moves between several different syntactic and scalar registers here; viewpoints are foreshortened or lengthened with the party’s movement along the road and their position within the carriage. Likewise, Austen moves between the natural and the social, the determined and the contingent, in her evocation of prospect in this scene. It is important to note how she describes the rural prospect itself as both pastoral and natural--a scene of rural life--as well as “Nature, inanimate Nature,” each viewpoint contingent on the individual viewer’s perspective. Austen is accounting for prospect in all its fullness, as well as noting the primacy of the individual in this moment. Prospect is not a collectively apprehended view; rather, it is one comprised of shifting and discrete relationality to the environment, both social and natural.

⁸³ Austen, 58.

⁸⁴ Raymond Williams, in his foundational work, *Keywords: A Vocabulary of Culture and Society*, asserts that “we realize that determine is used as often in prospect as in retrospect; the sense of inevitability which can be an observed consequence of retrospect when it becomes something different when it is projected into future events.” Austen seems to be playing with prospect here in the form of Miss Bertram’s view, as it also foreshadows the inevitable prospect of the lovers’ affair. See *Keywords* (Cary: Oxford University Press, Incorporated, 1985), 71.

In noting Mary's particular indifference to the pastoral, agricultural scene, Austen is also pointing to another facet of the rural estate's prospect: its "inanimate Nature" in the form of mineral reserves and industrial development. Just as we see in *Sense and Sensibility*, the industrializing estate is denoted by its plantations of woods and its ferrous associations. For instance, after the rural ride, the party approaches Sotherton, where the estate is marked by a park of "fine timber," and its approach notable for its avenue of "distant trees. It is oak entirely."⁸⁵ While the trees initially appear to serve a purely aesthetic purpose, they also denote the extent and the exploitation of natural wealth of the British estate, as well as its colonial reach. We see importance of the trees in relation to Sotherton's economic prospect and its "improvement," as the group tours the manor:

The situation of the house excluded the possibility of much prospect from any of the rooms; and while Fanny and some of the others were attending Mrs. Rushworth, Henry Crawford was looking grave and shaking his head at the windows. Every room on the west front looked across a lawn to the beginning of the avenue immediately beyond tall iron palisades and gates. [. . .]

Mrs. Rushworth began her relation. 'This chapel was fitted up as you see it in James the Second's time. Before that period, as I understand, the pews were only wainscot; and there is some reason to think that the linings and cushions of the pulpit and family seat were only purple cloth; but this is not quite certain. It is a handsome chapel, and was formerly in constant use both morning and evening. Prayers were

⁸⁵ Austen, 130.

always read in it by the domestic chaplain, within the memory of many; but the late Mr. Rushworth left it off.’

‘Every generation has its improvements,’ said Miss Crawford, with a smile, to Edmund.

This scene, much like the ride to Sotherton engages the many social and natural valences of prospect, as prospect shifts from signifying the view from the manor’s windows,⁸⁶ the party’s view from above, the estate’s improvements, and the burgeoning flirtation between Mary Crawford and Edmund. Moreover, the manor’s lavish décor and exterior grandeur, as well as Rushworth’s plans for its future improvement, alludes to the estate’s significant income. It is also notable that the home’s prospect terminates at an iron-fenced boundary; all the rooms on the west-facing portion of the home look out at the “tall iron palisades and gates,” beyond which lies another natural prospect, “the wilderness.” As the party grows fatigued of touring the estate’s interiors, Mrs. Rushworth exhorts her son:

‘James,’ said Mrs. Rushworth to her son, ‘I believe the wilderness will be new to all the party. The Miss Bertrams have never seen the wilderness yet.’

No objection was made, but for some time there seemed no inclination to move in any plan, or to any distance. All were attracted at first by the plants or the pheasants, and all dispersed about in happy independence. Mr. Crawford was the first to move forward, to examine the capabilities of that end of the house. The lawn, bounded on each side by a high wall, contained beyond the first planted area a bowling-green, and

⁸⁶ Repton notes the importance of the view of prospect from windows: “there is no subject connected with landscape gardening of more importance, or less attended to, than the window, through which the landscape is seen.” Humphry Repton, *Fragments on the Theory and Practice of Landscape Gardening* (London, 1816), 29.

beyond the bowling-green a long terrace walk, backed by iron palisades, and commanding a view over them into the tops of the trees of the wilderness immediately adjoining. It was a good spot for fault-finding.

A considerable flight of steps landed them in the wilderness, which was a planted wood of about two acres, and though chiefly of larch and laurel, and beech cut down, and though laid out with too much regularity, was darkness and shade, and natural beauty, compared with the bowling-green and the terrace. They all felt the refreshment of it, and for some time could only walk and admire.⁸⁷

There exist several key factors in the novel's depiction of the rural estate here, ones that gesture to extractive, inanimate Nature as an important element of prospect. Fault-finding, the iron gate and palisades, the "wilderness," and the west-facing view, are all key markers of prospect and its relation to the extractive economy at Sotherton. Just as with Norland, trees are an important marker of the estate's improvement measures; here, it is notable that Sotherton's "wilderness"⁸⁸ of trees, is, in fact, a "planted wood of about two acres, and though chiefly of larch and laurel, and beech cut down," and "laid out with too much regularity." This wilderness just beyond the boundaries of the estate, is, in fact, not a wild stretch of forest: it is a plantation. It signals the estate's cultivated economic and social status,⁸⁹ similar to its planted avenue of oaks, which

⁸⁷ Austen, 65.

⁸⁸ Heidi M. Scott asserts in *Fuel: An Ecocritical History* that "Accounts of the age of exploration are replete with images of deep forests in terrains unknown, combining the intrigue of wealth with the exhilaration of danger and mystery. To the colonial explorer, these forests were treasure chests of fuel and raw material." Scott traces accounts of the "wilderness" in *The Tempest*, *Robinson Crusoe*, Jack London's "To Build a Fire," among other works that employ the wilderness trope that spans across dramatic and realist fictions. See Scott's chapter, "Wood: Forests' Fires," in *Fuel: An Ecocritical History*. Environmental Cultures (London: Bloomsbury Academic, 2018), 78.

⁸⁹ Scott goes on to assert that during the Regency period, especially at the start of the Industrial Revolution, "the source of domestic fuel came to indicate social status." Whereas rural peasants

signify Sotherton's British national character; yet the plantation is also a "portion of the Sotherton estate whose nominal wildness obscures its history of cultivation, including the shifting fuel economy it represents and the disparity of human work and human disparity that accompany it."⁹⁰ Importantly, the plantation at Sotherton dually represents the British estate's use of the trees in its domestic extractive economy, during what Heidi Scott characterizes as a period of "timber scarcity and accelerating coal consumption" during the Regency period.⁹¹ The plantation effectively symbolizes the important transition occurring on the estate between fuel sources, and the changing nature of the rural estate.

We see this transition signaled in a few ways. First, upon approach to the estate, the woods are characterized as "fine timber,"⁹² indicating its use value, rather than for its aesthetic role within the estate's natural environs. Moreover, the "wilderness"—a tongue-in-cheek play on this highly artificial portion of the estate—is considerable in area. It is a "planted wood of two acres." Its scale and regularity indicate that it is being employed not for aesthetic purposes, but rather, that it, too, exists for a sizeable energetic scheme on the estate. Moreover, the wilderness is not comprised of indistinguishable trees, flora, and other wild species. Instead, it is characterized only by its "larch and laurel, and beech cut down." The categorization of trees, and the "beech cut down," is notable, as this species is described as being actively harvested or

gathered and burned brushwood and kindling gathered from the commons and from hedgerows, and the urban poor burned cheap coal in the cities, the wealthy often enjoyed "fragrant, bright wood fires fueled by large timber at their country estates." Yet, chronic deforestation and the great increases in mineral mining led to coal replacing wood and became the primary domestic fuel "across the classes," and coal burning was now common in urban and rural environments, at the time of Austen's composition. Scott, 86.

⁹⁰ Gold, 95.

⁹¹ Scott, 86.

⁹² Recall that Edward Ferrars uses this exact phrase to describe the prospect in *Sense and Sensibility*.

coppiced from the wilderness. Beech, especially was a highly prized firewood and grew abundantly in areas of chalky soil across Britain during the Regency period.⁹³

But the larch points to another kind of industry happening in accordance with this cultivated “wilderness”: mining.⁹⁴ Originally introduced as an ornamental tree in the seventeenth century, timber from the larch tree was highly prized in mining areas, as it could be used as a “pit

⁹³ Malachy Postlethwayt asserts in his 1757 treatise, that “Chalky soils will be productive of good timber; [. . .] we have so many instances of hills and lands of the same kind of chalk in Berkshire, Oxfordshire, Buckinghamshire, &c. which are covered in trees, as well for timber as fire-wood. We there find the beech is natural to that kind of soil.” See Postlethwayt, 174.

⁹⁴ Wordsworth’s famous hatred for larch plantations is recorded in his *Description of the Scenery of the Lakes in the North of England*. He characterizes the larch as an aberration within the native landscape, calling them “this spiky tree,” that “grow up into nothing but deformity.” He further writes, “But this deformity, bad as it is, is not so obtrusive as the small patches and large tracts of larch-plantations that are over-running the hill-sides.” See *Description of the Scenery of the Lakes in the North of England*, 4th ed. (London: Longman, Hurst, Rees, Orme, and Brown, 1823), 78-82.

In a letter dated November 7, 1805, Wordsworth’s sister, Dorothy, also inveighs against a local larch plantation owner, “Sir Michael Fleming,” who has “been getting his woods appraised” in anticipation of harvesting after Christmas.” She complains that Sir Michael has been “building a long high wall under the grand woods behind his house which cuts the hill in two by a straight line; and to make his doings visible to all men, he has whitewashed it, as white as snow.” *Letters of William and Dorothy Wordsworth*, ed. E. de Selincourt, *The Early Years, 1787-1805*, rev. Chester L. Shaver (Oxford: Clarendon Press, 1967), 636.

And finally, a famous story related by Thomas De Quincey, describes a visit he and Wordsworth made to a Grasmere neighbor and larch planter, Thomas King, who had doubtless heard of “Wordsworth’s frankness on this theme” and who received the two men with civility but with uncharacteristic reserve, predicated on hearing this story: “Wordsworth, for many years, had systematically abused the larches and the larch planters.” One day, while Wordsworth believes himself to be alone in the woods, he happens upon foresters taking their lunch break and sees that they have uprooted native beech trees to lay a larch plantation. With “gathering wrath in his eyes; next he was heard pouring out an interrupted litany of comminations and maledictions; and, finally, as his eye rested upon the four of the five larches which were beginning to ‘dress the line,’ of the new battalion, he seized his own hat in a transport of fury, and launched it against the odious intruders.” See Thomas De Quincey, *The Collected Writings*, ed. David Masson, Vol. II. *Autobiography and Literary Reminiscences* (Edinburgh: Adam and Charles Black, 1889), 429-430.

prop”—a length of lumber used to hold up the roof of a coal mine.⁹⁵ It is unknown as to whether the “fine timber” in other parts of the estate specifically denotes larch, but it is notable that it is one of the three named species in this plantation. Equally significant is that this carefully managed wood, the estate’s source for both timber and fuel, is made evident as “wilderness” by the iron gates and palisades that mark the prospect and boundaries of Sotherton. In conjunction with the wood coppice and the “beech cut down,” the iron gate and palisades further signal the changing rural economy, announcing mining and iron prospects and production happening on the estate itself. While Mrs. Rushworth flaunts the manor’s ancient pedigree, her son and heir bumbles through Sotherton’s modernization, which, as Mrs. Norris declares, “deserves every thing that taste and money can do . . . planting and improving,” as there is “space to work upon there and grounds that will well reward you.”⁹⁶ Just as in *Sense and Sensibility*, the coppiced trees strongly suggest an estate in transition, where charcoal iron production is being exploited for Sotherton’s modern economic improvement.⁹⁷

Mary Crawford mocks the estate’s “improvements,” as does her brother, in his “fault finding” of the estate’s landscape, “commanding a view over” the iron palisades and “into the tops of the trees adjoining.” Yet again, Austen plays with the nuanced, multiple forms of prospect in Mary’s and Henry’s visual critique of Sotherton. As the consummate expert on Repton’s theory, Henry Crawford, in particular, appears to survey the estate’s prospect in terms of its picturesque qualities, so that he can personally recommend the best course of its

⁹⁵ Steven Morris, “Larch Forests of South Wales Fall Victim to Disease,” *The Guardian* (Guardian News and Media, May 17, 2015), <https://www.theguardian.com/uk-news/2015/may/17/larch-forests-south-wales-fall-victim-disease>.

⁹⁶ Austen, 83.

⁹⁷ See G. Hammersley, “The Charcoal Iron Industry and Its Fuel, 1540-1750.” *Economic History Review* 26, no. 4 (November 1973): 593–613.

improvement. The novel employs visual movement in the description of his critique, where Henry's commanding eye moves from each, discrete picturesque element—the bowling green, the terrace walk, the iron palisades--finally out onto the indistinct wilderness, culminating in his scrutiny of its aesthetic deficiencies. Here, he inhabits the “raunging” perspective of a landowner, enhanced with the objective assessment of a landscape improver. However, Austen signals that Henry Crawford's “fault-finding” upon this industrializing estate point to an altogether different kind of viewing practice. He's looking for “faults,” or strata, the geological and mineral features of the area,⁹⁸ to assess Sotherton Court's extractive economic prospects.⁹⁹ Indeed, “fault-finding” was not only regarded as a diversionary geologic pursuit for the gentry during the Regency, as part of the larger program of gentlemanly explorations within the branches of natural philosophy, it was also an important measure of rural improvement schemes.

⁹⁸ Robert Bakewell, in fact, connects faults directly to coal and iron seams, and their appearance from above, across vast stretches of the British countryside:

It has been before observed that coal strata are frequently bent in concavities, resembling a trough or basin, dipping down on one side of the field and rising on the other. [. . .] On the eastern side of England, the strata generally decline, or, in the miner's language, dip, to the south-east point: on the western side the strata are more frequently thrown into different and opposite directions, by what are called faults and dykes.

A fault is a break or interchapter of strata, by which they are commonly raised or thrown down; so that, in working a bed of coal, the men come suddenly to its apparent termination.

See Robert Bakewell and Benjamin Silliman, *Introduction to Geology: Intended to Convey a Practical Knowledge of the Science: And Comprising the Most Important Recent Discoveries, With Explanations of the Facts And Phenomena Which Serve to Confirm Or Invalidate Various Geological Theories*. 2nd American from the 4th London ed. (New Haven: H. Howe, 1833), 105.

⁹⁹ Sotherton Court is believed to be set in Northamptonshire, a region of Britain that saw iron development in the latter half of the nineteenth century. Northamptonshire iron possesses the unique quality of being visible to the eye, the surface soil having been denuded over eons: “Much of the ore is thus either actually at the surface or within quarrying depth, an economic advantage.” It is thus not implausible that Henry Crawford could, indeed, see iron ore faults upon the estate. See Stanley H. Beaver, “The Iron Industry of Northamptonshire, Rutland and South Lincolnshire.” *Geography* 18, no. 2 (1933): 108.

Moreover, fault-finding was a clear indication of the landed class's nationalistic pride. To both find and improve the mineral resources upon one's estate, as eighteenth-century economist and trader, Malachy Postlethwayt puts it, is a matter of British civic duty and economic dominance: "Prosperity is intimately interwoven with that of the national commerce; and that nothing can be more naturally conducive to both than the due improvement of every inch of his lands, according to what it shall be found to admit of."¹⁰⁰ We see "fault," in relation to geology and mining, begin to appear throughout the literature right around the time of Austen's writing.¹⁰¹ But the notion of fault-finding upon the estate, and turning to mining as an important facet of the gentry's status and wealth, was already a well-established practice for the landed classes, at the moment of *Mansfield Park's* composition.

Again, it is helpful to return to Malachy Postlethwayt's 1767 treatise, wherein he entreats his gentry readership to develop their estates' mineral resources. He notes that the "internal structure and qualities of the earth" directly benefit British domestic agriculture insofar as "There are also mineral qualities, whose warm exhalations arise at a proper distance, that will help and expedite vegetation, and not injure but administer additional virtues, perhaps, to vegetables: such as these are all ferruginous minerals, and other semi-minerals, as pit-coal, manganese, and divers innocuous sulphureous fossils, &c."¹⁰² It is notable that he mentions "ferruginous minerals," as well as "pit-coal" in the list of minerals beneficial for agriculture. Indeed, Postlethwayt has such

¹⁰⁰ Postlethwayt, 245.

¹⁰¹ The first recorded instantiation of "fault" in the geological and mining register is B. Outram's 1796 *Philosophical Transactions* from the Royal Society: "The workmen discovered a fault, throw, or break of the strata." And then in R. Bakewell's 1813 *Introduction to Geology*: "Faults are generally inclined a little from a vertical position." While it is impossible to know if Austen had access to these works, it is also important to note the term's growing usage throughout scientific and popular texts during the Regency period.

¹⁰² Postlethwayt, 249.

faith in iron and coal, he believes that the “warm exhalations of the mineral earth” will lead the “end of solar heat.” In his estimation, these forms of inanimate Nature are as powerful, if not more so, as the sun in the rural agrarian economy. He then continues to laud mineral development as a profitable venture in conjunction with planting: “Where lands that abound with mineral qualities will turn to better account in researches of that nature than to apply them to vegetation, the latter will be neglected; though they both ought to go hand in hand; for small tracts of land that afford mines or coals may afford extraordinary profits.” Not only does iron and coal yield its own mineral produce, the ideal model for Postlethwayt is an estate that cultivates both mining and agriculture, each benefitting the other and bolstering the landowner’s profits.

Postlethwayt emphasizes the gentry’s unique role in developing mines and coals; the gentleman prospector must be versed in the “art [that] instructs us in the ways of finding, judging, and digging of mines. Before this art can be practiced to advantage, it requires no inconsiderable compass of knowledge; it requires a competent skill in the nature, effluvia, and effects of mineral matters.” The landowner must also have a command of hydraulics, leveling and mechanics: “without which the gentleman can never judge what mountain, plain, or valley is proper for his inquisition; in what manner to search; how the beds will dip or run [. . .] or how the general process of mining may be conducted at the least hazard and expence.” Here, Postlethwayt points to the gentry’s management of its own prospect, both in the mechanical sense, as well as in the landowner’s sufficient knowledge of faults, strata, and other natural landscape features to properly judge the mineral stores it may contain. The gentleman prospector must be well-versed in both the discrete and general elements of his estate, in order to best extract and exploit its produce.

Finally, in line with other providential accounts of Britain's natural mineral wealth,¹⁰³ he states that "Here we must take things as nature has already prepared them to our hands: and how many gentlemen have enjoyed a larger estate under-ground within the compass of half a dozen acres, than they have above-ground within that of half a thousand?"¹⁰⁴ England's mineral resources are not only a gift from providence, but it is a gentleman's duty to extract and exploit this natural wealth. Henry's own estate, Everingham, is described in similar, providential terms: "such a happy fall of ground, and such timber!" and with "natural advantages of the ground."¹⁰⁵ His account of improvement there suggests that it is his duty to capitalize on such natural wealth.

Henry Crawford not only "finds-fault" at Sotherton, later in the novel, he suggests a series of alterations for Thornton Lacey at Mansfield, including the "removal of the farmyard": it must be "cleared away entirely, and planted up to shut out the blacksmith's shop."¹⁰⁶ This scheme not only reveals Henry Crawford's adherence to Repton's picturesque prescriptions, which often occluded scenes of rural labor, but it also subtly reveals Mansfield's own active iron industry; like Sotherton, Mansfield Park is also "finely sprinkled with timber"¹⁰⁷ and has its own "blacksmith shop." Furthermore, Crawford recommends even more planting upon the estate, replacing crops with trees, to feed the estate's iron industry and yet, to also occlude the forge

¹⁰³ Daniel Defoe is another famous figure who encouraged mining as part of a natural scheme for Britain's wealth. In his famous work, *A Tour thro' the Whole Island of Great Britain* (1724-26), Defoe celebrates "the improving activity of mining" and human's discoveries and exploitation of valuable minerals as going hand-in-hand with "fate." Yet, as Bethany Williamson argues, Defoe's narrator also "records how improvement and depletion go hand in hand," in the process, raising the questions as to "whether improvement can continue indefinitely." See Bethany Williamson, "Inexhaustible Mines and Post-Lapsarian Decay: The End of Improvement in Defoe's Tour." *Eighteenth Century Fiction* 32, no. 1 (Fall 2019): 79.

¹⁰⁴ Postlethwayt, 260-261.

¹⁰⁵ Austen, 95-96.

¹⁰⁶ *Ibid.*, 375.

¹⁰⁷ *Ibid.*, 376.

from view. As a final measure of domestic extractive schemes, Postlethwayt recommends that the gentleman prospector must also make acquaintance and employ mining experts to safeguard from fraud and deception in sinking his mines.¹⁰⁸ Yet, the deep irony in the novel's portrayal of Henry Crawford as a "fault-finder"¹⁰⁹ at Sotherton is that despite his self-appointed role as a landscape advisor to Rushworth and Edmund Bertram, he is the most deceptive and opportunistic figure throughout the story, blind to his own faults, his own moral failings. Although he is forthright in his assessment of each estate's picturesque and extractive potential, in fact, his own fraud and impropriety ruin Maria Bertram's prospects for a successful marriage and life at Sotherton.

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Finally, *Mansfield Park* explores the kinds of natural and social prospects involved in the improvement of the domestic estate and denotes how extractive schemes help achieve and maintain modernization and new forms of economic growth. Yet, the novel also hints at a deep tension between the improving British estate and the growing instability of its native surface resources—its "beech cut down." In the novel, the resources are always tending towards depletion and substitution of other forms of energy, and new sources of natural wealth, leading to the need for downward and outward expansion for prospects elsewhere. The facts of extraction

¹⁰⁸ The practice of colliery "viewing" also arose in this period. William Deringer's current research addresses the role of the colliery viewer, most famously the Buddles Senior and Junior, who represented and advised the landed classes and who would often work the mine in the capacity of what we now call a mining engineer. In his research, Deringer explores how practices of discount calculation and accounting, a way to calculate ongoing future yields, were bound up with new forms of extractive capitalism, as a means to understand a mine's potential profitability. Moreover, he notes the important role these calculations and the colliery viewers held in negotiating social relationships amongst the gentry.

¹⁰⁹ In the same way "prospect" possesses multivalent meanings throughout the novel, Austen employs "fault" in a variety of associations in *Mansfield Park*; namely, "fault" is assigned or eschewed as a moral quality by Mary and Henry Crawford.

and resource exhaustion throughout the work challenge Edward Said's premise that Austen views "overseas properties as a natural extension of the calm, the order, the beauties of Mansfield, one central estate validating the economically supportive role of the peripheral other."¹¹⁰ While we certainly see extractive schemes as beneficial to both domestic and global economic growth, and mining as a means to increase productivity, using less domestic surface area,¹¹¹ such schemes also portend future instability, exploitation, and ultimately, resource exhaustion.

Henry Crawford represents this manner of rapacious improvement and finite resource depletion; in describing his estate, Everingham, he declares to Mrs. Grant, "I am inclined to envy Mr. Rushworth for having so much happiness yet before him. I have been a *devourer* of my own."¹¹² Here, there is no indication that Everingham's natural resources can be renewed. Rather, Henry Crawford has used up his own "inanimate Nature," and must move on to another

¹¹⁰ Said, 79.

¹¹¹ Postlethwayt's enthusiasm for mining as a way to concentrate productivity within compressed spatial parameters underground is a phenomenon Georg Borgström first names in *The Hungry Planet* as "ghost acres," or, the measure of the area of land abroad needed to meet consumption needs at home, that is not satisfied by domestic land area. Kenneth Pomeranz expands upon "ghost acres" in his work, *The Great Divergence*. Pomeranz explores the ways in which Britain escaped a purely Malthusian fate—one where land as a fixed variable ultimately limited arable crops and population growth based on food production—by "materializing" ghost acreage elsewhere (i.e. in the colonies) for food and commodity production and for emigration to help relieve a redundant population. Pomeranz connects "ghost acres" to the success of Britain's First Industrial Revolution; this additional land permitted division of labor, global trade and higher quality consumer goods—each an important element in Britain's industrialization. Coal, too, functioned as a kind of domestic form of "ghost acres," as Pomeranz calculates that coal from the underground was equivalent to fifteen million acres of forest. Tobias Menely notes that Pomeranz's "colonies and coal—outward and downward expansion—allowed Britain and then Europe to transcend environmental constraints, reducing exposure to dearth and disaster while enabling an economic system based on accelerating growth." See Georg Borgström, *The Hungry Planet: the Modern World at the Edge of Famine*. New York: Macmillan, 1965. See also Menely, 7.

¹¹² Emphasis mine, Austen, 96.

estate for continued exploitation. And while Sotherton's wilderness symbolizes, on one hand, boundless potential for further growth and extraction, driven and maintained by the coppiced trees and iron ore, on the other, it indicates its own future collapse, especially under the guidance of an improver such as Henry Crawford. Indeed, Mr. Rushworth, under Crawford's tutelage, is "very eager to be improving his own place in the same way,"¹¹³ signaling that Sotherton, too, will be devoured and completely drained. In this way, the novel simultaneously points to the changing material and spatial realities of the estate above ground, and the future dislocations at home, precipitated by extraction. Austen first points to this changing spatiality of the estate through Sotherton's wilderness; the iron gate and palisades imbue the wilderness without with a sense of danger and transgression--Maria Bertram's flirtatious indiscretion and Mary Crawford's complete eschewal of marked time and measured distance occur only after they pass through the gate and are deep into the woods. Mary Crawford, especially, highlights how, within this industrializing landscape, the characteristic British landscape transforms into an unrecognizable space.

'Oh! you do not consider how much we have wound about, We have taken such a very serpentine course, and the wood itself must be half a mile long in a straight line, for we have never seen the end of it yet since we left the first great path.'

'But if you remember, before we left that first great path, we saw directly to the end of it. We looked down the whole vista, and saw it closed by iron gates, and it could not have been more than a furlong in length.'

¹¹³ Ibid., 82.

‘Oh! I know nothing of your furlongs, but I am sure it is a very long wood, and that we have been winding in and out ever since we came into it; and, therefore, when I say that we have walked a mile in it, I must speak within compass.’

‘We have been exactly a quarter of an hour here,’ said Edmund, taking out his watch. ‘Do you think we are walking four miles an hour?’

‘Oh! do not attack me with your watch. A watch is always too fast or too slow. I cannot be dictated to by a watch.’¹¹⁴

While this scene is important in showing Mary’s growing flirtation with Edmund, it also illustrates the loss of clear domestic markers within the wilderness and a foray into a new kind of world: furlongs, minutes on a watch, recognizable vistas, all measures of stability, time, and order become muddled and useless within the wilderness. In their departure from the enclave of the traditional British manor, the prospect also becomes uncertain. The only thing that remains in clear view is the iron gate. As the party of three goes deeper into the wilderness, lateral distances and above-ground views, as well as the marked boundaries of the estate itself, become highly ambiguous and porous. And although the party attempts to gain their bearings through exploring the wilderness’s periphery, Austen shows how, within this acreage connected to extractive schemes and modernization, the party appears to be very far from home, indeed.

Miller makes the additional point, emphasizing Jesse Oak Taylor’s and Allen McDuffie’s claims, that “we must go outside the city, to provincial and colonial settings, to see resource extraction rather than consumption in the nineteenth-century fictional landscape.”¹¹⁵

¹¹⁴ *Ibid.*, 148.

¹¹⁵ Miller, 39.

While *Mansfield Park* only alludes to the kinds of “industry” occurring in Sir Thomas Bertram’s colonial holdings in Antigua, we can ascertain that the plantation abroad is but one element in the larger matrix of the estate’s extractive economy. The plantation symbolizes what Macarena Gómez-Barris calls an “extractive zone”: the “colonial paradigm, worldview, and technologies that reduce life to capitalist resource conversion.”¹¹⁶ While the novel is not explicit in its illustration of Antigua as an active “extractive zone,” we can use Said’s own logic of the parallel estates to illustrate the way mining schemes on the British estate also signify the tenets of British extractive capitalism abroad.¹¹⁷ Postlethwayt points to this very issue, asking why extraction in the West Indies should not mirror that occurring at home and in other colonized territories: “For it cannot be imagined why, by the means of art and labour, they should thrive in one Indies, and not in the other [. . .] the oriental nations are presumed to owe their natural advantages arising from the surface as well as the internal bowels of the earth.” He thus advocates for extractive zones, both in the wilderness at home and abroad: the more “useful and estimable productions the land affords, as objects of trade and merchandizing, the greater will be the gain of the land-holder, and the greater treasures will be brought into the kingdom from our foreign negoce.” Jeremy Black notes about the rise of such consumer practices in Britain and the relationship to foreign holdings, “Consumerism fed by transoceanic links reached into every parish, with shifts in taste focused on the products of empire and trade, notably tobacco, sugar, coffee, tea, chocolate, and cod. So also with mahogany and exotic

¹¹⁶ Macarena Gómez-Barris, *The Extractive Zone: Social Ecologies and Decolonial Perspectives* (Durham: Duke University Press, 2017), xvi.

¹¹⁷ Said, 97.

woods for furniture, indigo for cloth dyeing, and other products. In turn, the development of these tastes sustained the profits of this commercial imperialism.”¹¹⁸

Sir Thomas Bertram is firmly situated within this imperialist matrix of empire, consumerism, and extraction; likewise, *Mansfield Park* comes to represent what Jeremy Davies calls the “penetration of capitalist relations of production into the English countryside.”¹¹⁹

Upon his return from Antigua to *Mansfield Park*; he reinstates himself in “all the wonted concerns of his *Mansfield* life: to see his steward and his bailiff; to examine and compute, and in the intervals of business to walk into his stables and his gardens, and nearest plantations.”¹²⁰

Paula Byrne argues that Austen’s choice of phrase, “nearest plantations,” is unlikely accidental.¹²¹ Sir Thomas’s experience of the estate is characterized only by his survey of its productions, laid out in a fashion identical to West Indian estates, with the plantation and adjoining “stables” in close proximity, to provide livestock for the plantation economy. It is also noteworthy that the estate is characterized by its “intervals of business,” whereupon Sir Thomas meets with his “steward and bailiff,” and “examines and computes.” Ben Richardson argues that the introduction of intensive monoculture in the West Indies, such as in the Antigua sugar plantations, “created the way for production to intensify and the division of labour to fragment through the introduction of the plantation system.” He continues, “these

¹¹⁸ Jeremy Black, *Geographies of an Imperial Power: The British World, 1688–1815* (Bloomington, Indiana: Indiana University Press, 2017), 238.

¹¹⁹ Jeremy Davies, “Romantic ‘Ghost Acres’ and Environmental Modernity.” *Studies in Romanticism* 61, no. 2 (2022): 211.

¹²⁰ Austen, 296.

¹²¹ See Paula Byrne, *The Real Jane Austen: A Life in Small Things* (New York: Harper, 2013), 103.

early experiments should be considered as instigating a partial industrial revolution.”¹²² While the extent of industrialization or extraction schemes at Mansfield Park is uncertain, save for the mention of its “nearest plantations” and the blacksmith’s shop at Thornton Lacey,¹²³ Austen does provide some insight into Sir Thomas’s industrial management of his British estate. In surveying his land, he “examines and computes,” signaling that he views his domestic holdings through a lens of “economic modernization,” like the kind occurring in the West Indies.

Davies importantly notes that this form of modernization was heavily reliant on an “import/extraction process whereby the land constraint governing seasonal economies was progressively displaced.”¹²⁴ Again, while Austen only makes scant reference to the estate’s extractive processes, she makes very clear that Mansfield Park’s wealth and its domestic agricultural output from the stables, gardens, and nearest plantations, managed by the “steward and bailiff,” is made possible by profits from Antigua, whereby the natural constraints of British seasonal agriculture are solved through (dis)locating labor and agricultural production to the plantation. Additionally, Sir Thomas’s “computations” at home signal how these industrialist or capitalist principles are not reserved solely for sugarcane monoculture in Antigua. Instead, Austen reveals that the rural estate’s relationship to the West Indies plantation requires a new rhetoric of calculation and prospect, one that discloses the processes of extractive capitalism and industrialization happening at home and abroad.

¹²² Ben Richardson, *Sugar: Refined Power in a Global Regime* (Houndmills, Basingstoke, Hampshire; New York: Palgrave Macmillan, 2009), 43.

¹²³ It is also worth mentioning that later in the century, a “ground bailiff” is a term commonly used for a coal mine foreman or overman.

¹²⁴ Davies, 211.

It is useful to once again return to Sotherton's description to understand how Austen further signifies the "gain of the land-holder" both at home and abroad, as the result of extractive schemes, and how she symbolizes the connection between wealth gleaned from mining and plantations upon the estate, and the rise of consumer culture. Raymond Williams first notes the connection between the "country house system" and the profits of imperial trade in *The Country and the City*.¹²⁵ Likewise, Corinne Fowler asserts that "Country houses have complex, multiple connections to slave-derived wealth." She states that starting in the late seventeenth century well into the twentieth, "as many as one in six country houses were purchased by merchants whose fortunes depended on colonial trade."¹²⁶ Fowler recounts the story of the Hibbert family, part of the "sugar aristocracy," who in the span of three generations, progressed from "merchants to planters." They financed London docks and lobbied Parliament against abolition. Fowler notes that as part of their ascendancy, they established themselves in rural estates where, "the origins of their wealth were gradually forgotten."¹²⁷ Austen provides oblique references to similar, murky ancient origins disguised by ostentatious wealth in her characterization of Sotherton. Describing the prospect from the inside of the manor, she states, "Every room on the west front looked across a lawn to the beginning of the avenue immediately beyond tall iron palisades and gates." It seems significant that the party's view outward, from the mansion, is curated by its numerous, west-facing windows. And likewise, that the view is subsequently channeled directly onto the avenue beyond the iron gate and palisades. In this collective westward vision, Austen alludes to

¹²⁵ Williams, 279-80.

¹²⁶ Fowler, 364.

¹²⁷ Ibid.

Rushworth's domestic estate, and its relation to what lies beyond the avenue—such as plantation holdings in the West Indies.¹²⁸

Austen does not outwardly reveal whether Sotherton's income, like Mansfield Park's earnings, is bolstered by profits from Antiguan sugarcane plantations and by the labor of enslaved people; yet we can at least surmise that this estate bears some relation to Mansfield Park, in its identical possession of domestic plantations, and in Austen's particular characterization of Rushworth as obsessed with the improvement of his estate. He is not a member of the upwardly mobile middle class, who infiltrate traditional estates in her other novels. Rather, he is clearly identified as a member of landed gentry who is preoccupied with the ongoing fashionable enhancements to Sotherton. His desire "to change and upgrade the structure" and for a "continued renewal and replacement of products"¹²⁹ characterizes him as part of the rapacious consumer society of the nineteenth century. The estate's external markers of prosperity—its iron gates and dyed purple cloth, and now his picturesque landscape—are part of this larger trade and consumer network. In this way, Rushworth is characterized as a member of the "sugar aristocracy," whose primary aim it is to grow and display conspicuous wealth from plantations and forced labor abroad—the kind of labor and landscape that remains invisible from Sotherton's west-facing prospect.¹³⁰ Jeremy Davies asserts that "The

¹²⁸ Sheryl Craig states, "the West Indies were, by far, Britain's most profitable colonies, and the West Indian economy was based on sugar that was planted and harvested by slave labor." See Sheryl Craig, *Jane Austen and the State of the Nation* (Houndmills, Hampshire and New York, NY: Palgrave Macmillan, 2015), 94.

¹²⁹ Black, 237.

¹³⁰ Display of conspicuous wealth was a marker of the "sugar aristocracy" during the eighteenth and nineteenth centuries, Peter Macinnis relates a popular anecdote about the "sugar aristocracy" and their privileged position:

Around 1780. King George III was riding in a carriage with the then Prime Minister, Pitt the Elder, when he saw a carriage far outclassing his own, he asked who the owner was,

exceptional thing about Britain in the Romantic period was that it sustained its eighteenth-century trajectory of improvement and economic advance to previously unachievable heights,” ushering a “wave of commercial expansion” and consumption based on the “bounty of the New World.”¹³¹ While Henry Crawford’s improvement schemes portend Sotherton’s future ruin, its present appearance, at least, indicates the estate’s bounty and visual excess: an excess that must be funded somehow.

Austen indicates that the estate’s external grandeur as a marker of resource exploitation, and new forms of wealth, is unstable and subject to natural decay and human fallibility. The interiors of Sotherton, while grand and historical, also appear shabby, unfashionable, and in need of repair, prompting Mary Crawford’s sharp mockery of its “improvements.” Moreover, its counterpart, Mansfield Park, easily falls into moral decline and dissipation in Sir Thomas’s absence. Upon his return home, Fanny and his children are subjected to his examinations and computations, and famously, his “dead silence,” rather than to his fatherly love and proper moral guidance. Austen thus recognizes that with the excesses of extraction, consumption, and display in service of expanding the British estate in this period of frontier expansion,¹³² comes depletion and division.

and learned that it belonged to a West Indian planter, to which he replied, ‘Sugar, sugar, eh? All that sugar. How are the duties, eh, Pitt, how are the duties?’

See Macinnis, *Bittersweet: The Story of Sugar* (St. Leonards, N.S.W.: Allen & Unwin, 2002), 105.

¹³¹ See Davies, 207; 210.

¹³² Dimitrios Theodoridis, Paul Warde, and Astrid Kander, “Trade and Overcoming Land Constraints in British Industrialization: an Empirical Assessment.” *Journal of Global History* 13, no. 3 (2018): 331.

Fanny Price, too, understands the high price of domestic extraction at home, as well as its devastating effects for her conception of the traditional, and moral estate. In her lament to Edmund regarding plans for Sotherton's picturesque improvements, she exclaims,

“Cut down an avenue! What a pity! Does it not make you think of Cowper?”¹³³

‘Ye fallen avenues, once more I mourn your fate unmerited.’

He smiled as he answered, “I am afraid the avenue stands a bad chance, Fanny.”

“I should like to see Sotherton before it is cut down, to see the place as it is now, in its old state; but I do not suppose I shall.” [. . .] Oh! It does not signify. Whenever I do see it, you will tell me how it has been altered.”¹³⁴

Just as Marianne Dashwood, also a lover of Cowper, mourns the loss of trees within the industrializing estate in *Sense and Sensibility*, so too does Fanny Price echo Marianne's apostrophe to the avenue's imagined alteration and depletion,¹³⁵ and the way its fall signifies other forms of exploitation connected to the estate that remain outside of Fanny's view.¹³⁶ In fact, what lies beyond the cutting down the oak avenue¹³⁷ is beyond Fanny's imaginative

¹³³ Cowper was one of Austen's most beloved authors, who, in his 1785 *The Task*, vehemently opposes slavery.

¹³⁴ Austen, 88.

¹³⁵ This moment is, indeed, a fascinating revision of Marianne's apostrophe; Austen embeds Cowper's apostrophe within Fanny's dialogue. Here, there is a much more seamless integration of old poetic forms within realist dialogue. The tension between narrative forms in Marianne's apostrophe, what I call a “rupture,” seems to resolve much more easily here in Fanny's interlocutory speech. M.H. Abrams, in fact, notes that the “free flow of consciousness, the interweaving of thought, feeling, and perceptual detail, and the easy naturalness of the speaking voice” is “the earliest Romantic formal invention.” See Abrams, *The Correspondent Breeze: Essays on English Romanticism* (New York: Norton, 1984), 206.

¹³⁶ Postlethwayt observes how domestic ironworks have resulted in the “waste and destruction in the woods in Warwick, Stafford, Worcester [. . .]. In some places it is all consumed. –It is necessary, therefore, to preserve our timber from these consuming furnaces, lest they should lay hold of our oak.” Postlethwayt, 248; 151.

¹³⁷ James C. McKusick notes of the industrial change in the late eighteenth century, “primeval oak forests were being cut down [. . .] that were formerly sacred to the Druids.” Indeed, in both

capabilities,¹³⁸ as she declares, “Oh! It does not signify.” Only later, during Fanny’s exile to Portsmouth in her family’s impoverished hovel, does Austen finally signify what, exactly, will replace the fallen oaks and the rural landscape’s “old state”: “Dear me!” continued [Fanny’s] anxious mother, “what a sad fire we have got, and I dare say you are both starved with cold. Draw your chair nearer, my dear. I cannot think what Rebecca has been about. I am sure I told her to bring some coals half an hour ago.”¹³⁹ This is the only moment throughout Austen’s entire oeuvre, in which she specifically names coal as a fuel source; here, in the dilapidated and impoverished domestic scene, the coal is “a piece of information that carries geography and class alongside the sadder aesthetics of smelly and polluting coal fires.”¹⁴⁰ What *Mansfield Park* illustrates is that, in the scene at Fanny’s home, coal seems to exist only at the coastal periphery of Britain, serving as a meager fuel source for the nation’s poorer households. Yet, in fact, the extractive economy that provides this coal as part of its diversifying “prospect,” is actively promoted within the landed classes, as a measure to grow and protect their rural estate. Austen signals that in the rapidly industrializing economy of the early nineteenth century, it will not be long until the depletion of its native trees and schemes for rapacious estate

novels mentioned throughout the chapter, Austen’s protagonists possess an almost sacred reverence for the oaks and avenues of old trees. See McKusick, *Green Writing: Romanticism and Ecology* (New York: St Martin’s Press, 2000), 19;30.

¹³⁸ It is helpful to return to Pomeranz’s conception of “ghost acres” here to provide a possible material explanation for Fanny’s remarkable statement, “It does not signify.” Davies points out that in Pomeranz’s sense, “ghost acres,” “is not a real place, but the hypothetical land that would otherwise be needed within a given region to produce some resource that is actually obtained by other means.” For instance, he observes that E.A. Wrigley notes that in 1800, English and Welsh coal reserves provided some 11.2 million additional “ghost acres” of woodland for Britain, that would have otherwise been consumed for fuel. Pomeranz further adds 1.3- 1.9 million acres to this estimate for “calories imported to Britain in Caribbean sugar.” In essence, sources of fuel, energy, commodities cultivated from these ghost acres have an “additive” quality that increases or preserves Britain’s native acreage. See Davies, 210.

¹³⁹ Austen, 301.

¹⁴⁰ Scott, 91.

improvement will result in Britain's need to seek out new supplies of latent tracts and unknown mineral prospects. *Sense and Sensibility* and *Mansfield Park* illustrate that not only is the British estate a very poor marker for economic and moral stability, but that the drive to exploit the estate underground is, in fact, already well underway.

**Chapter 3. “Strict Energetic Measures”: Vapor, Effluence, and Coal’s Cheap Nature in
Anna Seward’s Mining Sonnets**

The equation for the combustion of coal is as follows: $C + O_2 \rightarrow CO_2$

When coal burns in atmospheric oxygen, the chemical bonds holding its carbon atoms in place break, releasing a large burst of energy: the exothermic issue of hundreds of millions of years of compressed sunlight and dead plant matter, the result of incalculable geological forces of heat and pressure acting upon once living forms. David McDermott Hughes asserts that carbon products are the natural result of millions of years of sedimentation, compression, heat, and the heat of the earth which transformed microorganisms and other life forms into “long strings of carbon and hydrogen atoms,” a process that had “taken place and beyond the reach of the human species.”¹ Upon combustion, this capture of “solar income” converts into chemical energy, which then becomes the motive force used to power mines, machines, factories, and power grids. However, coal is not pure carbon, but rather, carbon bound to many other elements such as sulfur, mercury, nitrogen, arsenic and to other volatile and radioactive organic compounds.² As the compound burns, concomitant chemical reactions occur—many of which

¹ See his chapter, “Petro-Pastoralism: Agrarian Hydrocarbons in South Trinidad,” in *Petrocultures: Oil, Politics, Culture*, eds. Sheena Wilson, Adam Carlson, and Imre Szeman (Montreal: McGill-Queen’s University Press, 2017), 412.

² Compare the relative energy values based on average hydrogen/carbon ratios; these data show that burning coal releases more a larger degree of carbon dioxide relative to its carbon content and energy output thus illustrating the higher degree of secondary output. While this table is important in understanding coal CO₂ emissions in terms of their relationship to greenhouse gases, it also signals the manner how emissions necessarily qualify the entire coal combustion process as one closely bound up with secondary effects:

	H/C Ratio	Energy Content (kJ/g)	CO ₂ released
Hydrogen	----	120	----
Gas	4/1	51.6	1.2
Petroleum	2/1	43.6	1.6
Coal	1/1	39.3	2.0

However, McDermott Hughes also notes that the “only thing humans add to [coal] that is truly important—and unnatural” is to burn it; with this “profoundly artificial act, we change the climate and impose a catastrophe upon ourselves and the rest of the world. Yet, this moment of combustion rarely connotes such rupture and crisis.” Indeed, in parsing out the innocuous from the poisonous in coal’s natural characteristics, McDermott Hughes points to what he deems the “second nature” of hydrocarbons: the ambiguous, sublime quality of the material that both “constitute[s] nature sometimes and destroy[s] nature at other times.”⁷ The same combustion reactions that enable coal to produce useful energy also creates harmful impacts to the environment and human life, which, in their traces and lasting effects, often overshadow the hydrocarbon’s positive energetic output.

Coal pollution is a powerful symbol. It is most often associated with images of urban development and of the dirty and gloomy air of the First British Industrial Revolution; it evokes scenes of the proliferation of Victorian factory towns, of urban smokestacks belching fumes, and of the exponential growth rise of large-scale industry. In short, coal pollution carries with it a complex of associations, and its effects are what we now view as an “indictment of modern life.”⁸ However, coal combustion and its aftereffects possess a more ambivalent character in the earlier eighteenth century, as nascent coal extraction and burning prompted and powered the “great new technologies” of the period, such as the steam engine and the canal system. Coal was central to London’s manufacturing and domestic heating sector. In addition to its commercial and industrial benefits, there existed a long-familiar claim that the nation’s buoyant coastal coal trade was crucial in the maintenance of national security, inspiring Sir George Downing to

⁷ Hughes, 412.

⁸ Thorsheim, 42.

declare, “Plantations, the Fishery, and Coal trade, are the three great nurseries of seamen.”⁹ Prodigious fleets of coal-carrying vessels to London, supplying fuel and timber to the capital provided a visual instantiation of the nation’s natural wealth and the sheer number of vessels traveling upon the Thames: a spectacle that John Houghton earlier claimed would “frighten our neighbors from making war with us; and with that, bring a further advantage of an honourable, lasting peace.”¹⁰ In addition to its visible contributions to national security, coal also freed the nation from Malthusian constraint, as more land could be devoted to agriculture and food production, rather than for wood ground and fuel. This allowed for greater “demographic growth, urbanization, and expanding consumption.”¹¹ In essence, coal now fueled England’s improvement, development, inland and sea navigation, and its growing national wealth and power. And yet with progress, there was a growing ambivalence about the cost of coal extraction and its pollutive effects upon Britain’s landscape, the very landscape that was becoming liberated from its own “photosynthetic constraint,”¹² through extraction and combustion. With the growing extractive sector and the spread of coal “vapors,” there was a concomitant, growing

⁹ Downing quoted in Raymond Turner, *English Coal Industry in the Seventeenth and Eighteenth Centuries.* ” *The American Historical Review* 27, no. 1 (October 1, 1921): 6.

¹⁰ *A Collection of Letters for the Improvement of Husbandry and Trade.* Vol. II. (London: John Houghton, 1683), 56.

¹¹ William M. Cavert, *The Smoke of London: Energy and Environment in the Early Modern City* (Cambridge: Cambridge University Press, 2016), 141.

¹² Cavert is referring to E.A. Wrigley’s central claim that energy is essential for economic and social transformation. In pre-industrial, or what he calls “organic” economies, energy was sourced largely from the products of photosynthesis (i.e. agriculture) and relied on the energy flow from the sun. Economies dependent on organic energy were limited, especially in industrialization schemes. As coal energy was introduced, it freed the nation from “organic” constraint. With the harnessing of energy from fossil fuels, what he calls “stock,” a transitional period ensued in which industrial growth became possible. See David Meredith, *The Path to Sustained Growth: England’s Transition from an Organic Economy to an Industrial Revolution*, by E.A. Wrigley, *The English Historical Review*, 133. 561 (April 2018): 1.

cognizance of the fact that the air of the mines, the city, and even of the rural countryside now contained “steams of fuel.”¹³

In the following section, I investigate how coal combustion and creates a kind of “geopoetics,”¹⁴ in which coal vapor and secondary outputs are a rubric whereby we can understand how the coal imaginary begins to seep into the British consciousness between the eighteenth and nineteenth centuries, as well as the important role of literary representations in working out these kinds of hidden energetic transformations that increasingly power modernity.¹⁵ More particularly, this section examines eighteenth-century poet Anna Seward’s mining verse—which took as its subject and location the Midland coalfields—a place fundamental in providing the energy source that powered the First British Industrial Revolution and which ultimately inspired a large body of imaginative work centered on coal and its vaporous and pollutive after-effects.

I contend that Seward’s loco-descriptive poetry composes a kind of national poetic imaginary around the extraction and secondary effects of coal and mining. In the first section, I assert that for Seward, vapor is bound up with the very thematic, energetic, and aesthetic processes in the poetic process itself. Specifically, her attention to vapor in Sonnet 47—a

¹³ John Arbuthnot, *An Essay Concerning the Effects of Air on Human Bodies: By John Arbuthnot* (London: printed for J. Tonson, 1733), 208.

¹⁴ This term is coined by Kent Linthicum, in his work on John Scafe’s 1819 poem: “King COAL, the mighty hero of the mine” in which he discusses literature’s complicity in the “slow catastrophe of climate change” and its adoption of fossil fuels—a transition that Linthicum asserts was not necessarily fated to occur. See Linthicum, Kent. “‘King COAL, the mighty hero of the mine’—Acculturating to Coal in Scafe’s King Coal’s Levee.” NASSR. June 2018.

¹⁵ In “Anthropocene Air,” Menely identifies a “the figure of air, a metaphoric drift in materialist invocations of air toward ideality and ahistoricity: atmosphere as allegory of the outside.” I, however, argue for vapor as a kind of in-between rather than as an allegory for an outside. It is, at once, fully material and fully historical and yet, still exists somewhere in the midst of perfect linguistic and ontological capture. See Menely, “Anthropocene Air.” *Minnesota Review*, 83.1 (2014): 94.

reimagining of John Sargent's 1785 epic poem, *The Mine*, highlights her deep unease with the toxic aftereffects of mining, and simultaneously illustrates her efforts to employ the Miltonic sonnet form to address what she sees as her era's rapidly dissipating poetic value. Her verse takes seriously how vapor is a metaphor for other kinds of energetic processes and serves to denigrate proper material and formal qualities, especially those of the Miltonic sonnet. Serving as a dual metaphor and formal code, vapor's very elusiveness and exchangeability serves as a lexicon through which she articulates the quickly eroding distinctions between the experiential and unseen and actual material conditions in her reimagining of Sargent's work. She deploys the "hardnesses" of Miltonic sonnet form as a kind of recuperative gesture to the degradation of not only poetry, but of British society, a process which she then connects to the social and economic forces unleashed by mining and coal-fired energy.¹⁶ Finally, in attempting to harness and qualify the "grave and energetic" processes necessary for legitimate sonnets, Seward also forces the reader to reconsider questions around poetic labor in this moment of rapid industrialization and of changing public taste, and the preference for popular poetry that now incorporated descriptions of geology and industrial processes.

Seward has traditionally occupied an uneasy place within literary studies and criticism. Attempts to situate Seward as either a contributor to Enlightenment discourse or to the Romantic movement are complex, as her relationship to nature and to poetics is similarly abstruse. Claudia Kairoff, in her first full-length critical study of Seward, argues that Seward's poetry represents

¹⁶ See Steer and Hensley. "Signatures of the Carboniferous: The Literary Forms of Coal," in *Ecological Form: System and Aesthetics in the Age of Empire*. New York: Fordham University Press, 2018.

“eighteenth century ideals applied to the political challenges” of Romanticism.¹⁷ Pastoral scenes, neoclassicism, and Augustan poetics largely govern her poetic oeuvre. Moreover, Lisa L. Moore notes that “Seward confidently assumed the position of “British Muse,” after the publication of her poems on the national tragedies involving the deaths of James Cook and John André: a position that Seward relished, and that Moore calls her “gender-inflicted version of the Augustan role of poet as public intellectual taken up by Dryden, Pope, and Swift.”¹⁸

Yet her locodescriptive mining poems reveal Seward’s more complicated engagement with rural scenes of beauty and introspection--scenes now dominated by coal and iron extraction. As an Enlightenment-era poet, she celebrates the scientific and industrial achievements of her peers in Birmingham, figures who were central within industrial and intellectual societies that helped bolster coal extraction and combustion, including her collaborator and friend, Erasmus Darwin.¹⁹ However, she also contends with the fact that unbounded speculative knowledge also leads to destructive industries, like coal and iron mines, and to the exhaustion of natural and human resources. Claudia T. Kairoff notes that at this moment, Seward “epitomizes eighteenth-century poetics at the moment when verse turned to Romanticism.” And that despite the “prosodic and critical standards of her youth,” as well as her adherence to principles and forms “established and refined by poets like Milton, Pope, and Thomson,” Seward is also “alert to and

¹⁷ Claudia Thomas Kairoff, *Anna Seward and the End of the Eighteenth Century*. Johns Hopkins University Press, 2012), 3.

¹⁸ Lisa L. Moore, *The Collected Poems of Anna Seward Volume 1*. (London: Routledge, 2016), xvi.

¹⁹ Seward was famous for her correspondence with the scientists and philosophers of the Lunar Society, and contributed to the scientific literature with her *Memoir of the Life of Dr. Darwin*.

often welcoming poetic trends such as interest in the sublime” and in “neglected forms like the sonnet.”²⁰

Seward further gestures to the Romantic as she is a poet of sensibility; thematically, her larger oeuvre illustrates her taste for feeling and for nature. Indeed, Seward was disenchanted with her own “sublime” touristic experience at Coalbrookdale and disheartened by the rapidly expanding coal industry across Britain and its toxic effects during her lifetime. This much is clear, as we see throughout Seward’s multiple literary works on Coalbrookdale—treatments that span multiple years and genres, ultimately culminating in the Miltonic sonnet, the most enduring English poetic form in Seward’s estimation. However, the thematic endurance of the “mine” and of extraction throughout Seward’s literary production reveals how Seward grapples with the proper epistemological and poetic frameworks for understanding England’s new extractive reality. If, as Tobias Menely asserts, we can follow locodescriptive poems’ general “principles of transition and association,”²¹ we can better understand how vapor operates throughout Seward’s work: a powerful symbol for transformation, vapor provides associations with historical, material, atmospheric, and aesthetic realms throughout her poems and criticism. Toxic coal vapor and pollution are not only powerful images in her work, but vapor is a material means for Seward to engage with and interrogate discourses of the sublime. Unlike her contemporaries, who revel in Coalbrookdale’s industrial horrors, Seward proves instead that the sublime experience is not simply aesthetic, it is highly poisonous and capable of transforming the productive landscape into a barren space, and its inhabitants into specters indistinguishable from the toxic effluence their work produces.

²⁰ Kairoff, 227.

²¹ Menely, *Climate and the Making of Worlds*, 154.

Finally, forms of conversion—material, energetic, and aesthetic--further help us understand Seward most concretely as a transitional poet writing between the Enlightenment and the Romantic era, and whose themes and poetics reflect transition itself, rather than as an artist firmly ensconced in either tradition. Her revision of Sargent’s epic work, and her two “Colebrook Dale” poems oscillate between persisting, disappearing, overlapping, and emerging genres and themes. Her use of neoclassicism and invocation of the toxic sublime in these works highlight how she revises and creatively re-forms popular literary discourses to describe the unfolding of the large-scale extractive economy more accurately at the end of the eighteenth century. In each, she incorporates the contemporary and the vaporous within ancient poetic forms, revealing the unstable position of the narrator, of place, and the yet-to-be-known material effects of coal mining: effects that permanently altered and influenced Seward’s traditional poetic subjects and her “strict energetic measures,” but that, incredibly, endure and characterize her most popular poems to date.

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The recognition that coal burning possesses transformative and destructive qualities is not a modern observation, nor even an eighteenth-century conception. Indeed, cognizance of the dual nature of coal’s pollutive output was articulated as a major environmental issue in Britain, as early as the 1660s. In his famous pamphlet addressed to King Charles II, *Fumifugium*, John Evelyn implores the sovereign to move London’s more pollutive industries into the forests. Evelyn challenges the popular miasma theory, which propounded the idea that airborne coal pollution could prevent disease by acting as a fumigant against airborne impurities, and that the carbon and sulfur released from coal burning could neutralize miasma vapors rising from British

swamplands. He rejected the theory of coal smoke as a beneficial fumigant, instead characterizing it as “this impure vapour, which, its black and tenacious quality, spots and contaminates whatsoever is expo’s to it.” He further writes that it is “universally mixed with the otherwise wholesome and excellent Aer,” and contaminated the atmosphere which corrupts London inhabitants’ “Lungs, and disordering the entire habit of their Bodies” with “an impure and thick mist, accompanied with a fuliginous and filthy vapor.”²² What makes his observations even more profound, is that they directly opposed popular contemporary thought on coal vapor, which believed that coal pollution was beneficial to the atmosphere and useful in combating disease. Instead, Evelyn notes the immeasurable cost of coal vapor, to both environmental and human health. Indeed, his observations articulate an almost prescient cognizance of the significant impact of coal’s vaporous, secondary outputs. Moreover, he understands that coal pollution cannot be understood through traditional notions of economic or salutary value—instead, he recognizes that the vaporous emissions from coal combustion can only be measured through a rubric of destruction inflicted on and directly impacting other valuable British natural resources such as soil, waterways, forests, and human health.²³

The link between vapor and atmosphere, and the impact on human actors, is further observed in the early pneumatic chemistry of the eighteenth century. The discernment between

²² John Evelyn, *Fumifugium, Or, the Inconveniencie of the Aer and Smoak of London Dissipated Together with some Remedies Humbly Proposed* / by J.E. Esq. to His Sacred Majestie, and to the Parliament Now Assembled (London: 1661), 6.

²³ The most infamous secondary output of coal combustion, being, of course, CO₂: “Over the past three centuries, through the combustion of the Earth’s Carboniferous reserves, we have released more than 375 billion tons of carbon into the atmosphere, introducing an additional 120 parts per million of carbon dioxide molecules into the air.” See Tobias Menely in *Reading the Anthropocene: Literary History in Geologic Times* (University Park, Pennsylvania: The Pennsylvania State University Press, 2017), 96.

“good” and “bad” air arose largely around observations of mining vapors and their toxic effects. Pre-dating Priestley’s 1775 publication of his discoveries of oxygen and carbon dioxide combustion²⁴ as well as Lavoisier’s later refinements, and Volta’s 1776 observations of methane bubbling to the surface of Lake Maggiore, coal vapors played an important role in early atmospheric experiments. Robert Boyle comments that “the abundant smoke of pit coal” is suitable for use in chemical laboratories.²⁵ Similarly, William Brownrigg studied the deleterious health effects of the vapors, or “damps” encountered in coal mines.²⁶ In his pneumatic experiments presented to the Royal Society in 1741, he examined the “brisk, penetrating, purging” ability of mineral waters to “elastic substances” absorbed during their journey through subterranean passages, but inveighed against identifying mining vapors with common air “in every other respect.”²⁷ Later in the century, Swedish pharmacist Carl Scheele, also famous for

²⁴ Mark Z. Jacobson notes that Priestley discovered several other gases relevant to what we call “air pollution” today. Between 1767 and 1773, while working at Mill Hill Chapel in Leeds, Yorkshire, Priestley also “isolated nitric oxide,” as well as nitrogen dioxide, nitrous oxide, hydrochloric acid gas, as well as sulfur dioxide and gas-phase nitric acid. For more on early atmospheric chemical discoveries, see Jacobson’s work, *Atmospheric Pollution: History, Science, and Regulation* (Cambridge, U.K.: Cambridge University Press, 2002), 16.

²⁵ Robert Boyle, *Some Considerations Touching the Usefulness of Experimental Naturall Philosophy: Propos’d in a Familiar Discourse to a Friend, by Way of Invitation to the Study of It, by the Honorable Robert Boyle Esq; Fellow of the Royal Society*. A second edition since the first published June 1663 (Oxford: Printed by Hen : Hall printer to the University, for Ric : Davis, 1664), 176.

²⁶ It is necessary to note that while I am concentrating in this section on secondary outputs and the waste resulting from coal extraction and combustion, and vapor as an industrial by-product of energetic processes, there is also something which could be called “primary vaporous output,” the three deadly gases naturally emitted by coal—irrespective of combustion, and which built up in mines: “choke-damp,” “white-damp,” and “fire damp.” See Barbara Freese, *Coal: A Human History* (Cambridge, MA: Perseus Pub., 2003), 47-49.

²⁷ See William Brownrigg’s *Extract from an essay entitled On the use of a knowledge of mineral exhalations ... which was read before the Royal Society in April 1741* (1765), 238.

his early discoveries of oxygen, discovered the source of what miners called “stink damp”: hydrogen sulfide.

The recognition of vapors, of “good” and “bad” air, was not simply a matter for the ideal conditions of the Enlightenment-era laboratory, but rather, vapor resulting from coal burning was an observable and steadily increasing phenomenon throughout the rapidly industrializing British landscape: a visual spectacle that now had major implications for conceptions of nature and for human life. While the workers in eighteenth- and nineteenth-century mines were not aware of these advances in chemistry, they certainly observed and recorded that the air of mines possessed different qualities and could be “dangerous in different ways; it could be suffocating, or it could catch fire and cause explosions.”²⁸ Thomas Pennant’s famous eighteenth-century travel guide, *A Tour in Wales* (1781), records the social history of dangerous coal vapors; he details the famous explosion at Common Hall and connects this event to “a similar phaenomenon [that] has been remarked from an explosion of inflammable vapors of a mine.” He connects specific minerals in the Welsh strata to dangerous vapors, the latter of which Agricola anthropomorphized as *daemones montani*, and were further mythologized as “fairies” by the Welsh coal miners. He also recounts the tragedy of the coal-works at Mostyn, in which the damp exploded, throwing the bodies of the miners hundreds of feet into the air.

What we see throughout *A Tour* is that Pennant importantly records and recounts the economic and social history of coal vapors as an important feature of his travelogue. Vapors precipitate cataclysmic events that show up in written records and contribute to a persistent

²⁸ See Anthony Seaton’s *Farewell, King Coal: From Industrial Triumph to Climatic Disaster* (Edinburgh: Dunedin Academic Press, 2018), 20.

mythology surrounding the dangers of the coal mine.²⁹ Noah Heringman asserts that the fantastical, such as the Welsh “fairies,” plays an important role in making visible the complex scientific processes within the mine, as fairies, gnomes, and other mystical figures are attached to “concrete agencies as yet inaccessible to ‘rigorous’ science.”³⁰ What becomes clear throughout Pennant’s work is that, in addition to the recognition of the practical economic and social importance of coal and other minerals in a regional setting, narrative and myth are, likewise, deeply bound with empirical observations and local knowledge about coal extraction and its effluences.

Evelyn’s early observations, Pennant’s tour guide, and the later pneumatic experiments are prime examples of the growing cognizance of the material significance of coal vapor and effluence, as the observable aftereffect of carbon energy production, as well as coal vapor’s devastating effect on the environment and on human lives. Pennant characterizes the sinking of coal mines as a wholly speculative endeavor: “It is at this time an undetermined question, whether more wealth has been gotten out of this earth, or more lost in the search after the prizes in this subterraneous lottery.”³¹ Pennant’s wry commentary on the economic loss and financial uncertainty associated with sinking mines, and Evelyn’s earlier critique of coal pollution’s insidious effects on Londoners’ health and the environment illustrate that traditional economic and ontological systems, in fact, could not account for the entirety of coal’s visible and invisible costs, which exceeded quantification and determination.³² What each of their writings indicate is

²⁹ Thomas Pennant, *A Tour in Wales*. Vol. 1 (London: Printed for Benjamin White, at Horace's Head in Fleet Street, MDCCLXXXIV. [1784]), 176;487.

³⁰ Heringman, 223.

³¹ Pennant, 448.

³² French economist, Frédéric Bastiat, speaks about negative unseen “effects” in terms of value and visibility, including his famous “broken window” analogy that ends in the aphorism: “‘Destruction is not profitable.’” Bastiat’s conception does not appear to fully account for the

the very *inability* to quantify and fully describe coal's more insidious effects, and the entanglement of coal's energetic, vaporous, and pollutive outputs with similarly complex natural and human environments.

Moreover, each of these writers speaks to coal combustion's materially and rhetorically abstract nature. In *Energy Dreams: Of Actuality*, Michael Marder asserts that the thinking around coal fired energy takes us back to the roots of Western philosophy, with the birth of the concept of *energia* in Aristotle and its different permutations in the millennia following, including coal combustion: "We associate energy with something to be burned, hoarded, or wasted without any clear end, indispensable yet also unidentifiable except by enumerating the resources that contain it."³³ Coal combustion is but one form of energetic output, as there exist various ways in which energy is converted and utilized, and subsequently there are multiple methods to quantify and record energy use.³⁴ While it is just one form of innumerable kinds of energy conversions, coal combustion shares in energy's larger, elusive character. Vaclav Smil begins his study on energy with an extended commentary on energy's unfathomable etymological origins: "The word energy is, as are so many abstract terms [. . .], a Greek compound." He contends that Aristotle created the term in his *Metaphysics*, to "signify motion, action, work, and change."³⁵ David

produce and after-effects of coal, but he does account for morals, health and habit, with which coal-driven energy has a complicated historical relationship:

In the economic sphere an act, a habit, an institution, a law produces not only one effect, but a series of effects. Of these effects, the first alone is immediate; it appears simultaneously with its cause; it is seen. The other effects emerge only subsequently; they are not seen; we are fortunate if we foresee them.

See Bastiat's "What is Seen and What is Not Seen," in *Essays On Political Economy* (London: A.W. Bennett, 1850), 57.

³³ Michael Marder, *Energy Dreams: Of Actuality* (New York: Columbia University Press, 2017), x.

³⁴ See Ismet Urgusal, "Energy Use and Energy Conservation," in *The World Scientific Handbook of Energy*, ed. Gerard M. Crawley (Singapore ; Hackensack, NJ: World Scientific, 2013), 481.

³⁵ Vaclav Smil, *Energy: A Beginner's Guide* (Oxford: Oneworld, 2006), 1.

Hume later writes of his frustration about energy's ubiquitous, and subsequently unclassifiable character, in his 1748 *An Enquiry Concerning Human Understanding*, "There are no ideas, which occur in metaphysics, more obscure and uncertain, than those of power, force, energy or necessary connexion, of which it is every moment necessary for us to treat in all our disquisitions."³⁶ Indeed, into the early nineteenth century, a clear definition of energy remained elusive, as the term oscillated between different scientific and linguistic registers. In his famous 1807 lecture at the Royal Institution, Thomas Young restricted the term solely to its kinetic properties, stating, "The product of the mass of a body into the square of its velocity may properly be termed its energy."³⁷ Later in the century, *Encyclopedia Britannica* described energy as "the power, virtue, or efficacy of a thing. It is also used figuratively, to denote emphasis in a speech."³⁸

Part of the difficulty in firmly defining coal energy and its aftereffects as either a kinetic, material, or linguistic concept is that its effects are not necessarily an "immediately experienced phenomenology."³⁹ Instead, coal combustion involves what Allen MacDuffie observes, "not simply a mere 'transfer of materials' but an irreversible [and often hidden] reconfiguration of them."⁴⁰ It is "material but also vague and indefinite, an interplay of absence and presence."⁴¹ Tobias Menely similarly asserts that carbon energy and its ability for reconfiguration, like that in

³⁶ David Hume, *The Complete Works and Correspondence of David Hume* (Charlottesville, VA: InteLex Past Masters, 1997), 62.

³⁷ Thomas Young, *A Course of Lectures on Natural Philosophy and the Mechanical Arts: (Miscellaneous Papers, Reprinted with Corrections)* (London: Printed for Joseph Johnson, by William Savage, 1807), 52.

³⁸ Smil, 1-2.

³⁹ Marder, 58.

⁴⁰ Allen MacDuffie, *Victorian Literature, Energy, and the Ecological Imagination* (Cambridge University Press, 2014), 36.

⁴¹ Thomas H. Ford, *Wordsworth and the Poetics of Air: Atmospheric Romanticism in a Time of Climate Change* (Cambridge, United Kingdom: Cambridge University Press, 2018), 8.

coal combustion, “is involved in all processes and all scales, yet (or because of this) it is profoundly elusive. It is often said to be perceivable only in its effects, its capacity to accomplish ‘work,’ to alter or displace matter.”⁴² Menely further contends that while evidence of energy flux is “pervasive,” its many forms are not necessarily “evident.” For Meneley, this is true especially in what he calls energy’s “metamorphic principle” or what Patricia Yaeger deems the “energy unconscious”: a kind of invisibility, “non-knowledge,” or erasure of energy networks and outputs.⁴³ These networks also include “instruments of conversion, sources and sinks, the feedback mechanisms—that connect all social and natural processes.”⁴⁴

It is coal’s plentitude and ubiquity, as well as the elusiveness of coal’s exchangeability—its convertibility from a highly dense material source of solar stock into an invisible driver of motion and steam-powered energy, running the very engines designed to drain and extract more coal to keep these energetic processes in perpetual motion—as well as the inability to quantify its transformation into residuum and its murky after-effects, that forces us to re-think the way in which we speak about these very processes of energy, output, and value. Jason W. Moore addresses this rhetorical inability to properly describe the value of fossil fuels:

the language is imprecise, precisely because we are dealing with an incommensurable mix of specific work/energies. Quantification can illuminate but not adequately capture these specifics. Energy and material flows can be measured; but within capitalism, they cannot be *counted*.⁴⁵

⁴² Tobias Menely, “‘Like a Force of Nature’: The Form and Scale of Anthropocene Energy Transitions.” Scaling Forms Symposium. University of Chicago. April 2016.

⁴³ Patricia Yaeger, et al., “Editor’s Column: Literature in the Ages of Wood, Tallow, Coal, Whale Oil, Gasoline, Atomic Power, and Other Energy Sources.” *PMLA* vol. 126, no. 2, (2011), 306.

⁴⁴ Menely, 1.

⁴⁵ Jason W. Moore, *Capitalism in the Web of Life* (New York: Verso, 2015), 106.

Moore rightly points to the way in which “energy and material flows” can only be understood on an imprecise scale, one that only has meaning when compared to a designated standard of value, which is, in a system of capital, labor value. He points out the inability to both name and count these flows, by their very nature.⁴⁶ By its very nature, energy disrupts traditional notions around labor and thus, disallows clear demarcation of the very systems by which it is measured and described.⁴⁷ Yet, despite this difficulty in adequately “counting” the energy flows, a recent faction of critical thought considers fossil-fuel energy dynamics as both a rich topic for, as well as the material driver of literature. Scholars such as Andreas Malm, Allen MacDuffie, Tobias Menely, Nathan K. Hensley and Philip Steer, among others, argue for the necessity of understanding the intersection of “thermodynamic and social power” in the use of fossil-fuel energy, as a form of “materialization of social relations.”⁴⁸ Menely, for instance, reads across two centuries of intellectual and literary history—from the Restoration into the Victorian period—and specifically considers how ideas of form and scale allow for a kind of conceptualization of what he calls “energy-in-history.” Likewise, he argues that a greater understanding of energy’s polysemy and instability can help order interpretation of “those dense ontological points where matter, energy, and the symbolic intertwine.”⁴⁹ Bruce Clarke traces the

⁴⁶ In 1815, Wordsworth similarly points to the difference between scales of quantification and measure. He writes that “in nature everything is distinct, yet nothing defined into absolute singleness.” He resists definite forms as a sign of anthropomorphic fetishism” of the “Pagan religion” which “subjected the minds’ of classical poets to the ‘bondage of definite form.’” Wordsworth quoted in Mark Offord, *Wordsworth and the Art of Philosophical Travel* (Cambridge, United Kingdom: Cambridge University Press, 2016), 118.

⁴⁷ In *Fossil Capital*, Andreas Malm speaks about coal’s unique role in capitalism’s propensity for temporal acceleration and spatial dislocation, as coal (and coal-fired Newcomen and Watt steam engines) is portable, self-moving and drives its own production.

⁴⁸ Andreas Malm, *Fossil Capital: The Rise of Steam Power and the Roots of Global Warming* (London; New York: Verso, 2016), 18-19.

⁴⁹ Menely, “Anthropocene Air,” 2.

literary crossover between energy, atmosphere, and literature in the later nineteenth century, noting, “an earlier science of physics borrowed the word *energy* from a traditional register of literary and philosophical significances.” As a result, the “already overdetermined term *energy* became even more charged with powerful semantic currents.”⁵⁰ What becomes clear throughout natural philosophy and the literature of the eighteenth- and-nineteenth centuries is that there existed a heightened interest in atmosphere and its mutual inflections across scientific, aesthetic, and literary realms.

MacDuffie, Hensley, and Steer similarly sharpen their focus specifically on this kind of ontological-symbolic relationship in Victorian literary representations of fossil-driven energy, and energy’s relationship to conceptions of the period’s concept of nationhood. Just as Pennant noted centuries before, picking up on Agricola’s and the Welsh miners’ characterization of coal vapors as fairies, MacDuffie claims that coal energy is “mystified not only through the imagery of magic and fable, but also through the way energy seems to be produced by, or to be a sign of, English character.”⁵¹ Hensley and Steer examine the way coal energy becomes visible—through a lens of mediation—and how “coal energy might be visible in cultural productions unable or unwilling to engage this system, as a system, directly.”⁵² And Elizabeth Miller makes the claim that the rise of speculative fiction originating in the nineteenth century, “often took flight” from increasing ruminations “on the coal economy—ruminations sparked by the exponential growth in subsurface extraction and the growing social dependence on it in the

⁵⁰ Bruce Clarke, *Energy Forms: Allegory and Science in the Era of Classical Thermodynamics* (Ann Arbor: University of Michigan Press, 2001), 2.

⁵¹ MacDuffie, 43.

⁵² See Philip Steer and Nathan K. Hensley, *Ecological Form: System and Aesthetics in the Age of Empire* (New York: Fordham University Press, 2018), 1.

industrial era.”⁵³ Each of these treatments ask us to take seriously the implications of energy conversion that drove processes both industrial and creative, and how energy’s mutable character is taken up in literary productions emerging from the beginnings of the First British Industrial Revolution and throughout subsequent centuries. What we see across energy scholarship is a heightened concern and curiosity about the way coal extraction and its use both defines and eludes the conversation around energy stocks and their lasting effects on social and material relations. Indeed, with its dual, and equally powerful mobilization of both energy and residuum, coal is a materialization of competing relations and discourses that seem to exist in the realm of the mystical and the sublime.

The wealth of excellent energy studies focused on the Victorian period—what is commonly regarded as the temporal apex of British coal consumption and extraction--have ushered in a critical re-evaluation of notions of value and exchange, and how thinking about energy during this period invites a sustained discussion around wider notions of material, social, and literary energies. Patricia Yaeger states in her famous introduction about energy and literary periodization, “thinking about literature, through the lens of energy, especially the fuel-basis of economies, means getting serious about modes of production as a force field for culture.”⁵⁴ Yet what seems to be missing from the larger literary conversation on coal-driven energy, as both an environmental and aesthetic consideration, is the literary cognizance around vaporous after-effects of coal at earlier moments of energy transition, moments when coal began to replace wood as a primary energy source—starting in the eighteenth century and into the early nineteenth century. Menely asserts that “Coal was in this period playing an increasingly

⁵³ Miller, 141.

⁵⁴ Yaeger, 308.

important role in Britain's energy economy. Wrigley estimates that, in 1700, Britain was generating 50 percent of its total consumed energy from coal, a percentage that rises to 60 percent in the middle of the century."⁵⁵ It is during this time that not only do coal-powered technologies, like the steam engine, become more widely utilized and visible in the extraction of coal and other manufactures, but it is also the moment when geology and industrial tourism enter the popular imagination, thus offering opportunities for the British public to read about and to witness coal extraction and combustion outside of the domestic sphere, and to experience its pollutive after-effects for themselves.

It is the aim of this chapter to add an additional temporal refinement in the cultural and literary history of coal combustion and connect the period before large-scale coal extraction, the late eighteenth century, to the wider conversation around energy and its residuum, which too often focuses on mid-nineteenth century concerns. What we see in the literature of the eighteenth century is a concerted engagement with the leftover elements from coal energy, what Miller classifies as the "gross material embodiments" of coal combustion--its "dirty and dangerous" elements and its aftereffects. The aftereffects, especially, illustrate how changing forms of energy helped Britons reconsider the energetic processes and atmospheres that drove tangible industrial production during the First British Industrial Revolution. Thinking about energy and vapor at an earlier moment does not detract from the scholarship focused on the Victorian period, but rather, a broader historical approach focuses the critical conversation about how writers and poets, prior to the period in which coal enters the popular, public imaginary, thought about shifting forms of sources of energy. Building on Heidi M. Scott's observation that while the term

⁵⁵ Menely, 106.

“energy” denotes a “material entity known as fuel,” it also is “used to obfuscate between fuel and metaphorical concepts such as the ‘energy’ of intellect, ingenuity, collaboration,” I contend that the relationship between energy and literature during the late eighteenth and nineteenth centuries was fundamental to understanding notions like atmosphere and the “quality” of air and perfection of nature upon their despoilment by coal vapor and its toxic effluences. Moreover, in conjunction with Elizabeth Miller’s observation that the “overdetermined conceptual category of ‘energy’ has helped obscure fuel’s materiality,”⁵⁶ I contend that Romantic-era writers, like Seward, display a heightened concern with the fuel’s materiality itself. What writers were beginning to realize about coal energy was that despite its sublime or fantastical scale, it was at its core a deeply material process. Likewise, what Seward captures in her poetry is that while great value or quality could be extracted from coal burning, much escapes, is wasted, and ultimately becomes vaporous.

Like energy, the secondary effects of coal—smoke, toxins, and vapor--present a great degree of conceptual difficulty when attempting to delineate its signature on what Menely calls a “materialist account of history” and its presence within the period’s literature.⁵⁷ Coal vapor signifies at once a historic record of coal as a geological object and the driver of industrial processes during the First British Industrial Revolution. The steam engine--the very symbol of the Industrial Revolution--was driven by the energetic products of coal combustion. The resulting vapor from burning coal was then used to draw up more coal to keep feeding its seemingly never-ending positive feedback loop of coal extraction, combustion, and vaporization to continue the extractive process. Yet the very mutability of coal in its different physical states,

⁵⁶ Miller, 142.

⁵⁷ Menely, 94.

and the difficulty in conceiving of language adequate to describe coal vapor's transformative and elusive nature, that is inherent to, yet separate from, the physical material of coal and its energetic processes, presents ontological and rhetorical difficulty. Indeed, like energy's rhetorical crossover between concepts of power, movement, and change, vapor similarly bridges multiple scientific and aesthetic realms, as it is often bound up with the vocabulary and ontology around "water," "air" or "atmosphere."⁵⁸ Thomas H. Ford notes that the term "atmosphere" itself is a "portmanteau of the terms, ἀτμός, 'vapor,' and σφαῖρα, 'ball.'"⁵⁹ Rowan Rose Boyson further observes that "atmosphere" enters the literary realm around 1800, denoting a mental or moral environment and a literary quality or tone, most significantly appearing in Coleridge's 1817 *Biographia Literaria*.⁶⁰ Boyson argues that the "intellectual density of 'atmosphere'" develops in Britain during this period, as the firm distinction between atmosphere's literal, scientific, and affective climates began to break down, thus undermining the notion of "two cultures," in which atmosphere as a kind of Romantic "spiritual resource against reductive science no longer resonates."⁶¹ In fact, Boyson points to Steven Connor's 2010 *The Matter of Air* and Jayne Elizabeth Lewis's 2012 *Air Appearance* to further support the claim that "the term atmosphere belongs to a linguistic nexus including ambiance, climate, medium, milieu, and mood." She contends that since the "materialization" of the atmosphere by science in the 17th

⁵⁸ The body of work on air and atmosphere, and their disciplinary and aesthetic crossover in the early modern and Romantic periods, is particularly rich, comprised of works such as Steven Shapin and Simon Schaffer's, *Leviathan and the Air-Pump: Hobbes, Boyle, and the Experimental Life* (Princeton: Princeton University Press, 1985). Mary Favret's *War at a Distance: Romanticism and the Making of Modern Wartime* (Princeton: Princeton University Press, 2009). Vladimir Janković's *Reading the Skies: A Cultural History of English Weather, 1650 – 1820* (Chicago: University of Chicago Press, 2001).

⁵⁹ Ford, 27.

⁶⁰ Boyson, 5.

⁶¹ *Ibid.*, 3.

and 18th centuries, there was a concomitant, reflexive turn to the atmosphere as also possessing a “particularly intimate affinity with thought,”⁶² language, representation, and indeed, with English literature.”⁶³ Lewis further argues for a simultaneous emergence of atmosphere, both literary and scientific, noting that pneumatic chemists, like Priestley and Davy, were themselves, “compulsive writers and self-conscious literary stylists.”⁶⁴

Indeed, a continued fascination in vapor sustained later scientific and intellectual endeavors throughout the eighteenth and early nineteenth centuries, as Joseph Priestley’s later experiments,⁶⁵ as well as Henry Cavendish’s and Humphry Davy’s respective work on charcoal and coal, further define the experimental features of vapors, with coal as a prime material for understanding the fluid properties of air and for establishing pneumatic chemistry as a formal scientific branch.⁶⁶ During this same period, as Boyson contends, the Romantics also link the “poetic imagination” with notions of energy and atmosphere, of which “vapor,” is a prime

⁶² Steven Connor, *The Matter of Air: Science and the Art of the Ethereal* (London: Reaktion Books, 2010), 63.

⁶³ Boyson, 4.

⁶⁴ Jayne Elizabeth Lewis, *Air's Appearance: Literary Atmosphere in British Fiction, 1660-1794* (Chicago; London: The University of Chicago Press, 2012), 3.

⁶⁵ Richard C. Sha interestingly notes that Priestley uses the term “imagination” to “refer to theories or hypotheses needing confirmation,” or for when applying a new process to substances. Priestley writes in his 1783 tract, “Priestley’s Phlogiston and the Conversion of Water into Air”: “Being now a master of a new and easy process, I was willing to extend it to other liquid substances, and I presently found, as I then imagined, that, by this other means, I could give permanent aerial form to any liquid substance that had previously been thrown into the form of vapor.” See Priestley quoted in Sha, *Imagination and Science in Romanticism* (Baltimore: Johns Hopkins University Press, 2018), 233.

⁶⁶ Davy, inspired by correspondence with the founder of the Society for Preventing Accidents in Coalmines, went on to develop the “Davy Lamp” for use coal mines to alert miners to the presence of methane and other flammable gases, colloquially deemed “fire damp” or “mine damp.” Humphry Davy, “On the Fire-Damp of Coal Mines, and on Methods of Lighting the Mines So as to Prevent Its Explosion.” *Philosophical Transactions of the Royal Society of London*. 1816.

component.⁶⁷ For instance, In Book VI of *The Prelude*, Wordsworth presents what Thomas H. Ford calls a “a locus classicus” of Romanticism’s crossover between material realms and the poetic mind.⁶⁸ In an outburst of joy upon completing his Alps journey, Wordsworth states,

Imagination! lifting up itself
Before the eye and progress of my Song
Like an unfather’d vapour; here that Power,
In all the might of its endowments, came
Athwart me; I was lost as in a cloud,
Halted without a struggle to break through,
And now recovering to my Soul I say
I recognize thy glory; in such strength
Of usurpation, in such visitings
Of awful promise, when the light of sense
Goes out in flashes that have shew to us
The invisible world, doth Greatness make abode,
There harbours whether we be young or old.⁶⁹

Like the characterization of vapor in Jago’s poem, Wordsworth describes the imagination as an “unfather’d vapour”: it is materially indistinct from the physical atmosphere in which it resides,

⁶⁷ While Davy is most famous for his miner’s safety lamp invention, Wordsworth asked Davy—a friend of Wordsworth’s publisher, Joseph Cottle—to correct proofs of the 1800 edition of *Lyrical Ballads*. Coleridge, too, admired the young chemist, and Robert Southey included five of Davy’s poems in his 1799 edited volume of *The Annual Anthology* of ‘Bristol poets.’ See Maurice Hindle’s piece, “Humphry Davy and William Wordsworth: A Mutual Influence.” *Romanticism* 18, no. 1 (April 2012): 16.

⁶⁸ Ford, 116.

⁶⁹ William Wordsworth, and W. Basil Worsfold. *The Prelude* (London : Boston: Chatto and Windus; J.W. Luce, 1907), 6.525-37.

comprised of other vaporous forms, like the “cloud.” However, Wordsworth’s imaginative vapor has no known origin—it both phenomenally surrounds and comprises the imagination itself. It is also noteworthy that Wordsworth intermixes vapor with “Power,” “light,” “flashes,” “progress,” “the invisible world”: the very language of energy production and its visible and unseen processes. For Wordsworth, vapor exceeds immediate or empirical sense perception and instead, is only “available only to imaginative or esoteric ways of knowing.”⁷⁰ In short, it exists within the abstract realm divorced from the material realities of the surface land. However, this passage also illustrates that vapor comprises the substrate of imagination itself. It is not simply a figurative vocabulary applied to poetic production, but rather, vapor serves as a locus or rather, a flash point, that draws together and ignites multiple energetic, material, and symbolic realms.⁷¹ This passage shows how vapor, specifically, acts as precisely the “kind of linguistic nexus” Boyson describes as emerging throughout Romantic-era literature; it provides multiple vectors and metaphors that connect and encompass different conceptual planes,⁷² from the aerial and atmospheric to the energetic and imaginative.

It is precisely this semantic overlay of context and complex metaphorical interactions in vapor—its ability to seamlessly move between the poetic thought processes, speculative temporal and material realms—that this chapter explores. In the following section, I consider how vapor affords metaphoric crossover between the staunch materiality of the carboniferous

⁷⁰ Menely, “Anthropocene Air,” 93.

⁷¹ Thomas H. Ford notes that poetic language—was the “primary site for the semantic extension of the atmospheric lexicon to include cultural meanings—what we now think of as these terms’ metaphoric sense.” Ford, 116.

⁷² Ford also points to the notion of “decontextualized citation” in the concept of atmosphere, as a crucial gesture in the disruption of clear divisions between disciplines and the ability to connect such conceptual planes. This seems helpful, especially, in working out how vapor is used interchangeably between the burgeoning realms of natural philosophy and Romantic poetry.

and the immateriality of the symbolic in Anna Seward's Sonnet 47, a poem that revises John Sargent's *The Mine*, and that uses vapor as a prime component in her critical apparatus, and a means to connect her work with the Miltonic sonnet form.

*

Part I. Vapors and Hardnesses: the Miltonic Form

In one of her surviving letters addressed to Court Dewes, dated March 30, 1785, Anna Seward writes about the English tradition of poetry, her deep admiration for John Milton's "penetrating judgement and a refined taste," and her hatred for Johnson's *Lives of the Poets*--a work she holds responsible for destroying "every thing like taste and feeling in the common reader." Throughout the epistle, she engages in an extended critique of British verse, and places John Sargent's newly popular poem, *The Mine*,⁷³ on par with Milton's work, declaring,

No, indeed, my conviction of the high poetic merit of Mr. Sargent's dramatic poem, the *Mine*, has lost none of its ardour. Mr. Hayley says it is the worthy rival of Milton's *Comus*. Perhaps I do not rate its claim quite so high; but I place it on a level with Mason's *Caractacus*. Judge, then, if I can subscribe to your friend's opinion, that it does not rise above mediocrity! — Why is it that people of fine understanding, and general accuracy of taste, are so often blind to the irradiations of genius, on its first emerging?⁷⁴

Indeed, Seward is so taken with Sargent's poetic "irradiations," she hand-copies lines of his dramatic verse into the letter, stating,

⁷³ Buckland notes that, in addition to its popularity with Seward and Hayley, the poem was also a particular favorite of Charlotte Smith and Erasmus Darwin. Buckland, 50.

⁷⁴ Anna Seward and Archibald Constable, *Letters of Anna Seward: Written between the Years 1784 and 1807* (Edinburgh: A. Constable and Company, 1811), 54.

The first speech in blank verse of the Gnome is perfectly Miltonic; and I scarce know heroic rhymes more sublime than the ensuing:—

Of hoary fens exalt the stagnant breath,
And load the passing gale with plagues and death!
Thro' yelling gulfs outrageous whirlwinds urge,
Or curl the tossing pool with fiery surge!
Rid flaming cataracts round Vesuvius glow,
Bid Hecla thunder thro' incumbent snow!
From Cotopasci's heights the deluge pour,
And melt a thousand winters' frozen store!
Beneath the main expansive vapours raise,
And with metallic embers feed the blaze,
Till the black vortex of the water boils,
And Ocean wonders at his new-form'd isles.

In the letter to Dewes, we see that Seward's imagination appears particularly captivated by the lethal and the vaporous elements, as she includes passages detailing the "dank caves" full of "dense and sulphurous fumes" the "misty darkness" and "sublimated vapours": a "damp infectious air." Seward assigns Miltonic perfection to the "stagnant breath" of "plagues and death," recognizing in Sargent's expansive vapors a kind of Burkean sublime that evoke the horrors of the "drear domain" and the wonders of the unfathomable. In fact, she concludes her letter with a tongue-in-cheek apology for "drenching" him perforce, with "Heliconian dews springing up at Lavington," expressing that Sargent's poem had so captivated her with its "beautiful sentiment, imagery and description," that time had all but vaporized during her

exaltation of *The Mine*'s literary virtues. Her literary atmosphere becomes saturated with Sargent's energetic verse, her mind permeable and subject to the forces of poetic effluvium that she cannot contain, and must, instead, transmit to her letter's recipient.

Seward's marked concern with vapors, liquid, and dew provides the source of Seward's own poetic inspiration and reverie. Throughout the letter, she recognizes vapor's destructive tendencies, as well as its expansive, world-creating sublimity. Yet, while Seward's epistle engages a deep thematic interest in vapor as a geological phenomenon within Sargent's poem, vapor represents for Seward generative and even creative possibility, allowing her to assimilate an un-versed experience of subterranean space and the vaporous to the formal and heroic, what Jan Golinski calls "more familiar feelings about works of art or natural scenery."⁷⁵

In *The Mine*, Sargent aims to refute John Aikin's claim that the mineral kingdom is sterile and unaccommodated to description. Instead, in his own words, *The Mine* is Sargent's attempt to "unite Poetry and Science,"⁷⁶ and to acquaint his readers with the works of Nature, enlarge the understanding, and improve the heart through versifying the subterranean realm, unknown and wholly unimaginable to an eighteenth-century audience. The poem chronicles the travails of Count Maurice, a Hungarian nobleman, condemned to perpetual confinement and labor in the mines of Idria, for having "fought a duel with a General of the Austrian infantry."⁷⁷ Yet more so, Sargent's poem is a catalogue of natural geological features, and is an impenetrable, undiscovered terrain, "filled according to the conjectures of speculative men."⁷⁸ Adelene

⁷⁵ Jan Golinski, *The Experimental Self: Humphry Davy and the Making of a Man of Science* (Chicago ; London: The University of Chicago Press, 2016), 28.

⁷⁶ John Sargent, *The Mine: A Dramatic Poem*. By John Sargent, Esquire (London: printed for T. Cadell, 1785), xv.

⁷⁷ *Ibid.*, xi.

⁷⁸ *Ibid.*, 45.

Buckland notes that Sargent draws upon Richard Watson's *Chemical Essays* (1782) among other scientific and philosophical works to "explore the internal structure of the earth."⁷⁹ Keith Hasperg further asserts, "Sargent's close attention to the minute details in nature, his vast scientific knowledge evident in his painstaking descriptions" appealed to a wide readership.⁸⁰ Buckland further notes that the mythological gnomes who inhabit the poem do the work of mineral classification, as they "divide the mineral kingdom into its three Linnaean classes: *Petrae* (earths and stones)," as well as "*minerae* (salts, sulphurs, and metals)," and "*fossilia* (fossils, earthy soils, and concretions). Each of these reveal "fairy scenes" and "heavenly visions" within the "rocky fold." She observes that Juliana, the female protagonist of the poem, is brought mineral specimens by gnomes who weave "Visions of celestial dye" that transport her to other imaginative and spatial realms.⁸¹ Buckland notes the importance of the term "ravish'd" within the poem, as she argues it denotes the kind of moral and scientific transcendence necessary to "see the underground" in the poem. However, it is also noteworthy that geological vision is comprised by vaporous forms emanating from the geological specimens themselves. Vapor is also taken up in the scientific explanatory notes, as Sargent delineates the discoveries of Diodorus, Dr. Priestley, and Goldsmith, among others, whose investigations concern mercury's curious elastic properties and insidious toxicity.

Once again, vapor is bound up with the observer's imagination and affords them the ability to "see" into other realms. The poem is a hybrid literary space of footnoted hypotheses of

⁷⁹ See Adelene Buckland's chapter, "The World Beneath Our Feet," in Adelene Buckland, and Sadiah Qureshi. *Time Travelers: Victorian Encounters with Time and History* (Chicago: University of Chicago Press, 2020), 48.

⁸⁰ Keith Hasperg, "'Saved by the Historic Page': Charlotte Smith's Arun River Sonnets." *Studies in Romanticism* 53, no. 1 (2014): 108.

⁸¹ Buckland, 49.

Boyle, Kircher and Buffon and the mythical population of gnomes, fossil queens and banditti. Filled with geological specimens of all kinds, including treacherous, vaporous mercury that saturates the atmosphere, *The Mine* showcases a dazzling, imaginative ecology that blends empirical, human, and fantastical realms. It is what Siobhan Carroll calls a “marvelous but lethal atopia”: a space of ill-defined ontology and uncertain generic and formal attributes.⁸²

Vapors not only indicate the poem’s scientific intertextual impulse, but they also occupy a central thematic place in Sargent’s dramatic work. Noxious vapors pose a larger threat to the imprisoned noblemen than the violent criminals with whom they toil: “such wretches my eyes never beheld. The blackness of their visages only serves to cover a horrid paleness, caused by the qualities of the mineral they are procuring.”⁸³ Coal dust masks their identities and the vapors sicken the miners; vapor not only possesses the ability to obscure and transform the noblemen’s appearances, it also creates a disorienting space, and upends traditional social order. As the more of the mineral the noblemen procure, the more they are obscured by the coal, coming to resemble the criminals and miscreants with whom they must toil.

In the process of extracting nature, and releasing its noxious vapors, man does not simply “change the forms of the materials of nature,” but rather, the coal effluence threatens to dissolve one’s very identity and class position. Through their toils and the vaporization of the mineral, the wretches come to almost mirror the coal itself.⁸⁴ Pollution and vapors characterize the mine as an

⁸² Siobhan Carroll, *An Empire of Air and Water: Uncolonizable Space in the British Imagination, 1750-1850* (Philadelphia, Pa.: University of Pennsylvania Press, 2015), 154.

⁸³ Sargent, iv.

⁸⁴ Menely has an excellent interpretation of coal energy in relation to Marx’s “colossal productive forces,”: once combusted and turned into air, appears to be the displaced counterpart to the labor obscured in the exchange, the “forgotten human element in the commodity.” This obfuscation seems to be very evident in Sargent’s passage, insofar that there is a positive correlation between the increased level of labor, greater extraction of the mineral, and the higher

illegible space, one that resists the kind of visible and knowable classification that formally organizes the poem, but which seems to break down within this space. Likewise, in their contact with coal pollution, the miners too become resistant to being read. Noah Heringman notes that geological bodies “articulate the otherness of the physical through the literal and metaphorical opacity of rock.”⁸⁵ We see a transfer of the coal’s otherness to the miners, as the vapors weaken their bodies and the dust obliterates all intelligible distinctions, and illustrates that the human body is permeable to coal’s toxic effects. I want to further suggest, however, the obscuring of the miners’ faces and the threat of deracination through coal vapor also unravels the “material categorization of the matter (corporeal and mineralogical) within the poem,”⁸⁶ and introduces the logic of what Kathryn Yusoff calls a “deformation that presses an inhuman categorization and the inhuman earth into intimacy” that is “organized by historical geographies of extraction, grammars of geology.”⁸⁷

Seward continues to integrate Sargent’s dramatic poem into her own literary production over the next ten years. She writes two, compressed sonnet versions of *The Mine*. The first version is published in the May 1795 edition of *Universal Magazine*, and a second, amended poem appears in her 1799 *Original Sonnets on Various Subjects* as Sonnet 47. However, a curious and highly conspicuous phenomenon occurs in these sonnets. While her letter to Dewes shows that she is effusively captivated and inspired by the ontological and literary possibilities of vapor as a marker for sublimity and a vehicle for divine inspiration in Sargent’s poem, in her own versions, vapor is completely omitted; it appears neither as a thematic element nor an

degree of obscured labor and alienated class consciousness—here, metaphorized as the noblemen’s changed, unrecognizable visages. See Menely, “Anthropocene Air,” 98.

⁸⁵ Heringman, 53.

⁸⁶ Yusoff, 10.

⁸⁷ *Ibid.*, 10.

aesthetic gesture in either version. Instead, Seward re-envisioned the space of the mine as a sparry, cold underworld, devoid of noxious vapor, and likewise, of its human prisoners. It is a space entirely emptied of atmosphere and of energy.

This omission may at first, appear unexceptional, especially considering the complicated nature of textual derivations during the period,⁸⁸ and Seward's heightened self-awareness around the transcribing of original ideas and poetic imagery into new, and revived, forms. She famously levels a charge of copying against Charlotte Smith, stating that Smith's sonnets are a "mere flow of melancholy and harmonious numbers, full of notorious plagiarisms, barren of original ideas and poetical imagery,"⁸⁹ and further accusing Smith of "vaporizing" in her *Elegaic Sonnets*.

However, I contend that the complete excision of vapor from Sonnet 47, is a highly significant move. It signals Seward's conferral of legibility to a space that is hidden, obscure, forbidden. In reconfiguring the mine as a legible space, Seward's poem establishes the extractive space as worthy of serious literary treatment, further instantiated by its taking form as a Miltonic sonnet. The transposition of Sargent's verse is fundamental in helping Seward establish her unique literary persona and for asserting a permanent, forceful vision of "a particular lyric poetic form" distinct from Sargent's longer, classificatory, popular verse.⁹⁰ Although committed to

⁸⁸ Tilar J. Mazzeo claims in *Plagiarism and Literary Property in the Romantic Period* that "It is not difficult to find instances in which prominent writers of the period were accused of plagiarism." She suggests that this is due to the period's complex approach to ideas around originality, as well as heightened competition within the literary market. Mazzeo's argument applies in the case of Seward and Smith, with the additional complication of marked class divisions between the two women sonneteers. See Tilar J. Mazzeo, *Plagiarism and Literary Property in the Romantic Period* (Philadelphia: University of Pennsylvania Press, 2007), 9.

⁸⁹ Anna Seward in a letter to Reverend Berwick, dated 6 October 1788, *Letters of Anna Seward, written between the years 1784 and 1807*, 2 vol. (London: Longman, Hunt and Rees, 1811), 2:162. Almost a year later, Seward famously declares to Theophilus Swift that Smith's poems are "everlasting lamentables, which she calls sonnets, made up of hackneyed scraps of dismality, with which her memory furnished her from our various poets." Seward, 2:287.

⁹⁰ Kairoff, 1.

traditional forms and subject matter, Seward, like Milton, is highly revolutionary in her subject matter. She describes the new era of mining, combustible energy, and subterranean depths. Yet the omission of the vapors and the geological mechanisms that so captivate her when reading and transcribing Sargent's poem, and the excision of Sargent's explanatory mechanisms appears, in some regard, to indicate Seward's resistance to the way Enlightenment discourse infiltrates and dissolves proper poetry. Instead, she configures the mine as a completely aesthetic space that will endure shifting temporalities and changes in popular discourse.

While Sargent's poem makes clear that vapor is recognized in its material sense as an emanation of imperceptible particles, arising as "damps," from the subterranean depths or as the result of combustion, vapor also possesses a distinctly literary bent during the period. Seward's beloved authors, Shakespeare, Pope, and Milton, and even her editor, Walter Scott, often used both the object and active form of vapor to denote the light and unsubstantial use of language; to "vapor" was to speak ostentatiously and to employ bluster without permanence. Milton employs both forms of the term throughout his corpus—to evoke a mystical landscape in "Exhalations dusk and moist, Sent up," and as an invective against "past poets" who used to "vapor much."⁹¹ Scholars Claudia Kairoff, Lisa Moore, and Theresa Barnard note Seward's distinct affiliation with the Miltonic sonnet form as a kind of protective measure against such poetic vapping. Barnard posits that Seward chose this form and an attendant poetic vocabulary with posterity and

⁹¹ David Simpson notes that "vapors, in Milton's work, are almost always negative, as is the 'noxious vapor' of the lower depths and the 'Vapour, and mist, and exhalation hot' accompanying the change of climate consequent upon the Fall in *Paradise Lost* (2: 216; 10: 694). [. . .]. He likewise connects this negative connotation to vapor's appearance in *The Prelude* in which vapors signal "a world gone wrong, smothered in print and drowning in water." See Simpson, *Wordsworth, Commodification and Social Concern: The Poetics of Modernity* (New York: Cambridge University Press, 2009), 90,91.

historical accuracy always at the forefront.⁹² We see this in Seward's response to George Hardinge's critique of her style, to which the poet retorts:

I choose, and shall always choose the strongest, which spontaneously occur, to express my idea, whether in prose or verse, if the idea is elevated; mindless whether they do, or do not form a part of the fashionable vocabulary of Lord Fillagree and Lady Pamtickle.⁹³

Seward so believes in the strength of her poetic expression, that she declared her work "not inevitably perishable." Indeed, she places her poetry on the scale of the inorganic, or even, the geological. Kairoff aptly notes that Seward publicly declared in 1788 that the only legitimate sonnets "were those patterned on Petrarch's and Milton's."⁹⁴ While Kairoff posits that this was a measure, in part, to establish feminine literary dominance over other female poets engaged in the sonnet revival, Paula Backscheider notes that the Miltonic was a verse ideal that, with its emphasis on technical virtuosity and social commentary as its occasion, protected female poets' work from being trivialized by critics.⁹⁵ Laura Runge further takes up how the critical discourse, including Scott's own, employed terms that draw on picturesque and sublime terminology, as

⁹² Paula Feldman and Daniel Robinson note that William Wordsworth admired Milton's sonnets for their enjambment and the unique volta, which comes after the second foot of line eight, instead of at the beginning of line 9. They point out that in a "letter to Alexander Dyce, Wordsworth praises Milton for dropping the rhetorical division of the Italian sonnet, creating what Wordsworth refers to as the 'intense Unity' of 'the image of an orbicular body,--a sphere—or a dew drop.'" Yet, while he lauds the sonnet's structural importance as a "symbol for its content, on the other, he casts aspersions on the prevailing English and Italian forms that neatly divide the sonnet into moveable parts." See Paula R. Feldman and Daniel Robinson, *A Century of Sonnets: The Romantic-Era Revival 1750-1850* (Oxford, England: Oxford University Press, 2002), 8-9.

⁹³ Seward, *Letters*, 230.

⁹⁴ Kairoff, 160.

⁹⁵ John Fuller claims that "The sonnet in the eighteenth century lives under the shadow of Milton if it can be said to live at all." See John Fuller, *The Sonnet* (London: Methuen, 1972), 9.

well as geological metaphors, such as “hard” and “severe” to denote masculine literary prowess and, conversely, “soft” and “graceful” in conjunction with secondary, seemingly feminine works.

Seward is highly cognizant of such critical discourse, and of her work as having the potential to be read simply as poetic “vapor” on account of her sex; she thus uses the sonnet as a strict, rigorous test of skill to form a “beautiful and distinct order of composition,”⁹⁶ and to avoid falling in with those “who assumed the name of poet, on the slight pretense of tagging flimsy rhymes” and who its serious subject matter for “any of the lighter graces.”⁹⁷ Here, she uses the language of atmosphere, effluvium, and vapor to inveigh against “flimsy rhymes” and to describe the kind of aesthetic posturing, against which she squarely positions herself, by employing the hard, Miltonic tradition.

We see Seward employ themes of severity and durability in the narrative arc of Sonnet 47, in which vaporous, flimsy, and light themes and images in Sargent’s work are exchanged for the stony, gelid, and persistent. Seward omits Sargent’s copious, scientific explanatory notes and allusions, and omits most of the narrative involving Maurice and Juliana. The raucous, hazy environment and human characters of *The Mine* are replaced by a silent and forbidding atmosphere in Seward’s sonnet, as the Bard enters with lyre Orphean into the space of the mine, which is now emptied of all inhabitation and human markers. Following a traditional Miltonic sonnet structure of an octave and sestet merged into a single stanza, the sonnet commences by winding the reader through “the central caverns of the mornless night” and the “sparry floor.” Here, Seward’s narrative voice and seamless enjambment has the effect of visual movement: a watchful eye observes the Bard make his way through the dark recesses of the mine, carefully

⁹⁶ Seward, *Letters*, 2:256-57.

⁹⁷ *Ibid.*, 2:162.

observing his progression through Aonian, geological space. While in Sargent's version of the poem, the gnomes use vaporous "Visions of celestial dye" to impart knowledge to Juliana, who is shackled to the rocks, what we see in Seward's sonnet is a shift to an omniscient narrator who guides and observes the Bard in his journey of knowledge through the mine. This shift is significant: in Sargent's poem, Juliana, the protagonist is a passive figure, who gleans knowledge of geological classifications through absorbing the vaporous "dye" emanating from the minerals. In Seward's version, no such atmospheric geological knowledge exists. Instead, the mine is configured as a site of active knowledge that the observer must learn independently. There is no explanatory mechanism to guide the Bard, or the reader, in their passage.

Seward further signals that her sonnet is a clear departure from Sargent's poisonous mine. For instance, in Sargent's *Mine*, Count Maurice etches his name, "a sad memorial' and his fading days on the pendent vault, with trembling hand upon the "sparry architrave." In Sargent's verse, the Count, debilitated by noxious vapors, reaches upwards to the vault, his form positioned towards the exit of the mine, out to the light above. The spar serves as a medium onto which he etches the record of his dwindling human existence in the mine; the mineral's effluence is the cause of his demise and simultaneously, the material for the writing of his own epitaph, as the mine becomes a tomb devoid of human life. Seward, likewise, employs "sparry" in line four of her sonnet, but inverts the structure of the Grecian beam, and instead, turns it into a "sparry floor," upon which the sister powers advance to welcome the Bard. This subtle reversal from beam to floor shifts the reader's vision away from the vault and the light outside the mine—elements that symbolize human civilization and life above--down to the very lowest depths of the pit itself. The architrave is structural, indicating human presence and innovation, yet the sparry floor signals a non-human world. Whereas Jago pushes a narrative of mines and energy

predicated on human imagination and innovation, Seward provides us with a very different conception of the coal mine—one that is emptied of human presence. Yusoff identifies in this gesture, “The God’s-eye view is inverted into a lithic-eye view to produce a geologic commons from below.”⁹⁸

We further see this transition from the human world to the inorganic in her personification of the sister powers, Petra and Fossilia, in line six. Seward characterizes the sister powers as “Petra, stern queen, Fossilia, cold and bright.” Petra, like the sparry floor, is comprised of barren stony substances forming the first division of the fossil kingdom; she is produced by the earth of vegetables and animals, the viscid sediment of the sea, the precipitation of rainwater. Her sister power, Fossilia—cold and bright, is the last division of the fossil kingdom and includes all the petrifications. Taken together, the sisters represent coal itself: they symbolize the organic and inorganic life forms that inhabited a “former earth whose remains have transformed into mineral bodies that constitute and compose a part of “this present earth.” The two sisters remain deathly still within the cavern, calling in their gnomes to marshal into the Bard’s sight “the mystic virtues gold and gems acquire in their gelid incrust and veined ore”⁹⁹ fixed, state of nature: they are the vital vegetable and biological world suspended within the “mineral scene.” Seward reconfigures the mine as an aesthetic domain rather than a working material one, where the poetic voice can descend into the lowly, vaporous strata of the earth and provide man with a new visual and imaginative access to a nature, to an economy and to a sense of deep time with which he could not yet see but only imagine.

⁹⁸ Yusoff, 13.

⁹⁹ Seward, Sonnet 47, lines 7-9.

In Seward's reconceptualization of Sargent's work, the figure of the miner completely disappears. The Count, Juliana, the criminals, and the other humans who inhabit *The Mine* and drive the poem's narrative, do not figure into Seward's revision. It seems crucial that Seward's mine cannot dually accommodate the human miner and the ethereal in its still, mineral kingdom. Likewise, it is significant that the sonnet closes with the Bard displacing the feminine sister powers from the Mine, seating them "high among the Muses' choir," and removing them out of their sparry domain. The displacement of the sister "powers," is Seward's description of coal mining and combustion itself—as the Bard displaces Petra and Fossilia from their still underground domain and releases them into the atmosphere above. Moreover, in the poem's conclusion, Seward points the reader to another inevitability associated with coal mining: exhaustion. Whereas Sargent's mine is a fantastical space that uses coal extraction to feed imagination and fuel human ingenuity into a limitless future, Seward's vision for the mine is instead finite, exhaustible, and one that traps the Bard within its cold recesses for eternity.¹⁰⁰ Seward's mine does not oppose the ideology of plenitude and speculation about coal mines, put forth in her predecessors' works; rather, she illustrates precisely what is on the other side of coal mining's excesses and its ravenous quest for cheap energy--an underground world emptied of its mineral riches and of meaning itself. And while her sonnet does not contain vapor as a deathly aftereffect of mining and combustion, she understands that the exhausted mine—lacking any

¹⁰⁰ Frederic Jameson notes about the "nature and political function" of utopian fiction that "its deepest vocation is to bring home, in local and determinate ways and with a fullness of concrete detail, our constitutional inability to imagine Utopia itself: and this, not owing to any individual failure of imagination but as the result of the systemic, cultural and ideological closure of which we are all in one way or another prisoners." See *Archaeologies of the Future: The Desire Called Utopia and Other Science Fictions* (London; New York: Verso, 2005), 289.

“hopes and plans for renewal and change,”¹⁰¹ and unable to produce any further “energy”--is similarly lethal.

Seward’s particular instantiation of the Miltonic sonnet form provides a compressed means by which to expand and classify the diversity of the natural world, and to relay the highly important representation of mining with her highly particular imaginative and formal techniques. Seward’s use of the Miltonic sonnet is often read as a form of poetic mastery and formal containment over an unruly subject and illegible space. Seward’s compressed form also serves as a hermeneutic to not only evaluate and reconfigure Sargent’s original material, but a way to understand the overwhelming rapidity with which the English countryside increasingly and irrevocably bore the marks of coal extraction and manufacture, and the almost heroic proportions of its acceleration and attendant material and human dislocations. Sargent’s poem works in an expansive verse form and represents the mining enterprise in an equally prodigious aesthetic structure. Conversely, Seward’s derivation’s “hard” and “stern” Miltonic form and multiple moments of enjambment enact not only her nuanced, calibrated imagination, but her ability to move between incommensurable ranges of the immediate and the unseen. Yet, the Miltonic form also seems to be a concerted gesture to “assign solid and unchanging form to what is vaporous and inevitably shifting,”¹⁰² which, in Seward’s case, was the very ground upon which she composed her work, and the material surrounds from which she drew inspiration.

Seward’s expression in Sonnet 47 exemplifies a shared aesthetic impulse during the period, to represent the infernal regions and its hidden miners in neoclassical terms: her characterization of coal as Fossilium and Petra echoes a wider impulse around the mystification of

¹⁰¹ Miller, 142.

¹⁰² Simpson, 109.

coal mining during the period. In travelogues and occasional poetry, the river Severn was depicted as the River Styx, and the miners who crushed coal and extract the cinnabar were portrayed as devils and fairies. The atmosphere around the mines and ironworks was terrifying, as the calcining of iron ore and coking of coal released billows of sulfur into the atmosphere, obscured the miners' features by a thick layer of dust and vapor and created gigantic man-made mountains of iron slag outside the pit. Seward seems to understand, in Sonnet 47, that the mine is both heroic and horrifying to the spectator; the mine, configured as spectacle, and its working population exceeds the limits of imagination and of literary representation.

In this way, Seward's use of the neoclassical, and perhaps even the use of the Miltonic form within the sonnet, also signals a failure of realism and the limits of her own aesthetic representation, of which she is fully aware. Underlying Seward's verse is a marked cognizance of the inability of strictly neoclassical terms to portray the unfinished, not-yet-objective character of the present moment of the mine; her mining sonnets are punctuated and intruded upon by the present and inevitable voice of the immediate. She is cognizant of mining's energy and vapor's metaphoric and formal capabilities, and as such, she deploys and resists them at will. Seward's own insistence on the hard, stern, and durable Miltonic form helps create her own "worthy contrast to the classical productions of antiquity"¹⁰³ and maintain traditional notions of proper feminine production and the occasional subject. Her renunciation of vapor as a symbolic and aesthetic gesture forces her to call upon a new kind of imagination: one able to connect between new temporal and representative structures, and to depict the unfamiliar, disturbing, and titillating unearthing of an ancient past within the mine pit. Yet at the end of Sonnet 47, it seems

¹⁰³ Friedrich von Schlegel, Ernst Behler, and Roman Struc, *Dialogue on Poetry and Literary Aphorisms* (University Park: Pennsylvania State University Press, 1968), 101.

clear that Seward's rhetorical, visionary, and discursive techniques cannot adequately thwart the expansion of inescapable vapors that have seeped into poetic production and the severity and "hardnesses" of the mine that would come too soon with the First British Industrial Revolution, and forever alter poetic production and her beloved English landscape.

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What may not be immediately clear in considering Sonnet 47 singularly, but which becomes evident when one examines Seward's other mining verse, notably, her famous "To Colebrook Dale," is that like forms of vapor and energy, notions of value around the very landscape were rapidly and dramatically changing due to the coal industry. Seward continues her meditations on vapor, mining, and themes of futurity in what is, arguably, her most famous sonnet, "To Colebrook Dale." Like Sonnet 47, it is also Miltonic in form and is replete with Seward's characteristic neoclassicism in its description of scenes of extraction and geological features. However, "To Colebrook Dale" does not simply represent another of Seward's intertextual derivations of male-authored works. Going against what Gioia Angeletti calls Seward's characteristic "imitative and revisionist practice,"¹⁰⁴ the sonnet's description of mines and forges reflects Seward's original, and personal experience of witnessing the coal and iron works at Coalbrookdale in 1787--an important year, in terms of the discovery of new forms of hydrocarbons on the site, and the height of Coalbrookdale's extractive and technological production.¹⁰⁵ Moreover, Seward's sonnet represents the compression of all her written

¹⁰⁴ See her chapter, "Women Re-Writing Men: The Examples of Anna Seward and Lady Caroline Lamb," in Lilla Maria Crisafulli, and Cecilia Pietropoli. *Romantic Women Poets : Genre and Gender*. DQR Studies in Literature. Amsterdam: Brill, 2007), 245.

¹⁰⁵ Donna Coffey speaks about the importance of Coalbrookdale in the First British Industrial Revolution; a mining town located on the Severn River in Shropshire—adjoining Seward's and

production about the Ironbridge Gorge's sublime, industrial splendor. This was a subject she revisited and revised throughout her lifetime, using multiple literary forms and genres such as the epistle, the epic poem titled "Colebrook Dale," and the Miltonic sonnet, "To Colebrook Dale." Seward's multiple literary treatments of Coalbrookdale highlight her unique position within a wider movement of eighteenth-century women's literary interventions in domestic travel writing and her role in the proliferation of locodescriptive poetry at the time. What is unique about Seward's locodescriptive work is that in her description of picturesque natural beauty, she also addresses complex industrial phenomena happening in rural scenes, such as large-scale extraction and industrialization.¹⁰⁶ Seward's verse stages the emergent tensions between Romantic conceptions of nature and sublimity and the rapidly industrializing scene before her.

Seward's mining verse challenges her own revisionist tendencies and persistent indebtedness to the literature of sensibility. It also puts her in direct opposition to the tradition of women's locodescriptive poetry, most aptly described by her fellow Bluestocking, Hannah More, who, in the Preface of her 1777 *Essays on Various Subjects, Principally Designed for Young Ladies*, prescribes the appropriate subject and form for feminine participation in this genre:

Erasmus Darwin's Lichfield in Staffordshire—Coalbrookdale, long the site of coal and iron works, "became in the 1770s and 1780s a cradle of industrialization in Britain due to technological innovations such as the smelting of iron ore with coke rather than charcoal and the application of steam engine technology to the production of iron." Coffey also notes the building of the famous Iron Bridge in 1779, a wonder of engineering and manufacture, and in 1786, a deposit of petroleum was discovered there, and was "the impetus for early speculations on industrial uses" of that energy source. See Coffey's article, "Protecting the Botanic Garden: Seward, Darwin, and Coalbrookdale." *Women's Studies: An Interdisciplinary Journal* 31, no. 2 (March 2002): 141–64.

¹⁰⁶ Peter M. Jones notes that while Anna Seward's "poetry expresses some unease about the expansion of Lichfield's upstart industrial neighbor, would nonetheless come to Birmingham for the musical entertainment the town could offer." See Peter M. Jones, *Industrial Enlightenment: Science, Technology and Culture in Birmingham and the West Midlands 1760–1820* (Manchester, UK: Manchester University Press, 2008), 66.

THE Author fears it will be hazarding a very bold remark, in the opinion of many ladies, when she adds, that it is readily allowed, that the female mind, in general, does not appear capable of attaining so high a degree of perfection in science as the male that the sex have lively imaginations, and those exquisite perceptions of the beautiful and defective, which come under the denomination of Taste. But pretensions to that strength of intellect, which is requisite to penetrate into the abstruser walks of literature, it is presumed they will readily relinquish. There are green pastures, and pleasant vallies, where they may wander with safety to themselves, and delight to others.¹⁰⁷

Here, More advocates for the feminine literary engagement with pastoral verse, largely centered on picturesque and natural scenery; women “wander” and “cultivate,” while men “scale” and “adventure.” Yet, while ostensibly focused on the surface, pastoral environment, More’s preface also contains subtle references to extraction and to gendered intellect and knowledge as a kind of subterranean space. She describes the “other sex” as “bold adventurers,” a phrase often used for mining speculators during the period. Likewise, she asserts that these adventurers possess “pretensions to that strength of intellect, which is requisite to penetrate into the abstruser walks of literature.” A nod to Swift’s *Apologia in Tale of a Tub*, the phrase also evokes scenes of subterranean exploration and extraction—of bringing to light what is concealed or hidden.¹⁰⁸

Like we see in Jago’s topographical poem, the exploring mind is likened to the practice and space of extraction. Seward, in many of her poems, affirms More’s feminine poetic prescriptions.

¹⁰⁷ Hannah More, *Essays on various subjects, principally designed for young ladies* (London: printed for J. Wilkie, in St. Paul’s Church-Yard; and T. Cadell, in the Strand, MDCCLXXVII. [1777]), 6-8.

¹⁰⁸ Patricia Meyer curiously calls Seward’s manipulation of male sources in her poems a “subterranean challenge,” referring to Seward’s feminization of traditionally masculine themes and genres, hidden under what Angeletti calls the “veil of domesticity and sentimentality.” See Meyer quoted in Angeletti, 243.

Her subject and style largely describe serene, pastoral environments, and she engages in “frequent use of anthropomorphism of abstract qualities and natural phenomena, an embellished style full of descriptive epithets and multiple paraphrases, sensuous and synaesthetic expressions, elegant and archaic words, the persistent use of alliteration and a language much indebted to the literature of sensibility.”¹⁰⁹

However, Seward challenges her own characteristic style, as she confronts extraction and the pollutive effects of mining in the sonnet, “To Colebrook Dale.” In this work, Seward utilizes all of her “degree[s] of perfection” in not addressing traditionally masculine subjects such as industrialization. She also importantly engages in what Noah Heringman identifies as a restructuring of “the horizontal space of geography,” anticipating the way geology and mining restructures vertical space.¹¹⁰ Scenes of extraction and industrialization, offer her a way “to participate in so-called masculine discussions outside the sanctioned feminine sphere”¹¹¹ as well as to recast the popular discourse on industrial travel and touristic impressions of the sublime. Seward’s use of multiple genres, revisions, and poetic forms, and the sonnet illustrate her continued critical assessment of environmental pollution, industrialization, migration, and speculation. In writing across genres and challenging polite, feminine categories in her unique subject matter of mines and pollution, Seward engages in a kind of formal critique and subversion of More’s gendered poetic ideology.

Seward’s multifarious writings on Coalbrookdale not only illustrate the way she drew from and reworked her own oeuvre, but they are also highly representative of the larger body of

¹⁰⁹ See Lilla Maria Crisafulli and Cecilia Pietropoli, *Romantic Women Poets: Genre and Gender*. DQR Studies in Literature (Amsterdam: Brill, 2007), 245.

¹¹⁰ Heringman, 98.

¹¹¹ Susan B. Egenolf, *The Art of Political Fiction in Hamilton, Edgeworth and Owenson* (Surrey, 2001), 3.

diverse eighteenth-century travel literature, consumed by the British public during the same period Seward composed her famous account.¹¹² Seward's documentation of her experience at Coalbrookdale marks a shift in what Chloe Chard calls "the model of encounter with the foreign in which the traveller confronts the topography as a distanced pictorial spectacle."¹¹³ Seward's own domestic encounter with scenes of extraction at Coalbrookdale instead draws the "foreign" encounter into her national sphere, allowing her to engage in direct commentary about the industrial monuments and geological sites before her. For Seward, and for other domestic tourists, the mine functions as a pictorial and sociohistorical substitute for the foreign experience of the Grand Tour, and for the classical sites that mark humanity's progress.

While the French Revolution certainly shifted British travel itineraries closer to home,¹¹⁴ the rise in domestic tourism, and especially the growing popularity of industrial tourism as a domestic form of the Grand Tour indicated a major shift in the domestic British travel itinerary and the changes to the "landed class image" associated with the Tour. While the increased interest in domestic travel may be attributed to several other factors, such as the sharp rise in

¹¹² In 1785, Edward Gibbon was "told that 40,000 Englishmen, including their servants were on the continent," compared with Lady Jerimingham's estimate of "15-16,000 abroad" in 1802. See John Towner's piece, "The Grand Tour. A Key Phase in the History of Tourism," *Annals of Tourism Research* 12, no. 3 (January 1, 1985): 304.

¹¹³ See Chard's chapter, "Women as Tourist Attractions," in *Romantic Geographies: Discourses of Travel 1775-1844*, ed. Amanda Gilroy (Manchester, Manchester University Press, 2000), 113.

¹¹⁴ See Nicholas Stanley-Price asks, "How is the period of the Grand Tour to be defined? For many authors, it was the outbreak of the Napoleonic wars that put an end to the Grand Tour as an aristocratic institution, whereas for others the Tour resumed, albeit in a modified form, after the wars ended in 1815." Stanley-Price evokes a common narrative concerning the rise of British tourism during the period: the wars prohibited young British aristocratic tourists and their entourages from following the typical continental itinerary—a circuit of western Europe undertaken primarily for education and pleasure, that often began in Dover, crossed the English Channel to Calais, and then on to Paris and to the Low Countries. Stanley-Price, "See Rome—and Die: Legacies of the Grand Tour in a Roman Cemetery," in *The Legacy of the Grand Tour: New Essays on Travel, Literature, and Culture*, ed. Lisa Colletta (Madison: Fairleigh Dickinson University Press, 2015), 170.

middle-class tourism, greater female participation in travel,¹¹⁵ as well as changing cultural attitudes that transformed the spatial changes and the very geography of the Tour.

Moreover, “British self-confidence” and commerce grew to such a degree in the eighteenth century that “cultural critics came to feel justified in writing that the country stood at the ‘summit of politeness’¹¹⁶: greatness or civilization no longer needed to be sought at other courts or in Europe’s classical heritage.”¹¹⁷ Instead, travelers in the style of the Grand Tour increasingly improvised their itineraries according to a “more liberal plan”¹¹⁸: one that increasingly substituted the British countryside and the geologic and industrial wonders of locales such as the Ironbridge Gorge and Coalbrookdale for the principal cities and sites of interest, such as the classical antiquities of the lower Rhone valley, the court at Versailles, and the natural sublimity of the French Alps.¹¹⁹

¹¹⁵ Sandra Adickes connects the increased mobility enjoyed by British women travelers as “part of the feminist aspiration brought forward by the Revolution.” She notes distinguished women writers in England such as Catherine Macaulay, Charlotte Smith, Mary Hays, Maria Edgeworth, Mary Robinson, Mary Wollstonecraft, and Helen Maria Williams, and later, Dorothy Wordsworth, who represented and documented the growing number of women who undertook journeys both domestically and abroad during the period. See Adikes, n.p.

¹¹⁶ Richard Hurd, *Dialogues on the Uses of Foreign Travel, Considered as a Part of an English Gentleman's Education: Between Lord Shaftesbury and Mr. Locke*. Vol. 1. (London: Millar, Thurlbourn and Woodyer, 1764), quoted in Geurts, 5-6.

¹¹⁷ Guerts, 5-6.

¹¹⁸ This phrase is Edward Gibbons, who, in his second Tour of the Continent, remarked that “According to the law of custom, and perhaps of reason, foreign travel completes the education of an English gentleman.” His second tour was consciously adapted for intellectual self-improvement, and thus included a “larger” and more capacious approach than his first. See E. Chaney, “Gibbon, Beckford and the Interpretation of Dreams, Waking Thoughts and Incidents,” *The Beckford Society Annual Lectures* (London, 2004), 25–50.

¹¹⁹ Towner argues that the Grand Tour can be divided along two, separate historical and ideological planes. The first, the Classical Grand Tour, predominates in the seventeenth century, and was primarily driven by classical and Renaissance tastes, reflected in the “distinct tourist goals that Italy possessed,” with two clearly defined route patterns that split between the northern and southern districts. He notes that “An interest in natural scenery was of little consequence for the spatial pattern of the Grand Tour in the seventeenth century.” Although there was some interest in rural scenery, these “sentiments were mainly confined to incidental observations while

Britons were increasingly seeking civilization and heritage within their own borders, and a perception of Other, largely attached to new technological and industrial innovations and sites, rather than cultural artifacts of the ancient past. Barry Trinder notes that in the late eighteenth century, industrial tourism exploded throughout England, as it became highly fashionable for travelers, both aristocratic and middling classes alike, to take in the sights of iron-blasting and working engines of Coalbrookdale and its surrounds. Maxine Berg has “argued for a significant expansion of the middling classes over the course of the century, in terms both of numbers and of wealth.” Berg asserts that the rise in real incomes of the middle class helped fuel demand for not only “an increasingly sophisticated range of ornamental and convenience goods” but domestic travel and tours.¹²⁰ As a tourist draw, Coalbrookdale¹²¹ was advantageously situated near the principal routes between London and North Wales and was serviced by inns that claimed to provide lodging for travelers on “the cross-country coach route from Bristol and Bath to Lancashire and the ports for Ireland.”¹²² For the leisured and middle classes, the latter for whom most of the area guides were written, a trip to Coalbrookdale was but a day’s diversion from the major travel routes. And while it was only one stop on the larger industrial Tour itinerary, the Severn Gorge was a particular point of interest, as it not only showcased the latest industrial innovations, but it also possessed unmatched natural beauty and unique mineral features.

traveling to the major cultural centers.” Conversely, the other pattern, The Romantic Grand Tour, was dominated by “romantic views of both urban and rural landscapes,” which embraced a “passion for the medieval and a love of wild nature with its sublime and picturesque scenery.” See Towner, 313-14.

¹²⁰ See Jones, 64.

¹²¹ Lisa L. Moore asserts that “Coalbrookdale became an international centre for coke smelting for the production of pig iron – a key industrial material in the 1770s. Linked by canals to the ports of Hull, Liverpool, Bristol and London, West Midlands manufacturing moved quickly to export markets in Europe, North America, Africa and Asia.” Moore, xviii.

¹²² Trinder, 2.

However, it “was not for scenery alone that visitors flocked to Ironbridge and Coalbrookdale”; this was the birthplace of the First Industrial Revolution, and the scene of modern innovations in coal mining and iron-making manufactures. The last quarter of the eighteenth century saw unprecedented growth in the extraction and refinement sector, as a new ironworks put into operation every few years, prompting Thomas Telford to observe in 1802 that the number of blast furnaces between Ketley and Willey exceeded any within the same space throughout the entire kingdom.¹²³

Additionally, the area’s transport systems, including primitive railways, tub-boat canals, inclined planes, and bored tunnels not only displayed scientific and industrial ingenuity, but they also “made accessible such geological features as the fossil-bearing beds of limestone that comprise Lincoln Hill and Benthall Edge, the burning well at Brosely, and the Tar Tunnel at Coalport.”¹²⁴ As part of a larger manufacturing and industrial travel circuit, one that counted the Derby silk mills, Richard Arkwright’s Cromford spinning mill, Matthew Boulton’s Soho manufactory in Birmingham, Josiah Wedgwood’s potbank at Etruria, and the Parys Mountain copper mine on Anglesey, the Severn Gorge was a particular draw on the Tour. It showcased “The latest wonders of engineering and metallurgical technology” seen in a “spectacular natural setting, where the fast-flowing Severn passed between towering cliffs of limestone, and hillsides honeycombed with mine workings amid the smoke of furnaces and the clanking of engines.”¹²⁵ Following a set itinerary, travelers would typically lodge at the Tontine hotel, located at the north end of the famed Iron Bridge. They would spend time examining the bridge itself--a brand new feat of engineering, and perhaps cross the bridge to view another engineered wonder, the large

¹²³ Telford, quoted in Trinder, 4.

¹²⁴ Trinder, 1.

¹²⁵ *Ibid.*, 7-8.

waterwheel at Benthall Mill. The tourist would then go to the Coalbrookdale ironworks and watch the making of castings or tapping of a blast furnace and could then go on to visit the Coalbrookdale forges or Madely Wood furnaces beside the Severn, or the Ketley ironworks further north. Tourists could listen to cannon being bored at Alexander Brodie's Calcutts ironworks or observe the chemical operations in Lord Dundonald's coke and tar works. From Calcutts, they could take a short ferry trip to Coalport, where, in observing the mysterious "Tar Tunnel," visitors were moved to compare the oozing bitumen to Pluto's realms. Other attractions included watching or riding on the Hay Inclined Plane,¹²⁶ and standing upon the cliff of Silurian limestone situated between Coalbrookdale and Ironbridge. Ironbridge was highly popular with visitors, who followed Richard Reynolds' "Sabbath Walks"--a curated pathway on the western side of Ironbridge, decorated with shrubs and rustic seating, that culminated in the "Rotunda," a cast-iron bandstand that provided extensive views of the Severn Valley and from which it was "possible to observe operations in a cavern filled with limekilns, from which extended adits penetrating the pillar-and-stall mine workings in the limestone."¹²⁷ Although the Rotunda was pulled down in 1804, tourists summited where it once stood, and could still view the underground workings lit with lanterns.

In addition to visitors such as Matthew Boulton,¹²⁸ Charles Wood, and other industrial entrepreneurs, eager to observe the coal-driven manufactures of the area, numerous artists,

¹²⁶ The Hay Inclined Plane is a 207-foot-tall canal inclined plane in the Ironbridge Gorge. Undertaken in 1788 and completed in 1793, the Plane was located at the end of the Shropshire and was a means of raising and lowering heavy weights between the Shropshire Canal and the River Severn.

¹²⁷ Ibid.

¹²⁸ On the 13th of April 1782, Boulton writes to his partner James Watt, who was away on business at the time, that the owner of a coalworks at Namur was staying with him, and that he would be taking the gentleman to view the workings at Coalbrookdale, which he was very eager

writers, clergymen, and major intellectual figures visited the Gorge when it was the center of national attention: famed personas such as Erasmus Darwin, Sir Joseph Banks, Arthur Young, Charles Dibdin, and Richard Pococke each recorded their observations of the burgeoning iron and coal district in official correspondence and travel accounts. Noah Heringman contends that during this period, approximately at the moment of the “emergence of modern geology,” travel served a crucial role in helping usher in the notion of “deep time,” as “eighteenth-century explorers and historians used travel to “envision human prehistory and human origins through art.”¹²⁹ Indeed, Heringman notes that in this period, travel began operating “under the aegis of ‘travel as science,’ in which tourists such as John Reinhold Forster and antiquaries like Pierre Hugues d’Hancarville and Joseph-Marie Degérando saw themselves as exploring the ancient world.

Heringman notes that scientific travel and the encounter with sites of geological interest also worked to promote “an empirical attention to artefacts and to customs and manners that joined civil with natural history.”¹³⁰ As an area whose prosperity was derived from its mineral wealth, visitors refer to geological features, deep time, and culture at Coalbrookdale. Travel writing about the area notes the proximity of coal, iron ore, and limestone in the area, expressing a deep desire of the tourist to see for themselves what Martin J.S. Rudwick calls “large-scale features of scientific significance.”¹³¹ The Ironbridge Gorge, containing the River Severn, formed by glacial overflow, was marked by deep exposure of the rocks cut through by the gorge,

to see. Matthew Boulton to James Watt, 13 April 1782, Birmingham Reference Library, Boulton & Watt Collection, parcel ‘D,’ Boulton quoted in Trinder, 1.

¹²⁹ See Heringman’s chapter, “Deep Time in the South Pacific: Scientific Voyaging and the Ancient/Primitive Analogy” in *Marking Time: Romanticism and Evolution*, ed. Joel Faflak (University of Toronto Press, 2017), 95.

¹³⁰ Heringman, 96.

¹³¹ Rudwick, 69.

which made visible to numerous tourists the rich deposits of iron ore, coal, limestone and fireclay, each of which were integral to the economic development of the area during the First British Industrial Revolution. Visitors were fascinated by the prospect of rugged, romantic scenery and geological wonder, intermingled with large-scale industrial workings. The area offered the ability for visitors to witness, firsthand, civil and natural history, working in concert with industry utilized for humanity's benefit. Reverend Charles Mason, communicates his observations of the Gorge to the Royal Society on January 18, 1746, noting his fascination with the visible mixed strata and subsequent processes of erosion and sublimation occurring at the river's edge:

The Country consists of Rock, Stone, Earth, and clay, unequally mix'd; and as the River, which is very rapid, washes away the soft and loose parts, the next successively slip into the Channel; so as, by degrees, and in time, to affect the whole slope of the Land: And as the inferior Strata yield Coal and Iron-Ore, their Fermentation may produce this Vapour, and force it to ascend with violence through the chinks of the Earth, and give the Water the great Motion it has. ¹³²

Richard Pococke further observes that at the Madely ironworks, "Nothing can be imagined more romantick and beautiful than the views of the Severn when one is on these heights, which far exceeds the prospects on the river; the ground being high and steep, varied with wood, houses and the coal machinery, for the other side much abounds in coal." He further writes about the considerable number of fossils in the quarries of nearby Lincoln Hill, "most remarkable for its figured fossils, which they find in all these parts, particularly the bivalve *Conchae amoniae* and

¹³² See the *Philosophical Transactions of the Royal Society*, 370-3.

others, coralline substances, large reeds, and barks of trees, cones of firr trees and plants inclosed mostly in ironstones and others.”¹³³

These first-hand accounts of the natural and industrial features of Coalbrookdale are crucial documents of the eighteenth-century experience of the Domestic Grand Tour—one that combined rugged natural landscapes with “awe-inspiring machines and processes”¹³⁴ and a burgeoning interest in geological observation and identification—an outdoor practice increasingly taken up and popularized by middle-class travelers, rather than simply an indoor pursuit reserved solely for savants and aristocratic collectors.¹³⁵ What is significant about both accounts is that they record not only the geological features of the gorge, but the ways in which the area’s natural features are closely intermingled with industrial capability, coal extraction, landscape, and financial prospects. However, travel writings about Coalbrookdale and the Ironbridge Gorge also record a larger epistemological shift occurring in relation to spatiality and notions of the sublime

¹³³ See James Joel Cartwright, *Travels through England of Dr. Richard Pococke, Successively Bishop of Meath and of Ossory, during 1750, 1751, and Later Years. Volume I [Camden Society, New Series, XLII]*. Vol. Searchable text edition. *The Travels Through England of Dr. Richard Pococke, Successively Bishop of Meath and of Ossory, During 1750, 1751, and Later Years* (Burlington, Ontario, Canada: TannerRitchie Publishing, 2015), 231.

¹³⁴ Trinder, 5.

¹³⁵ It is important to note that at this moment, “whereas art and music on the shores had been the original goal of this rite of passage [i.e. the Continental Grand Tour] into social and political status, by the later eighteenth century, as an awareness of the educational benefits of nature was coming to the fore,” travel routes had been “optionally revised in order to accommodate the new vogue for mountains and glaciers.” Hanley argues that this new interest was facilitated by improvements in travel methods and accessibility, and that it was “pioneered by Enlightenment scientists and topographers, but it also came in answer to deep psychological and aesthetic transformations. The Alps were becoming an important symbol in the myth of ‘nature’ that a pre-Romantic reaction to Enlightenment intellectualism was beginning to construct: a domain seemingly immune to human design.” What is interesting about the shift to the industrial sites is that human design is at the forefront of the experience of nature. See Keith Hanley, “Wordsworth’s Grand Tour,” in *Romantic Geographies: Discourses of Travel 1775-1844*, ed. Amanda Gilroy, Exploring Travel (Manchester, England: Manchester University Press, 2000), 76.

during the period, as the result of the touristic experience. Rudwick argues that within natural history, which included such emerging disciplines like physical geography and mineralogy, there was a concerted move from practices such as collecting and classifying mineral specimens indoors to considering larger, “terrestrial features in spatial terms” in the field.¹³⁶ This move from the particular to the general, the indoors to the out, was largely predicated on first-hand experience, such as we see in Pococke’s account, whereby he views and notes the finding of fossil specimens discovered in the digging of industrial chalk pits. Indeed, early naturalists such as Horace Bénédict de Saussure believed that the only adequate means whereby to experience and describe the earth’s large-scale diversity of the earth and its phenomena was through personal observation, gleaned through travel. In fact, Saussure used the “contemporary vogue” of the Grand Tour to describe a new kind of naturalism, one that combined the fashion for antiquarianism and collecting of artifacts from the Classical world with a more global practice. Moreover, it emphasized viewing great objects at a distance to understand the larger spatial relationships between natural features. Saussure writes about this practice in his preliminary discourse,

The only goal of most of the travelers who call themselves naturalists is to collect curiosities; they walk—or rather, they crawl—with their eyes fixed on the ground, picking up little pieces here and there, without aiming at general observations. They are like an antiquarian who scratches the ground in Rome, in the middle of the Pantheon or the Coliseum, looking for fragments of colored glass, without glancing at the architecture of those superb buildings. I do not at all advise the neglect of detailed observations; on

¹³⁶ Rudwick, 97.

the contrary, I regard them as the only basis for solid knowledge. But in observing these details I would wish that one would never lose from view the large masses and their ensemble, and that a knowledge of these great objects and their relationships should always be the purpose that one sets oneself when studying their small parts.¹³⁷

Coalbrookdale was one such place that married the fashion for antiquity, curiosity-collection, and large-scale, personal observation. Likewise, it exploited its own natural and man-made features, to evoke scenes of antiquity and the sublime. George Perry, who worked with famed ironmaster, John Wilkinson, at Coalbrookdale and who designed views of the area that were later engraved by François Vivares,¹³⁸ echoes Young's sentiments regarding the "Principal Beauties" of the landscape around Coalbrookdale, similarly noting in the pleasing variety and form of the natural scene. In his 1758 "A Description of Coalbrookdale," Perry writes, "ALL the adjacent Country abounds with mines. Those of Coal are the most numerous, but the same which produce coal afford likewise great Quantities of Ironstone." He continues, "This place affords a number of delightful prospects. One might venture to say that all the Principal Beauties of landscape may be observ'd from some or other of the hills that surround it.... These with a view of fine fertile Country. Water'd by the Severn, all contribute to form as agreeable a Variety to the Eye as well can be conceived."¹³⁹ Perry also describes the sublime horror of the ironworks. He contends that the "Pillars of Flame and smoke rising to a vast height," "a number of Engines in motion," and the "noise of the Machines," the "roaring of the Furnaces," do not oppose the natural beauty of the area. Rather, these sublime elements contribute to the overall, pleasing aspect of the scene.

¹³⁷ De Saussure quoted in Rudwick, 72-73.

¹³⁸ The most famous of these copper engravings of the area is *South West Prospect of Coalbrook Dale*. Designed and Published according to Act of Parliament by Geo. Perry and T. Smith, 1758.

¹³⁹ Perry quoted in Sally Dugan and David Dugan, *The Day The World Took Off: The Roots of The Industrial Revolution*. Channel 4 Books (London: Macmillan, 2000), 44.

Here, Perry unites nature and industry in a singular rural prospect, one that offers an infinitude of visual and auditory pleasure, and whose individual elements work in concert to please, awe, and horrify the spectator.

Indeed, Coalbrookdale was a locus for the eighteenth-century debate concerning the sublime, and the ways in which large-scale extraction and manufacturing operations were shifting the very perceptions of sublimity and aesthetics. Never before, on such a grand scale, were extractive and refining industries available as a consumable, touristic pleasure, and described in terms that evoked the overwhelming plurality and grandeur of the sublime. Famed traveler and agricultural writer, Arthur Young, recounts about his 1776 visit to Coalbrookdale,

Viewed the furnaces, forges, etc., with the vast bellows that gave those roaring blasts, which make the whole edifice horribly sublime. These works are supposed to be the greatest in England. [. . .] These iron works are in a very flourishing situation....Coalbrook Dale¹⁴⁰ itself is a very romantic spot, it is a winding glen between two immense hills which break into vaporous forms, and all thickly covered with wood, forming the most beautiful sheets of hanging wood. Indeed too beautiful to be much in unison with that variety of horrors art has spread to the bottom.¹⁴¹

Young attempts to describe the place in strictly Burkean terms. Unlike Perry, who sees the natural and industrial features as working in concert to create a complete scene, Young contrasts the beauty of the natural scenery. The romantic, “winding glen” and “beautiful sheets of hanging wood” are directly opposed to the immense industrial horrors, “flames bursting form the furnaces with the burning of the coal and smoak of the lime kilns,” and “roaring blasts. “

¹⁴⁰ Seward’s idiosyncratic spelling of Coalbrook Dale is deliberate here. She changes the spelling of Coalbrookdale to “Colebrook Dale,” in her later poems.

¹⁴¹ Young quoted in Dugan and Dugan, 47.

Young attempts to maintain strict boundaries between the natural and the industrial in his description; yet the intermingling of “vaporous forms,” “burning of coal” and the “smoak of the lime kilns” dissolve clear material divisions. Young describes the activity of landscape in phrases such as “break into vaporous forms” “variety of horrors art has spread,” “flames bursting from the furnaces”: active terms that describe not only the dissipation, profusion, and dispersion of coal effluvia, and the dissolution of clear material and perceptual boundaries. Indeed, Young’s scene is one of complete sensory bombardment, what Michael A. Williams characterizes as the “spectacularity”¹⁴² of Coalbrookdale--a torrent of noise and smoke, and a completely unfamiliar environment--one now negotiated in touristic encounters of extraction and industry, and characterized by the actions of “break[ing],” “bursting,” and “burning.”

Young’s description is crucial in understanding the spectator’s experience at Coalbrookdale, and of the emerging cognizance of environmental degradation that characterizes the spectator’s embedded and embodied experience of extraction and subsequent pollution.¹⁴³ While Mason’s mid-century account of the area notes the natural coal vapors as drivers of motion, and a source of scientific and geological fascination, Young’s observations track an important shift occurring in accordance with increased production later in the century. Coal vapors now threaten to overtake and obscure the Gorge’s romantic prospects, and to introduce a new form of pollution that overwhelms the observer’s senses and perceptions.

¹⁴² See his piece regarding the eighteenth-century sublime aspects of the Ironbridge Gorge, “Pillars of Smoke and Flame at Ironbridge.” *The Victorian Web*, June 21, 2018. <https://victorianweb.org/technology/ir/responses/3.html>.

¹⁴³ Chris A. B. Zajchowski and Jeff Rose address the touristic experience of pollution in their article, “Sensitive Leisure: Writing the Lived Experience of Air Pollution.” Using sensory phenomenology, Leder’s dual concepts of the ‘disappearing’ and ‘dys-appearing’ body, they explore accounts of individuals’ leisure experiences within spaces of “environmental disamenity.” See their piece in *Leisure Sciences* 42, no. 1 (2020): 1–14.

The embodied spectatorial experience of coal pollution and the sublime is a central concern in Anna Seward's "To Colebrook Dale," what Diego Saglia calls "one of the most outstanding poetic representations of British industrial progress." Composed in August of 1790, the poem depicts the renowned industrial site, presenting it through images of natural beauty and industrial sublimity that "echo contemporary accounts and paintings" of the time.¹⁴⁴ Seward visited the Coalbrookdale in 1787, and in a letter dated October 6th of that same year, addressed to her lifelong confidant and fellow poet, William Hayley, she describes the "uncommon union" of

the dusky, noisy, assiduous, and indeed stupendous efforts of art, with romantic nature; — where the Cyclops usurp the dwellings of the Naiads and Dryads, and drown, with their dissonance, the woodland song; light their blazing fires on each of the many hills, and, with their thick black smoke, shroud, as with a sable crape, the lavish woods and fantastic rocks; sully the pure waters of the Severn, and dim the splendour of the summer's sun; while the shouts of their crowding barges, and the clang of their numerous engines, din through every winding of the valley.¹⁴⁵

Using almost identical phrasing as Young and Perry— "romantic nature," "thick black smoke," "clang of their numerous engines"—Seward also describes the scene in highly phenomenological terms, marrying the beauty of the natural scene with the sublimity of the industrial "stupendous efforts of art," experienced by the traveler as tremendous visual stimulus and dissonant noise.

¹⁴⁴ Ruth Knezevich importantly notes that Coalbrookdale's fame as a popular tourist destination extended across England and was known on the Continent and in the United States. She asserts, "Visitors came to Coalbrookdale not in spite of the industrialization, but because of it." See Knezevich, "Margins and Modernity: A Geocritical Approach to Anna Seward's Llangollen Vale." *Romanticism* 25, no. 1 (April 2019): 153.

¹⁴⁵ Seward, Letters, 339.

What we see from her account is that Seward is certainly working from a tradition of popular travel writing and picturesque aesthetics in her account of Coalbrookdale.¹⁴⁶ Yet, unlike Young and Perry's writings that revel in the sublime horrors of the industrial innovations at Coalbrookdale, Seward's letter is marked with disappointment regarding the impact of the ironworks on the surrounding nature. She writes of the noise and smolder of the smoke and workers who populate the sylvan hills, and recounts the latest circulating talk of "the lately-discovered bituminous fluid, distilling through the subterraneous cliffs."¹⁴⁷

Moreover, the letter is characterized by her disenchantment and skepticism with the touristic experience at the Gorge. She states that while she found the Iron Bridge "very stupendous in the art of its construction, and very beautiful in the grace and lightness of its appearance," it was represented so "exactly in the prints, as to leave the eye little to acquire by actual contemplation." This remarkable statement not only illustrates Seward's disappointed expectations as a visitor to the famous Iron Bridge, but it also denotes her familiarity with the larger circulation of popular prints and visual reproductions of the area. These texts and prints would have provided Seward and the British public with a virtual touristic experience of the Gorge's attractions that, at least in Seward's estimation, are a preferable substitution for the first-hand experience of the site itself. Seward reveals an important feature of the copious travel

¹⁴⁶ Seward participated in this tradition of travel writing and the aesthetic of the picturesque, throughout her oeuvre. This is also seen in her famous piece, "Llangollen Vale," a "poetic travel guide through time and space around the northeast Cambrian countryside," which takes its cues from travel writings such as Thomas Pennant's two-volume *A Tour in Wales* (1778-81) and William Gilpin's famous *Observations on the River Wye* (1782). For more on Seward's "geocritical" approach in her locodescriptive poetry, see Knezevich, 72.

¹⁴⁷ This is a reference to the Tar Tunnel.

literature written about Coalbrookdale: it was meant to be consumed and enjoyed in the domestic realm.¹⁴⁸

While seemingly blasé regarding her trip to see the “Wonders of Colebrook Dale,” the Gorge and its ironworks nonetheless made an impression on Seward, as she expanded her epistle to Hayley into an epic poem titled “Colebrook Dale,” and then into a compressed, Miltonic sonnet “To Colebrook Dale,” fewer than three years later. Seward’s multiple literary treatments of her experience at Coalbrookdale, interweave themes of sublimity, picturesque aesthetics, and environmental critique into her verse. They illustrate what Knezevich notes as Seward’s emerging focus on “the defining features of place” and the implicit discussion of emergent “modernity within previously untamed, ancient spaces.”¹⁴⁹ Donna Coffey further argues that in her Colebrook Dale poems, Seward picks up on “the horrors of the machine, with its new threshold of power and energy as well as destructiveness,” and the popular site as a “collision of the past and the future.”¹⁵⁰ We see the tension between the ancient and the modern in the way Seward infuses her letter with classical references, what Saree Makdisi describes as a “distortion in the spatio-temporal fabric of the age of modernisation.”¹⁵¹ Seward first describes Coalbrookdale as an untouched pastoral scene, filled with “lavish woods and fantastic rocks” and

¹⁴⁸ Elizabeth Edwards observes this dichotomy, which reflects the indoor-outdoor paradox in eighteenth-century geology and travel writing. She quotes William Bingley’s early critique of the “long historical and antiquarian passages” of contemporary, Thomas Pennant’s, *A Tour in Wales*. Bingley asserts that “though well calculated both to instruct and amuse in the closet . . . [it is] too long and uninteresting for the generality of persons when upon their journey.” Bingley quoted in Edwards, “‘A Kind of Geological Novel’: Wales and Travel Writing, 1783–1819.” *Romanticism* 24, no. 2 (January 1, 2018): 135.

¹⁴⁹ Knezevich, 69.

¹⁵⁰ See Coffey, 153.

¹⁵¹ See Saree Makdisi, *Romantic Imperialism: Universal Empire and the Culture of Modernity* (Cambridge, U.K. ; New York: Cambridge University Press, 1998), 13.

the “pure waters of the Severn.” This is an environment that appears firmly fixed in an ancient, picturesque, and female past.

However, the pastoral scene is disrupted as the “Cyclops usurp the dwellings of the Naiads and Dryads, and drown, with their dissonance, the woodland song. Seward describes the “uncommon union” of nature and industry using terms such as “drown,” “shroud,” “sully,” “and dim,” each pointing to the vaporous, polluting effects of the coal and iron works. Coal vapor threatens the picturesque aspect of the natural scene; there no longer exists a clear distinction between the natural world and the extractive environment. Seward further uses the terms “drown” and “sully” to illustrate that coal pollution not only obscures the boundaries between the natural and extractive scenes, but it also threatens the very lifeforce and moral characteristics of the environment itself. Interestingly, the Cyclops is not a realist intrusion within the classical past, but rather, like the water nymphs, he is another figure drawn from antiquity, who is redrawn to represent extractive industry and modernity, and the release of coal vapor into the unspoiled air.¹⁵² Just as the visual atmosphere is sullied by the coal smoke, so too is the pastoral environment distorted and interrupted by scenes of industry symbolized by the Cyclops.

In fact, the intrusion of the Cyclops is crucial when attempting to understand the complexity of Seward’s neoclassical gestures throughout her written accounts of Coalbrookdale. On one hand, the recourse to the neoclassical is one that provides the reader with refuge in a familiar narrative environment. Sharon Setzer argues that Seward’s commentary on the effects of mining and its pollution is not a marriage of romantic nature and industrial art, but rather, it is the

¹⁵² According to Hesiod, the Cyclopes is the result of the primordial union between Gaia (Earth) and Ouranos (Sky). Despite their singular eye “in the middle of their foreheads,” the cyclopes in all other respects are “like the gods.” See Hesiod and M. L. West. *Theogony; and, Works and Days* (Oxford [Oxfordshire] ; New York: Oxford University Press, 1988), 7.

“result of a hostile and ruinous invasion, “ where “the thriving ironworks of Coalbrookdale threatened to transform an idyllic Shropshire landscape into a dismal region reminiscent of the infernal sublime.”¹⁵³

However, it is also important to understand Seward’s depiction of Coalbrookdale as a space inhabited by classical figures, as part of a larger collective formal response to the coal and ironworks at Coalbrookdale and the way neoclassicism was a common discourse throughout the period’s travel writing. Barry Trinder tracks this phenomenon across tourist accounts from Coalbrookdale, noting that “Many travellers described the Ironbridge Gorge in terms of classical landscapes.”¹⁵⁴ Noah Heringman points out that during the period Seward was writing, travelers “charted their course to ‘places apparently remote in time,’ in Neil Rennie’s words, under the influence of these conjectural histories as well as another body of thought with longstanding connections to travel: neoclassicism.”¹⁵⁵ Heringman argues that the “period’s histories of ancient art made a signal contribution to the practice of marking cultural difference as distance in time.” The “propensity to ‘temporalize difference,’ in Nicholas Thomas’s succinct formulation, led voyagers to imagine their encounters [. . .] as glimpses of ‘remote antiquity.’”¹⁵⁶ While this comparative phenomenon had existed from the start of the Age of Exploration in the sixteenth century, “By the time of Cook’s voyages,¹⁵⁷ much more was known about classical antiquity, and the prejudice in favour of classical aesthetics was stronger than it has ever been before or

¹⁵³ Sharon Setzer, “‘Pond’Rous Engines’ in ‘Outraged Groves’: The Environmental Argument of Anna Seward’s ‘Colebrook Dale.’” *European Romantic Review* 18, no. 1 (January 2007): 69.

¹⁵⁴ Barrie Trinder, *The Making of the English Industrial Landscape* (Gloucester: Alan Sutton, 1987), 89.

¹⁵⁵ Heringman, “Deep Time in the South Pacific,” 97.

¹⁵⁶ *Ibid.*, 98.

¹⁵⁷ It is important to note that one of Seward’s most famous works is the 1780 poem, “Elegy on Captain Cook.” The 280-line work is a sentimentalized account that Claudia T. Kairoff argues epitomizes “ideas about heroism that prevailed at the time.” See Kairoff, 75.

since.” The fascination of ancient art drove what Heringman calls “empirically driven histories,” and in the analogies found in travel narratives.

Travel accounts, such as John Wesley’s notebooks, compared the Iron Bridge to the Colossus at Rhodes; an Italian traveler, Carlo Castone della Torre di Renzionico Comasco, described his 1787 approach to the Gorge as a scene worthy of Dante: “a veritable descent to the infernal regions,” in which dense columns of smoke and “volumes of steam were ejected from the fire engines; a blacker cloud issued from a tower in which was a forge; and smoke arose from a mountain of burning coals which burst out into turbid flames.” The traveler continues to describe the River Severn passing under the Iron Bridge, which appears as “a gate of mystery,” and the “impressiveness of the scene, which could only be compared to the regions so powerfully described by Virgil.” Robert Parker of Bath, passing through Ketley, noted the overwhelming experience of being “surrounded with Coal Pits and Iron Stone Pits, Steam Engines, Furnaces and Forges, innumerable, immense beds of Coal blazing around [. . .] pouring out thick volumes of smoke in all directions as far as the eye can reach; this appearance, with the black faces of all the Men I saw, gave me an Idea of the Regions of Pluto.” The actor Charles Dibdin further states,

Coalbrookdale wants nothing but Cerberus to give you an idea of the heathen hell. The Severn may pass for the Styx, with this difference that Charon, turned turnpike man, ushers you over the bridge instead of rowing in his crazy boat; the men and women might easily be mistaken for devils and fairies, and the entrance of any one of those blazing caverns where they polish the cylinders, for Tartarus.

Henry Skrine uses equally prodigious terms to describe the scene at Coalbrookdale in 1798, comparing the works to “the workshop of Vulcan, or an epitome of infernal regions.” Both

Dibdin and Skrine, in their allusions, also note the role of the imagination, the fancy, and the mind in their encounters at the works. Skrine, in particular, notes the overwhelming phenomenological experience there, and the way the smoke and vapor, “aided by the clangour of the forges in every direction, affect the mind of one unpractised in such scenes with an indescribable sensation of wonder.”¹⁵⁸ These accounts of the site¹⁵⁹ are each crucial for understanding what Todd Toadvine identifies as a complex “confluence of the perceiver and the perceived” at geological and industrial sites, where the complete phenomenological experience provides the observer with access to “primordial prehistory,” and where they utilize multiple discourses, including neoclassical description, to contend with the sublime scene before them.¹⁶⁰

In fact, cultivating the tourist’s imaginative access to the classical past became a marketable feature of the mining site itself, such as in the case of William Reynolds—the ironmaster at Coalpoart—who directed the digging of an underground tunnel for visitors, whereupon they could view a spring of natural bitumen and were prompted to make comparisons to Virgil’s Hades. What the travel accounts reveal is the imaginative access to the classical past, available to the observer in the mines and tunnels at Coalbrookdale, and likewise, the shared

¹⁵⁸ Trinder, 89-90.

¹⁵⁹ This phenomenon was not limited solely to Coalbrookdale, as travelers used similar neoclassical references in their descriptions of other scenes of extraction, such as the Parys Mountain copper mine and the Cornish mining district, as well as in the Wye Valley. William Gilpin famously remarks on the picturesque qualities of charcoal and coal from the industries there, as well as those in the Forest of Dean. Heringman’s aesthetic geology, Tom Furniss’s exploration of eighteenth-century Scottish geological tours, and Elizabeth Edwards’ work on Romantic-era Welsh geology and travel writing each explore how the “journey” is central to the unraveling of “earth histories buried within the landscape.” See Edwards, Elizabeth. “‘A Kind of Geological Novel’: Wales and Travel Writing, 1783–1819.” *Romanticism* 24, no. 2 (January 1, 2018): 137; see also Tom Furniss, “James Hutton’s Geological Tours of Scotland: Romanticism, Literary Strategies, and the Scientific Quest,” *Science and Education*, 23 (2014), 565–88.

¹⁶⁰ Todd Toadvine, “The Elemental Past.” *Research in Phenomenology* 44, no. 2 (January 1, 2014): 78.

self-conscious theatrical and “literary”¹⁶¹ stylings of tourists in their otherwise realist accounts of the area’s sublime industrial and natural features. Erasmus Darwin, Anna Seward’s frequent collaborator and friend, likewise, wrote to fellow Lunar Society member Matthew Boulton about his travels at Coalbrookdale, what he characterizes as a trip “into the Bowels of Old Mother Earth,” where he had witnessed “Wonders and learnt much curious Knowledge in the Regions of Darkness.” Energized by his trip there, he vowed to use the minerals he gathered to “make innumerable Experiments on aqueous, sulphureous, metallic, and saline Vapours.”¹⁶² As Darwin’s overlapping metaphors and styles show, Coalbrookdale is often described through multiple competing discourses--an interweaving of the mystical with the experimental, the ethereal with the material and scientific.

Seward picks up on these overlapping and shifting popular verse forms, as she transforms her epistle into a poetic depiction of the site. She marks the poetic turn by revising the site’s name, Coalbrookdale, into two separate terms, in which the actual “coal” that characterizes the area is curiously omitted from the poem’s title.¹⁶³ The changes to the spelling and capitalization

¹⁶¹ This phrase is drawn from Sharon Setzer’s work on Seward, and her observations that Dibdin’s account of the area, what she characterizes as “undoubtedly the most negative, the most imaginative, and the most self-consciously ‘literary.’” I would expand this observation about the literary tenor of the journals, to include the other travel writings, as they, too, engage with the classical registers of the scene and sights before them at Coalbrookdale, and frame their encounters in highly literary terms. Moreover, Susan Egenolf notes Pennsylvania Quaker, Jabez Maud Fisher’s tour of Coalbrookdale, and his likening of the night scene there to an “immense Theatre,” “presenting all the horrors that Pandemonium could shew.” See, respectively, Sharon Setzer’s “‘Pond’Rous Engines’ in ‘Outraged Groves’: The Environmental Argument of Anna Seward’s ‘Colebrook Dale,’” *European Romantic Review* 18, no. 1 (January 2007): 72; see also Egenolf’s “The Cyclops in the Vale: Mythological and Fantastic Representations of Industry.” *Studies in Eighteenth Century Culture* 47 (January 2018): 53–70.

¹⁶² See Erasmus Darwin, *The Letters of Erasmus Darwin*, ed. Desmond King-Hele (Cambridge: Cambridge Univ. Press, 1981), 43; 44–45.

¹⁶³ Seward’s variation of “cole,” is an interesting one, as this particular spelling denotes deception or a conjuring trick. See *OED* (“cole”).

work to pastoralize the site, drawing out and emphasizing the area's picturesque features, transforming it from an industrial scene, marked by the mineral extracted there, to a generalized, pastoral valley. Another major, generic shift occurs from her epistle to her later "Colebrook Dale" poems, as Seward uses the neoclassical to mourn the loss of the classical, pastoral Coalbrookdale. She employs this gesture and the sonnet form to connect to themes of toxic sublimity and the horrors of extractive futurity. David Wheeler states about Seward's vacillating temporality, "Like Enlightenment philosophers and prospect-poem poets, Seward thus confronts the present, historical Coalbrookdale; at the same time, however, she displaces it, appropriating it to her poetic realm, and rendering it, in mythological terms, infernal."¹⁶⁴ Seward not only uses the neoclassical to access the historical present and classical past, but that Seward also speculates about a future, dependent on coal extraction and of the impacts of places like Coalbrookdale on the nation's enduring security and sovereignty.

We see this shift to futurity in the first poem draft, "Colebrook Dale." Written in 1790, Seward expands outward from her letter's concentrated locodescription of Coalbrookdale, and instead, expresses how the pollutive effects of coal mining seep into the hillsides and towns, in the form of coal vapor and of the miners. While in Sonnet 47, extraction and poisonous mineral vapors empty the mine space of man's presence, in the first of the "Colebrook Dale" poems, the swarms of workers who populate the sylvan hills, and who work the mines and foundries, destabilize and displace the Naiads and Dryads. Seward opens the piece *in media res*, and describes a scene that has already been despoiled before her approach:

SCENE of superfluous grace, and wasted bloom,

¹⁶⁴ David Wheeler, "Placing Anna Seward: the 'Genius of Place,' Coalbrookdale, and 'Colebrook Dale.'" *New Perspectives on the Eighteenth Century* 5, no.1 (2008): 35.

O violated Colebrook! in an hour,
To beauty unpropitious and to song,
The Genius of thy shades, by Plutus brib'd,
Amid thy grassy lanes, thy woodwild glens,
Thy knolls and bubbling wells, thy rocks, and streams,
Slumbers!--while tribes fuliginous invade
The soft, romantic, consecrated scenes.¹⁶⁵

Vapor remains an important trope for Seward throughout “Colebrook Dale,” as the scene moves between the solid, material world of rocks and woods and dynamic, evaporating bubbling wells and streams. The setting shifts from the topical and visible to the invisible, underground, and atmospheric, as the “airy step” of the wood nymph and the crystal flood of the “shadowy” and “Invisible” Naiads has now vanish'd and is replaced by the “tribes fuliginous.” There is a hazy exchange of materials and atmospheres, as the silent nymphs disappear from the scene. In the first stanza, the narrative voice clearly apostrophizes to “violated Coalbrookdale,” and then introduces the figure of “The Genius of thy shades” what we can read as the *genius loci* who, “by Plutus brib'd,” “Slumbers,” as industry adulterates “soft, romantic, consecrated scenes.” As the timeless quiet of the woods is taken over by the harsh sounds of modern industry, the Genius disappears, and the figure of the “rapt Bard” is introduced as an idealized, beholder of the scene.

The poem then shifts temporalities to the present moment, and locates the act of beholding in a collective voice: “--- Now we view/ “Their fresh, their fragrant, and their silent reign/Usurpt by Cyclops.” Here, the dale’s silence is replaced by the coal mines and forges’

¹⁶⁵ Anna Seward, “Colebrook Dale,” *The Poetical Works of Anna Seward, with Extracts from her Literary Correspondence*, 3 vols., ed. Walter Scott, Esq. (Edinburgh: John Ballantyne and Co., 1810), 2:315.

“mingled tones, /Shout their throng’d barge, their pond’rous engines clang.” The narrator’s senses become increasingly confused, as the scene becomes one dominated by sight to one overwhelmed by sound, with the sudden introduction of the “mingled tones, the clanging, “pond’rous” machines, and human shouts.” Additionally, Seward introduces countless fires,

With umber’d flames, bicker on all thy hills,
Dark’ning the Summer’s sun with columns large
Of thick, sulphureous smoke, which spread, like palls,
That screen the dead, upon thy sylvan robe
Of thy aspiring rocks; pollute thy gales,
And stain thy glassy waters.--See, in troops,
The dusk artificers, with brazen throats,
Swarm on thy cliffs, and clamour in they glens,
Steepy and wild, ill suited to such guests.

Here, Seward describes the coal fires and their resultant atmospheric pollution, so prodigious and voluminous, that it obscures the sun itself, falling like a shroud over the “aspiring rocks.” However, the coal vapor does not just obscure the dale, it becomes a very part of it, as it “pollute[s] thy gales, /And stain[s] thy glassy waters.” Seward’s use of “pollute” and “stain” is noteworthy, as she uses these terms to denote the sexual violation of a feminine nature.¹⁶⁶

¹⁶⁶ The sexual violation of feminine nature was first articulated by Carolyn Merchant’s famous work, *The Death of Nature*. This gendered “pollution” is the premise of Sharon Setzer’s 2007 article, “‘Pond’rous Engines’ in ‘Outraged Groves’: The Environmental Argument of Anna Seward’s ‘Colebrook Dale.’” Setzer claims that Seward’s poem is the “first known account of the locale to figure industrial activity associated with the famous ironworks as a sexual violation of the landscape.” This is evident in the way Seward nods to “wasted bloom,” engaging with Milton’s *Comus*, Pope’s *Windsor-Forest*, and Erasmus Darwin’s *Botanic Garden*. She also employs popular Linnaean discourse on women’s sexuality in the opening apostrophe and

However, Seward's use of "pollution" also points to the chemical and industrial effluence from the mines and works. Seward points to the oozy, vaporous movement of the smoke, and the way it envelops and obscures the woods, waters, and gales, as it works to "bicker," "spread," and "screen" the natural environment. Seward draws out the visual aspects of the vapor, characterizing its enormity—"columns large," its obscurity—"thick sulphureous smoke"-- as well as its profuse movement, as altogether sublime. Yet despite its visual grandeur, Seward's sublime is simultaneously vaporous, formless, and dissolving.

As the toxic smoke and pollution spreads through the scene, Seward also introduces a staggering multiplicity of sensory and chemical elements that bombard the observer—noise, smoke, flames, and sulfur. In addition to the visual overload, there is a shift from the solitary narrative voice to multiple, shared voices. The singular narrator that existed within the classical past, now becomes a present "we." This transformation illustrates the viewer's full immersion within the sublime environment where the spreading pollution not only despoils material nature, but it also threatens a complete dissolution of the self.

The invocation of the sublime is not unique to Seward's description of Coalbrookdale. In fact, the Burkean sublime is a common trope seen throughout the period's descriptions of the Coalbrookdale's mining industry. Seward, too, employs the Burkean sublime in "Colebrook Dale," as the pollution is described as "rising beneath a threshold," exciting ideas of danger and pain, and evoking themes of "Darkness," "Obscurity," "Vastness," and "Infinity." Additionally, she uses highly Burkean terms for the miners, likening them to his "notions of ghosts and

subsequent flower imagery throughout. See Setzer, 69.

goblins,”¹⁶⁷ in her description of them as “troops, /The dusk artificers, with brazen throats, /Swarm on thy cliffs, and clamour in thy glens.” Here, the miners transform into something similar to coal pollution. They dissolve into a “swarm,” and spread throughout the cliffs and glens, polluting its pristine surroundings. This endowment of coal’s vaporous essence into the miners is what marks Seward’s particular engagement with the sublime as not only distinct from her male contemporaries’ accounts of Coalbrookdale’s industrial horrors, but different from Burke’s own sublime aesthetics. Here, Seward possesses an acute awareness of the very real material effects of the pollution, and of the dire environmental and social consequences of the toxic sublimity witnessed and aestheticized in her poem. While for Burke, as for Young, Dibdin, and even for Darwin, the “life-threatening descriptions prompt an aesthetically worthwhile reaction,”¹⁶⁸ only possible because the “pain and terror are so modified as not to be actually noxious,”¹⁶⁹ in fact, Seward is pointing to the very real and toxic effects of this aestheticized environment. Within the poem, coal vapor is not, in fact, capable of producing Burke’s “delightful horror, a sort of tranquillity tinged with terror,”¹⁷⁰ as pollution’s insidious effects, are not “distanced and blunted enough by transformative representations to be pleasant in their terror.”¹⁷¹ Seward’s poem, instead, illustrates the immediate material effects of pollution on

¹⁶⁷ Burke describes the associative relationship between these figures and darkness, “As to the association of ghosts and goblins; surely it is more natural to think, that darkness being originally an idea of terror, was chosen as a fit scene for such terrible representations, than that such representations have made darkness terrible.” See Edmund Burke, and Adam Phillips, *A Philosophical Enquiry Into the Origin of Our Ideas of the Sublime and Beautiful*. Oxford World’s Classics (Oxford [England]: Oxford University Press, 1990), 130.

¹⁶⁸ Jerrold E. Hogle, *Cambridge Companion to Gothic Fiction* (New York: Cambridge University Press, 2002), 14.

¹⁶⁹ Edmund Burke and Adam Phillips. *A Philosophical Enquiry Into the Origin of Our Ideas of the Sublime and Beautiful*. Oxford World’s Classics (Oxford [England]: Oxford University Press, 1990), 123.

¹⁷⁰ *Ibid.*, 123.

¹⁷¹ Hogle, 14.

mankind. In the coal vapor, the sublime has now palpably infiltrated and transmuted the environment and humanity itself. Likewise, the “dusk artificers” illustrate that pollution is no longer atmospheric; it is now anthropogenic. The image of the workers spreading throughout the hills and extending into Birmingham, illustrates that the benign pleasure from sublime wonder of the tourist site is now sublimated into human migration, displacement, and overpopulation: Coalbrookdale now appears as a Malthusian nightmare, one that has unleashed pollution and people upon a natural environment that cannot accommodate it. Peter Kitson argues that “the dialogue of place and displacement” are a feature of Romantic period writing. He claims that “Romantic ideology displaces the historical, social and political tensions of the time into an idea realm of imagination, or nature.”¹⁷² However, what we see in Seward’s characterization of the site, and of its miners, is that the realms of imagination and nature no longer serve as a retreat from the historical and material realities of mining. Instead, the scene of retreat is now indelibly marked by industry, effluence, and human dislocation.

Later in the poem, Seward builds upon this imagery of uncontrolled human growth predicated on extraction and the coal industry, and translates these issues into regional and even global concerns about exhaustion and decimation. She first notes Coalbrookdale’s important place within the larger global, extractive sphere--its “large stores of thy metallic veins/Gleam over Europe; transatlantic shores/Illumine wide”--are connected to trade and commerce, and to Britain’s global dominance. She is cognizant of the crucial role the mining industry plays in national and regional growth, and its direct contribution to the scientific community and

¹⁷² Christopher Kitson, *Legacies of the Sublime : Literature, Aesthetics, and Freedom From Kant to Joyce*. SUNY Series, Studies in the Long Nineteenth Century (Albany: SUNY Press, 2019), 5.

manufacturing industries situated in “expanding BIRMINGHAM.”¹⁷³ While Birmingham’s expansion is “Illum’d by intellect, as gay in wealth, /Commands her aye-accumulating walls,” Seward curiously likens scientific curiosity and the expansion of commercial wealth to the environmental and human decimation occurring in Coalbrookdale: “Creep[s] on the circling plains, now here, now there, /Divergent--change the hedges, thickets, trees, /Upturn’d, disrooted, into mortar’d piles.” Seward asserts that in a speculative future, places like Birmingham, that derive their wealth and power from extraction and uncontrolled growth, will also experience the kind of environmental and social degradation that has already occurred at Coalbrookdale. In the pursuit of its “statelier square” and “street elongate,” Birmingham will become its own site of extraction: “Upturn’d, disrooted, into mortar piles.”

Seward finally warns of an exhausted future, if such speculation and extraction continues unchecked: “Warn’d by the Muse, if Birmingham should draw, / In future years, from more congenial climes /Her massy ore, her labouring sons recall, [. . .] content to draw /From unpoetic scenes her rattling stores, /Massy and dun; if Thence supplied, she fail, /Britain, to glut thy rage commercial, see /Grim WOLVERHAMPTON lights her smouldering fires, / And SHEFFIELD, smoke-involv’d; dim where she stands /Circled by lofty mountains, which condense /Her dark and spiral wreaths to drizzling rains.”¹⁷⁴ Seward characterizes Birmingham’s continued commercial growth as predicated on the mineral stores at Wolverhampton and Sheffield, locales that are less

¹⁷³ Seward alludes to Birmingham’s famous Lunar Society in the poem, who counted as its members Erasmus Darwin, Matthew Boulton, Richard Lovell Edgeworth, James Keir, Joseph Priestley, James Watt, Josiah Wedgwood. She connects the city and the Society with its members, Boulton’s and Watt’s, steam engine: “Science there /Leads her enlighten’d sons, to guide the hand /Of the prompt artist, and with great design /Plan the vast engine, whose extended arms, /Heavy and huge, on the soft-seeming breath /Of the hot steam, rise slowly;--till, by cold /Condesn’d, it leaves them soon, with clanging roar.” Seward, “Colebrook Dale,” 316.

¹⁷⁴ Seward, 318.

beautiful than Coalbrookdale, but that are similarly visually dominated by their “smouldering fires” and “dark and spiral wreaths.” Seward also notes the key role of vapor in these spots, as Sheffield is described as “smoke-involved,” and “dim,” where its surrounding mountains are not there simply for aesthetic benefit, but rather to “condense” the coal vapor’s “dark and spiral wreaths to drizzling rains.” Man-made pollution is transmuted back into the natural environment and transformed into what appears to be akin to acid rain--what Seward describes as “Frequent and sullied.” “Sullied” indicates that for Seward, the changes wrought by coal extraction and its resultant vapor are ravaging and irrevocable. As we see in this intermingling of coal vapor and Sheffield’s rain, the effluence from coal burning now dominates and transforms the “aerial forms” and “Tempean vales” into a “gloomy Erebus,” disenchanting “the poet’s spell.”¹⁷⁵ Seward notes that the landscape is no longer a place of poetic inspiration, as extractive reality has overtaken “bright inspirations,” and displaced “Thou venal Genius of these outraged groves.” Extraction does not simply desolate and exhaust Britain’s mineral stores, it also empties the landscape of something more valuable in Seward’s estimation: the possibility for sublime reverie and poetic contemplation.

Seward continues this theme of desolation and exhaustion in the final instantiation of the “Colebrook Dale” poems. Her 1790 sonnet, “To Colebrook Dale,” condenses the longer poem into Seward’s preferred form, the 14-line Miltonic sonnet, omitting much of the sublime imagery and thematic concerns around the miners and Birmingham’s unchecked growth seen throughout “Colebrook Dale.” She addresses the Genius directly at the start of the sonnet: “Thy Genius, Colebrooke, faithless to his charge.” No longer a distinct entity, the essence or poetic spirit of the

¹⁷⁵ Seward, 319.

Genius is now fully connected with the physical space of Coalbrookdale.¹⁷⁶ While there is no longer any intrusive human presence within the sonnet—the miners and scientists have all but disappeared from the verse—and the toxic sublimity of the coal vapor has been tamped down significantly, the mythological figures and the “black sulphureous smoke” and the “stores metallic” of the industrial landscape remain. Moreover, despite the enduring presence of the classical figures of the Naiads, nymphs, and Cyclops, Seward has now fully moved into the present tense in the sonnet. Neoclassicism appears to no longer afford these figures a safe space of antiquity and of unspoiled nature. Whereas Makdisi points out the neoclassical as a disruption in the spatiotemporal continuity of modernity, Seward shows instead that the human presence and its growing dependence on extractive commerce, has the effect of disrupting the ancient, unbroken past and of natural time. The sonnet’s narrator now describes the material and temporal realities before them, rather than locating both the envisaged, unspoiled past, and current extraction, pollution, and uncontrolled growth within speculative spaces and imagined temporalities.

Seward’s poetry, including Sonnet 47, “Colebrook Dale,” and “To Colebrook Dale,” illustrates a deep ambivalence regarding Britain’s new extractive reality, and the observer’s encounter of the toxic sublime. Sonnet 47 culminates in a post-exhaustion mine, devoid of human presence and innovation, a space only fit for a solitary, wandering Muse; conversely, in “Colebrook Dale,” she shows how real, human presence exhausts and decimates the classical environment. Moreover, the “bursting” and “breaking” of the flames and coal vapors in Young’s travel narrative—terms that, for him, symbolize the opening of new, subterranean realms for exploration, the fascinating processes of coal combustion, and with new energetic forms and

¹⁷⁶ Wheeler, 30.

machines, as well as the entirely new itinerary for the Grand Tour that included sites like Coalbrookdale and its industrial counterparts, is, for Seward, the very thing that “breaks the poet’s spell.”

For Seward, the traditionally masculine occasion of her locodescriptive poetry, and her subsequent use of the neoclassical to describe the industrial scene, plays an important role in establishing and guaranteeing the continued posterity of her mining sonnets during the late eighteenth-century sonnet revival. While this gesture is in line with her commitment to the Miltonic form-- what she considers the most durable, and British poetic category. “To Colebrook Dale” also illustrates Seward’s engagement with what Donna Coffey identifies as an unprecedented “depth of concern” with the industrialization occurring in the Gorge. Employing popular picturesque and sublime rhetoric to describe the scene of industry before her, Seward employs the neoclassical in relation to coal vapor and pollution, as both the occasion for her meditations on the mineworks and the environmental impact of extraction on the Ironbridge Gorge.

Seward’s travels and subsequent writings about Coalbrookdale engage with the neoclassical to consider the ways coal vapor exceeds its immediate surroundings, and the ways mining and its vaporous aftereffects permanently disrupt the moment of contained poetic reverie. Like we see in Sonnet 47, Seward’s use of the neoclassical also allows her to connect between her present moment and the classical past. Noah Heringman argues that the neoclassical was a way for travelers and writers to see “themselves entering a new order of time” whereupon a “kind of deep time arose from the shock of recognition and the simultaneous reaction that made these voyagers want to suggest they were encountering only faint traces of themselves, a human

past so ancient as to be almost forgotten.”¹⁷⁷ Instead, she transforms traditional scenes of natural contemplation into sites for speculation, and for future waste, excess, and desolation.

¹⁷⁷ Heringman, 97-98.

Chapter 4. “Where Science Smiles, the Muses Join the Train”: Canal, Coals, and Dissenting Education in “The Invitation”

1815 was a pivotal year for the mapping and spatial schematization of British coal. This was the year “land surveyor and drainer,” “engineer and mineralogist”¹ William Smith published his famous hand-tinted *Geological Map* of Britain’s stratigraphy and coal fields. The first of its kind, Smith’s map represented more than 175,000 square kilometers, and included England, Wales, and part of Scotland. The physical map itself reflected the scope and sheer size of his endeavor, “covering 2.6m x 1.8 m of wall space at the Geological Society of London’s Burlington House,”² and earned him the title of “Father of English Geology” and the nickname “Strata” Smith. The son of the village blacksmith in Churchill, Oxfordshire, Smith was not formally educated. Instead, he became pupil and assistant to land surveyor Edward Webb, who taught Smith how to “observe the land” in his attempts to find valuable coal seams.³ He created many underground surveys for landowners, as they sought to exploit and mine mineral resources on their estates; Smith based his surveys on John Strachey’s published data, and also on local knowledge of stratification uncovered by colliers

¹ Hugh Torrens notes that these are Smith’s own self-descriptions. He first characterized himself as a “land surveyor and drainer” in his 1801 *Prospectus*, and then later as the mineralogist in his 1806 book, *Observations on the Utility, Form, and Management of Water Meadows*. What is notable in Smith’s self-characterization is his cognizance of the considerable crossover of disciplines and environments, and the interlocking relationships between drainage, mining, and the canal system. See Torrens’s article, “Timeless Order: William Smith (1769-1839) and the Search for Raw Materials 1800-1820.” *Special Publication-Geological Society of London*, no. 190 (January 1, 2001): 61–84.

² See Renee Clary’s piece, “William Smith’s Mapping Milestone: An Interactive Historical Vignette Celebrating the Bicentennial of the First National Geologic Map.” *NSTA* 82.7 (October 2015): 36-42.

³ Torrens, 63.

in the area.⁴ Using this local data to drive his research, he transitioned to making preliminary surveys for a Somerset coal canal intended to “bring to market coal which was otherwise land-locked.”⁵ The canal’s excavation in 1794 extended his highly local observations within coalfields to areas outside the mines.⁶ He observed that the regularity of the strata and each level’s characteristic fossil-forms carried on for miles beyond the local site.⁷ The Somerset Coal Canal management encouraged Smith to travel the country on a “canal fact-finding tour” with two local coal owners. Having traveled from Yorkshire back to Shropshire, on his return to his home above Bath, he writes,

From this point [my] eye roved anxiously over the interesting expanse which extended before me to the Sugar-loaf mountains in Monmouthshire, and embraced all in the vicinities of Bath and Bristol; then did a thousand thoughts occur to me respecting the geology of that and adjacent districts continually under my eye, which have never been reduced to writing.⁸

⁴ Jeremy Black notes that “Surveying was a key skill for canal construction, and issues of terrain, slope profile, drainage, and soil type proved highly significant at the local level and therefore could affect more general issues of the viability of particular routes. Aside from making particular places of significance [. . .] canals also altered the economic consequences of being landlocked.” See Black, 236.

⁵ Torrens, 63.

⁶ Torrens notes that the unique canal cuts, in which much of the Somerset Coal Canal was cut “along two nearly parallel valleys” was important in Smith’s growing understanding of local stratigraphy and its application to the rest of the country. The strata in one valley, progressively exposed from west to east, could be compared to that of the other valley a few miles away. *Ibid.*, 63.

⁷ Smith writes in verse form, “Shells in plenty mark the strata, / And though we know not yet awhile/What made them range, what made them pile,/Yet this one thing full well we know-/How to find them ordered so.” Smith quoted in Leslie Reginald Cox and Yorkshire Geological Society, *New Light on William Smith and His Work* (Wakefield: West Yorkshire Printing Co., 1942), 25.

⁸ See John Phillips, *Memoirs of William Smith, Author of the “Map of the Strata of England and Wales”* (London: J. Murray, 1844), 15.

Smith's "slow travel," culminating in his own locality, played an important role within his wider consideration of geological principles and in his developing stratigraphy. He embodies the visual and spatial principles of "prospect," as his roving eye takes in the "interesting expanse which extended before me," inspiring him to map the area's geological features, and later put his observations into writing. Duncan Hawley notes that during this time of rapid Parliamentary Enclosure and the burgeoning extractive industry, landowners "sought to establish the boundaries of their land by drawing them up on maps in order to assert their claims over fields and to enclose these as their own property." He continues, "Land owners and investors also sought to improve their land to make it more productive and profitable, enthusiastically hiring prospectors, in the hope that the discovery of minerals on their land would secure their fortunes." Hawley contends that despite the demand for minerals for industry, systematic knowledge of rock formations was unreliable, and mineral surveys, unpredictable.⁹

Indeed, local and particular forms of knowledge were of central concern to Smith in his 1815 *Geological Map*. He delineates his own process of scaling from the local to global, and describes the interconnections between geometry and geology that the construction of geological maps requires:

The principles of geology like those of geometry must begin at a point, through two or more of which the geometrician draws a line and by thus proceeding from point to point, and from line to line, he constructs a map, and so proceeding from local to general maps, and finally to a map of the world. Geometricians founded the science of

⁹ See Duncan Hawley, "William Smith's 1815 Geological Map: 'A Delineation of the Strata of England and Wales with Part of Scotland ...'" *Geography* 101, no. 1 (2016): 35–41.

geography, on which is based that of geology.¹⁰

His statement demonstrates the relationship between geology and topography, and that the general and the global are necessarily predicated on local features. While Barrell points out that for eighteenth-century visual aesthetics and “prospect,” the landowner was encouraged not to engage in particulars and localities, for fear of becoming embroiled in the “mechanics” of a place and thus losing sight of how to govern the whole, Smith importantly counters this idea here. He notes that in the process of mapping, and in drawing property boundaries that signal one’s domain and power, it is necessary to have a firm understanding of the progression from the local to the global, and of all the points and lines that comprise one’s prospect. The progression from the minute to the global was a principle that Smith practiced in his own geology and stratigraphy: what was crucial about the 1815 *Map* was that Smith surmised that local geological features and principles could be expanded beyond their immediate surrounds and instead applied as universally distributed across Britain.

1815 also saw Unitarian minister and mineralogist--one of the founders of the Geological Society of London--Arthur Aikin, publish the American edition of his highly popular *A Manual of Mineralogy*. Intended for the “mineralogical traveller” and the “mineralogical student,” the synoptical table is a graphic-textual scheme that maps the distribution and hierarchy of information about different mineral classes found throughout Britain. Aikin’s table focuses on the “external, physical, and chemical characters that are employed in identifying simple minerals.” He asserts that his work is a response to the Wernerian School of Mineralogy’s methods of mapping the structure and fracture of mineral layers and classes, and to assist the British student’s assessment of properties “immediately

¹⁰ William Smith quoted in Cox, 64.

obvious to the senses,” or “from those which require for their manifestation the assistance of apparatus and reagents.” Aikin observes of his “philosophical arrangement of mineral characters” that

The first object of the mineralogical student is, or ought to be, the acquisition of a facility in identifying every mineral substance that presents itself to his notice. The absolute necessity of extreme accuracy in discriminating one species from another, is indeed too obvious to require any further remark, [. . .] all sound scholarship is founded upon grammar, so all sound geology depends primarily on a familiar acquaintance with the distinctive characters of simple minerals. As the grammar of language has its philosophy, so has the grammar of mineralogy, and the attentive student will soon perceive the connection and mutual relation between the several classes of external characters and will catch some glimpses that may probably hereafter be expanded into an arrangement of minerals at once natural and precise.¹¹

Aikin, like Smith, notes the importance of observation of individual features and of the “connection and mutual relation” of individual elements in his representation of a larger “arrangement of minerals.”¹² Aikin also similarly articulates the challenge of how to relay and teach students three-dimensional information and qualities of minerals within what he calls

¹¹ Arthur Aikin, *A Manual of Mineralogy* (London: Longman, [et al.], 1814), 9-10.

¹² Simon Winchester claims that of the original Geological Society of London, Aikin “knew William Smith and his work.” Winchester notes that Aikin was himself something of an amateur cartographer, and had a good knowledge of the topography of Shropshire and of its outcrops of minerals. There had been a halfhearted attempt by John Farey to bring the two men together, in the hope of speeding up the progress of [Smith’s] map—it came to nothing, however. But it was quite probably Aikin who proposed to his brother members that, having received the invitation from Smith, they go down to Buckingham Street and see exactly what he was doing.

See Winchester’s *The Map That Changed the World: William Smith and the Birth of Modern Geology* (New York: HarperCollins, 2001), 225.

“the grammar of language” upon the written page. Coal plays an especially important role in Aikin’s schema. He devotes three pages of his *Manual* to the mineral, more than to any other individual specimen within the work. He describes its physical characteristics, its color, fracture, and structure; importantly, he also tracks where the different types of coal are found throughout Britain, including their location within individual mines. Aikin notes about this inclusion of specific sites, “It appeared to me that the insertion of the principal British localities would render the work more interesting, especially to the mineralogical traveller.”¹³ The synoptical table is thus intended not only for visual classification of individual minerals, and to create a “grammar” that can be understood and communicated, but it also importantly situates the minerals geographically, naming the specific veins and sites of their extraction. Aikin recognizes that the study of coal is contextual. It is no longer adequate to study forms divorced from their geographical locale. In fact, he states that their localities are what adds interest to the study of minerals. Aikin’s synoptical table is not simply for memorization of individual characteristics; rather, it connects the minerals and their characteristics to a sense of place¹⁴ and creates a map of Britain’s major geological sites.

I open in 1815 with Smith’s *Map* and Aikin’s *Manual*, as they each reveal the major spatial and schematic developments in the mapping and characterization of British coal. Taken together, they illustrate that the “map” itself was not a static, two-dimensional display of topographical features and boundaries. Their representations instead reveal the wider

¹³ Aikin, vii.

¹⁴ Roy Porter notes that Aikin’s earlier 1797 map embodied “mere stratigraphical ambitions, but without exactitude of local detail.” He asserts that Aikin was “mainly concerned to divide up the country between areas of Primary and Secondary rocks,”; and that Smith’s map of 1815 represented a revolutionary approach “about what precisely a stratigraphical map should represent, and how it could be represented.” See Porter), 180.

epistemological shift occurring as the result of mineral extraction--what Iva Peša and Corey Ross call “a complex reciprocal relationship between the growing science of geology and the extraction and transport industries in the late eighteenth and early nineteenth centuries.”¹⁵ Both Aikin’s and Smith’s works, which place and characterize mineral strata and specimens, capture the wider geographical, material, and spatial changes occurring throughout Britain, as the result of coal mining and the expansion of the canal system. Each relied on their own fieldwork, as well as the practical knowledge of miners in creating their schematic representations.¹⁶ Moreover, each author recognizes the importance of language in mapping this kind of large-scale phenomena, and the need for a particular “grammar” to properly study and visualize different aspects of the dynamic historical and geological phenomena.¹⁷ Moreover, common to both works is the role of industry, particularly mining, in motivating practical and local study of geology, and the role of canal construction in exposing strata and geological forms. These works also illustrate the importance of excavation and extraction for the young sciences of the nineteenth century: geology and stratigraphy. Yet, both are, as Noah Heringman points out, also “informed by the need for an accessible science and for moral justifications for utility.”¹⁸ Smith’s and Aikin’s pieces introduced issues and representations of mining operations and geological forms to a wider public, and ushered in a new era of geological science that was aided by local knowledge and economic impetus, and that prized

¹⁵ See Peša and Ross’s piece, “Extractive Industries and the Environment: Production, Pollution, and Protest in Global History.” *The Extractive Industries and Society* 8, no. 4 (December 1, 2021), n.p. <https://doi.org/10.1016/j.exis.2021.100933>.

¹⁶ Leucha Veneer, “Provincial Geology and the Industrial Revolution.” *Endeavour (English Ed.)* 30, no. 2 (January 1, 2006): 76.

¹⁷ Kären Wigen and Caroline Winterer, *Time in Maps : From the Age of Discovery to Our Digital Era* (Chicago: University of Chicago Press, 2020), 3.

¹⁸ Heringman, 62.

practical skills over social standing. More importantly, however, these works also illustrate the burgeoning movement of Earth science becoming a profession,¹⁹ and the introduction of a new “managerial” class of land surveyors and geologists who possessed practical skills through surveying and consultancy work in mining, quarrying, canal-building, and other endeavors that dramatically changed the British landscape and its economic output.

Smith’s and Aikin’s 1815 works are pivotal in capturing the historical and reciprocal relationship between geology and industry in the first quarter of the nineteenth century. However, I want to suggest that, at least in the case of Aikin, his manual was predicated on earlier pedagogical and literary forms promulgated through the Dissenting educational model, and less formally, through the writings of his father, Dr. John Aikin and by his aunt, famous Dissenter and poet, Anna Letitia Barbauld. Arthur Aikin’s *Manual*, in its schema for identifying minerals, and in its careful design intended for students, reflects Aikin’s own liberal education, which stressed among other subjects, the study and pursuit of geography, geology, and industrial commerce. Richard Hamblyn argues that “there was an expansion of the franchise on natural knowledge”²⁰ during the second half of the eighteenth century. Heringman, likewise, asserts that a number of vernacular mineralogical works, many of them by Dissenters, “asserted the priority of local over philosophical knowledge.”²¹ Moreover, these “low” geological works, including J.R. Forster’s *Introduction to Mineralogy* (1768) and

¹⁹ See Roy Porter, “Gentlemen and Geology: The Emergence of a Scientific Career, 1660-1920.” *The Historical Journal* 21.4 (1978): 812.

²⁰ Richard Hamblyn, “Landscape and the Contours of Knowledge : The Literature of Travel and the Sciences of the Earth in Eighteenth-Century Britain” (PhD dissertation, University of Cambridge, January 1, 1994), <https://search-ebSCOhost-com.proxy.uchicago.edu/login.aspx?direct=true&db=edsble&AN=edsble.336534&site=eds-live&scope=site>.

²¹ Heringman, 15.

John Aikin's *Essay on the Application of Natural History to Poetry* (1777), carried on a "rivalry with officially sanctioned scientific institutions"²² and introduced geological principles to a wider, non-professional audience. Aikin is an especially important figure within this nexus of vernacular and local geology. Additionally his *Manual* epitomizes the "associations and networks that linked the worlds of Dissent, intellect and industry,"²³ in its aim to present practical, geological knowledge for middle-class and mobile readers.

Felicity James and Ian Inkster further identify what James calls "the close links between "Rational Dissent, intellect and industry, forged in the eighteenth century, continuing even through the political strife of the 1790s and the Napoleonic Wars, and evident in the circle around John Aikin's eldest son, Arthur."²⁴ Inkster further asserts that Arthur Aikin and his associates created their work within a larger "cultural identity of intellectual Dissent, scientific inquiry and practical laboratory manipulation, a nexus not then found in any English university or in any English royal society."²⁵ These disciplines are central concerns within the elder Aikin's *England Delineated* and in Barbauld's early published works, including the "The Invitation." Indeed, themes of extraction, the British canal system, and the correct "grammar" needed to accurately describe these endeavors are the prime concerns in this poem. It is commonly accepted that Aikin carries on the interests of his father and grandfather²⁶ in the areas of geography, geology, and industry, what Inkster identifies as "Arthur Aikin's concern

²² Hamblyn, 52.

²³ Ian Inkster, "'Under the Eye of the Public': Arthur Aikin (1773-1854), the Dissenting Mind and the Character of English Industrialization," in *Religious Dissent and the Aikin-Barbauld Circle, 1740-1860* (Cambridge, UK: Cambridge University Press, 2012), 127.

²⁴ James, "Introduction," *Religious Dissent and the Aikin-Barbauld Circle*, 19.

²⁵ Inkster, 126.

²⁶ In addition to the teachings of Joseph Priestley, a tutor at Warrington Academy, and for whom Arthur Aikin conducted chemical experiments as a young man when Priestley moved from Birmingham to Hackney.

to apply scientific experimental methods to matters of technology follow[ing] from a Dissenting microculture,” and what James calls a “conversation [continued] across generations.”²⁷

However, what has remained largely unexplored is Barbauld’s own literary contributions to this “Dissenting microculture”²⁸ around geology and industry: namely, the important role of her interdisciplinary approach to coal extraction and her cognizance of the interconnected nature of mining and the regional canal industry in national commerce. What we see in “The Invitation” is that the poem provides a nascent recognition of the importance of canals in mineral production and transport. In fact, Barbauld uses canals and coal mining as a rubric to elucidate larger themes of labor, commerce, and prospects abroad—themes that continue throughout her literary canon and political writings--whereby her reader comes to understand how the extractive imaginary seeps into the eighteenth-century British consciousness, and more importantly, the role of poetry and pedagogical texts in connecting her readers to their changing landscape and burgeoning mineral extraction schemes.

In this chapter, I consider how coal and canals afford Barbauld a way to engage with the larger matrix around eighteenth-century mapping, commerce, and the burgeoning extractive industry. These themes also provide the means for her to explore the metaphoric crossover between the staunch materiality of the carboniferous and the immateriality of the

²⁷ Inkster, 136; see also James, 18.

²⁸ William McCarthy does not leave Barbauld out of this important lineage; he states, Barbauld was the one most embedded in Dissent, a third-generation Dissenter on mother and father’s side. Moreover, as the daughter and granddaughter of divinity teachers she was, as it were, a theorized Dissenter, fully conscious of Dissent’s intellectual heritage and social position in all their nuances and ambiguities.

See McCarthy’s chapter, “How Dissent Made Anna Letitia Barbauld, and What She Made of Dissent,” in *Dissent and the Aikin-Barbauld Circle, 1740–1860*, eds. Felicity James and Ian Inkster (Cambridge, UK: Cambridge University Press, 2012), 55.

symbolic realm for her readership. She employs a semantic overlay of historical context and complex metaphorical interactions in her literary evocations of coal and other extracted minerals. This overlay allows coal and mineral extraction to seamlessly connect between material realities and “imaginative ways of knowing.” I examine Barbauld’s exploration of canals and coal extraction in “The Invitation: To Miss B*****,” and the way she uses poetic tropes to help her establish a unique topographic and temporal sensibility that both accommodates and interrogates natural and man-made features within the rapidly changing landscape. Barbauld uses poetic devices in her evocation of rural Britain to interrogate notions of surface, depth, and distance and the nation’s changing spatial parameters. While her topographical poem is local in scope and focuses specifically on the rapidly industrializing Lancashire countryside, I contend that Barbauld charts the key role of coal extraction and the canal system to not only show how these features underlie the changing rural landscape but how they also connect the domestic landscape within a larger schema of liberal progress.

I more fully underscore Barbauld’s characterization of Warrington’s “science” in “The Invitation” as geo-topographical in scope and claim that the poem’s depiction of the Warrington pupils’ commercial pursuits abroad reveals a deeply important epistemological transition occurring in Britain during the second half of the eighteenth century. The poem reveals the growing importance of commercial geography and its connection to extraction and geological science during this period. However, I also note how Barbauld’s treatment of these landscape and economic changes reflects her characteristic ambivalence toward global expansion, and that despite her enthusiasm for extractive schemes and for the expansion of commercial geography, she also recognizes the high human cost of coal mining.

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Roy Porter asserts that while “beliefs about the Earth—its history, form, purposes and future—have always been central to European culture, religion and science,”²⁹ geographic discourse was primarily derived from classical sources passed down by medieval scholars and based more on cosmic order, than on empirical investigation. Earth knowledge was located in “other bodies of discourse (e.g. meteorology, or Biblical exegesis).”³⁰ Geographical, topographical, and chorographical inquiries were expounded upon largely in the travel accounts, and between savants, rather than from empirical investigation. However, topographers typically celebrated human objects and antiquity--great houses, civil and family history. Or conversely, they attempted to map physical relief: coastlines, harbors, mountains, flora and fauna. Carew’s seventeenth-century account of Cornish tin mines represented the first important consideration of the composition and structure of the subterranean mineral world as an important facet of British geography. Porter explains: “the Earth’s interior retained its secrets, given the prevailing ignorance of its surface. Geographers had hardly plotted the physical features of the kingdom. Nor could they satisfactorily represent relief on maps.”³¹ Topographers too, singled out unique mineral specimens rather than establish geological norms in their spatial representations; likewise, they uncritically transmitted folklore explanations of geological forms and local curiosities rather than specific geographical-geological locations.

It was the rise of communities and institutions that helped geography and its intersecting interest in geology enter the public discourse and further take shape within formal

²⁹ Porter, 10.

³⁰ Ibid., 12.

³¹ Ibid.

academic programs. German principalities funded the rise of mining institutions--designed to serve their economic, technical, and military needs. And in Britain, the founding of the Royal Society of London put natural investigation of the earth at the forefront of its program—stressing the capacity of all its members to collect and transmit useful information between amateurs and professionals, across regions, regarding natural history, including mineralogy. The Royal Society’s work was indispensable in creating one of the first substantial, accessible public mineral collections, “for the most serious and diligent study,”³² and more importantly, in presenting geological and mining knowledge during debates and meetings. Topics discussed included coal mines, coal damp and vapors, the origin of metals, different stones used for building, and the need for mineral maps. The Royal Society showcased important early intersections between geography and geological sciences, first, by stimulating the empirical study of Britain’s natural phenomena and forms, and second, from drawing its knowledge and data from a large body of devotees across the nation.³³ Its members relied on correspondence, support, data, advice, and suggestions from fellow members about the nation’s geological forms, and the Society itself provided the “institutional focus” for this growing intersection between Britain’s geography and its geological forms. It is important to note that at its very

³² Robert Hooke writes of the “Repository as full and Compleat a Collection of all varieties of Natural Bodies as could be obtain’d . . . The use of such a Collection is not for the Divertisement, and Wonder, and Gazing,” but instead, for the kind of serious study undertaken by the Society’s members. See *The Posthumous Works of Robert Hooke, ... Containing His Cutlerian Lectures, and Other Discourses, Read at the Meetings of the Illustrious Royal Society. ... Illustrated with Sculptures. To These Discourses Is Prefixt the Author's Life, ... Publish'd by Richard Waller,..*(London: printed by Sam. Smith and Benj. Walford, 1705), 338.

³³ Other societies followed in suit, such as the Oxford Philosophical Society, the Dublin Philosophical Society, the Somerset Philosophical Society, and other regional clubs. However, scientific societies were largely concentrated in the large metropolises, and fleetingly, in university and capital cities, leading to what Porter calls a “most precarious” continuation of Earth studies. See Porter, 20.

core, the Royal Society was what Porter calls a “Community by letter,” insofar as extraliterary and informal correspondence connected its members and served as an important network for them to transmit local and regional observations. He states that written accounts of geological entities, traded between members, “broadened the intellectual vistas of those whose geographical horizons were drastically limited, and created a realistic awareness of the multifariousness of the Earth.”³⁴

Outside of scientific societies and informal correspondence, institutions such as Oxford and Cambridge continued a “secondary interes[t] in the mineral kingdom and in its applications,” however, most of the early interest relied largely on individual collectors and enthusiasts.³⁵ One of the measures used to draw together individual geological observations from around the country was the map. Thomas Burnet complained of early maps that they represented “things of chief use to civil affairs and commerce . . . not Philosophy or Natural History.”³⁶ As interest in soils and mineral resources grew, and the need to tabulate mineral outcroppings for rural extraction schemes became more pressing, so too did the need for wider publication of mineral maps and schemas. John Aubrey writes, “I have often time wished for a map of England coloured according to the colours of the Earth, with markers of the fossils and minerals.”³⁷ Another key component in the creation of accurate geological maps was the questionnaire, circulated among naturalists with subtitles such as “Articles of Inquiries

³⁴ Porter, 27.

³⁵ John Woodward’s private collection, part of which was donated to Sir Hans Sloane’s personal repository, provided the first mineral and fossil collection housed in the British Museum.

³⁶ Thomas Burnet, *The Theory of the Earth: Containing an Account of the Original of the Earth, and of All the General Changes Which It Hath Already Undergone, or Is to Undergo, Till the Consummation of All Things. The Two First Books, Concerning the Deluge and Concerning Paradise* (London: Printed by R. Norton, for W. Kettilby, 1684), 140.

³⁷ See Michael Hunter, *John Aubrey and the Realm of Learning* (London: Duckworth, 1975), 113.

Touching Mines” and the “General Heads for a Natural History of a Countrey.” These texts further helped gather and publish discrete data about Britain’s physical geography, mineral objects, and the creation of “exact verbal and visual descriptions to aid future identification.” Moreover, these questionnaires provided answers to the historical, local, and material relationships of minerals within a larger explanatory reference grid, and a greater understanding of Britain’s domestic landforms.³⁸ The interlocutory back-and-forth nature of the questionnaires and of the many communications between collectors and savants were pivotal in establishing the geological character of modern British geography, insofar as they evinced how at the start of the eighteenth century “local natural history was initiating more structural, proto-geological topography,” which was then formalized towards the end of the century.³⁹ Porter asserts that the fields was defined and buoyed by institutions of liberal learning—universities, medical fellowships, the Church of England, the Royal Society, and occasionally the Oxford and Dublin philosophical societies. Members shared a belief in the advancement of knowledge and classical learning, in their collection and trading of specimens and information.⁴⁰ However, the production of empirical and theoretical knowledge was largely practiced by non-professionals, and “not yet cast as a self-standing, autonomous discipline.”⁴¹ Specialization had not yet occurred, and savants interested in geological topography derived no income from their study and communications.

However, another major stimulus for the conceptual foundations of eighteenth-century geological topography, that moved the field towards professionalization and specialization,

³⁸ Porter, 37.

³⁹ *Ibid.*, 40-41.

⁴⁰ Porter, “Gentlemen and Geology,” 812.

⁴¹ *Ibid.*, 811.

was industrial development occurring throughout Britain, and the expansion of domestic and global extraction schemes in the search for valuable coal seams. As early as 1726, Isaac Watts suggests the utility of geography for “commerce,” while in 1754 Adam Anderson’s *Historical and Chronological Deduction of the Origin of Commerce, from the Earliest Accounts to the Present Time*, contains a “History of the great Commercial Interests of the British Empire.”⁴²

Black notes that as inventions like the canal facilitated easier transport of coal, there grew a similar appreciation of topography on the local, regional, and international level.⁴³ William Guthrie’s 1770 *A Geographical, Historical, and Commercial Grammar* asserts that, in fact, the commercial applications of minerals are important classes of knowledge for “a man sincerely interested in the welfare of society and of his country” and that extraction acts as a new stimulus for travel abroad and for the publication and dissemination of a new class of “Books of geography.” Guthrie writes that while geography is not the “sublimest pursuit of mankind,” in fact, the knowledge of the world is that “which most nearly interests them, and to which their abilities are best adapted.” He also asserts that in line with these “interests,” a new class of geographers is emerging, one prompted by “A thirst for knowledge, as well as for gold, has led several into different lands.” His “Compendium of Geography, we now offer to the public” addresses ancient history and the civil customs across the globe. He also asserts that the “character of a nation” is now dependent on a “continuation of a great many circumstances which reciprocally affect each other,” including the “situation, extent, soil, and productions of

⁴² Likewise, George Fisher states in 1763 that geography’s “great Utility” is “to the trading Part of Mankind,” and in the 1766 *New System of Geography*, he makes a claim for geography’s important role in “commerce, and the interchange of arts and manufactures.” See Johanna Smith, “Constructing the Nation: Eighteenth-Century Geographies for Children.” *Mosaic: An Interdisciplinary Critical Journal* 34, no. 2 (2001): 133–48.

⁴³ Black, 234.

kingdoms.” He states, “There is a nearer connection between the learning, the commerce, the government, &c. of a state, than most people seem to apprehend,” and that metals and minerals are key elements of this new, integrated geographical approach.⁴⁴

Importantly, Guthrie ties together Britain’s expanding commercial interests both at home and abroad with the aims of geo-topographical “learning”; he states that this book is intended for a distinctly middle-class and commercial readership. This new “Grammar” opens the field of geography, once only available to “the dignified, the learned, or the wealthy few,” to those who are now interested in its practical and pedagogical implications.⁴⁵ Guthrie’s work provides an important window into geo-topographical texts designed specifically for the expanding middle-class and the commercial sector, and for the ways texts like *A Geographical, Historical, and Commercial Grammar* formalized and provided an “epistemic space” for the commercial applications of mineral extraction and expanding global travel.

While *Commercial Grammar* represents a more informal treatise, it likewise reflects the concomitant interest and formalization of commercial geography both outside of and within institutions of learning. “Geography’s task” was to “determine relative location upon the earth and to describe the phenomena to be found in those locations.”⁴⁶ Yet, Robert Mayhew asserts that geography was a loose linguistic practice, or rather, a textual descriptive genre whose stable definition “was matched by continuity in the textual format in which

⁴⁴ See Guthrie, *A Geographical, Historical, and Commercial Grammar* . . . (London: printed for J. Knox, at No 148, near Somerset-House, in the Strand, MDCCLXX. [1770]), iii-v.

⁴⁵ He states, “Among us learning is no longer confined within the schools of the philosophers, or the courts of the great; but like all the greatest advantages which heaven has bestowed on mankind, it is become as common as it is useful.” Guthrie alludes to providence here, as Barbauld does in “The Invitation,” and that social plenty is not only shared by all British citizens, but that it also possesses a quotidian, useful character. See Guthrie, iii.

⁴⁶ Robert Mayhew, “The Effacement of Early Modern Geography (c .1600–1850): A Historiographical Essay,” *Progress in Human Geography* 25, no. 3 (September 2001): 388.

geographical information was presented. The stable definition of geography [. . .] relates directly to the generic conventions of geography's books."⁴⁷ Jeremy Black further argues that geology was "linked to an interest in the workings of Providence, in history, in the underpinning of physical geography."⁴⁸ What Black illustrates is that far from being separate branches of knowledge, the two fields were often considered in tandem. Yet, each of these works were crucial in helping establish what Martin R.S. Rudwick recognizes as the skill of early geologic grammar and "map-reading" and the development of the "visual language of geology."⁴⁹

As with other branches of knowledge, print played a key role."⁵⁰ Daniel Brewer similarly notes that geography was codified through "epistemic spaces," such as academic bodies and through textual and spatial visual practices such as mapping.⁵¹ Indeed, Paul Elliott and Stephen Daniels claim that commercial geography and the key role of minerals and mining in this field, came to be "understood as partly a disciplinary construct of institutions."⁵² Rachel Laudan asserts that the conceptual foundations of geo-topography were laid, in part, by quest for "industrial development stimulated theoretical mineralogy" and that an increasing proportion of instruction and texts devoted to mineralogy, geology, and geography "accompanied the more practical aspects" of curriculum at mining institutions and other commercially-focused schools. She further notes that this curriculum "served to codify,

⁴⁷ Ibid.

⁴⁸ Black, 37.

⁴⁹ Martin J.S. Rudwick, "The Emergence of a Visual Language for Geological Science 1760-1840." *History of Science* 14 (May 9, 2015): 151.

⁵⁰ Black, 37.

⁵¹ See Daniel Brewer, "Lights in Space." *Eighteenth-Century Studies* 37, no. 2 (2004): 177.

⁵² See Elliott's and Daniels's article, "'No Study so Agreeable to the Youthful Mind': Geographical Education in the Georgian Grammar School." *History of Education* 39, no. 1 (January 1, 2010): 17.

propagate, and preserve the geological and mineralogical knowledge that was generated in eighteenth-century Europe.”⁵³

Britain did not have the same early means for institutional training in these methods—it possessed no formal mining schools such as the Freiberg Mines Academy or France’s *Agence des Mines*. Moreover, British mine managers were typically trained on the job. Yet, a number of key consolidations were beginning to occur in the late eighteenth century in the study and professionalization of Earth science. Porter acknowledges that there was a major epistemological turn in the amateur tradition among the landed classes, seen in the scientific contributions to the fields from figures such as James Hutton, Sir James Hally, Sir John Clerk, and others. Porter argues that land-ownership created “a proprietorial interest—cultural and economic—in the terrain as a scientific object,” as well as normalized geological travel as part of an increasingly outdoor, field-based culture: a gentlemanly culture that closely examined the nation’s topographical and geological features. This movement linked the gentlemanly pursuit of knowledge with a rising consumer culture, fascinated with mineralogical specimens, and that “Gentlemanly cosmopolitanism legitimated Enlightenment philosophies”; further, collecting and trading specimens amongst this consolidated group “gratified [their] taste for conspicuous consumption.”⁵⁴ James Hutton personified the dual interests of this new landowner class of geologists, stipulating that while the “science” of geology had direct economic applicability, the field’s disinterested “philosophy” satisfied the gentlemanly pursuit

⁵³ Laudan contends that at Freiberg, arguably the most famous of the mining schools, Abraham Gottlob Werner taught theoretical courses such as mineralogy, geognosy (literally, “earth knowledge,” or the early study of strata and geological forms), the history of Saxon mining, mining economics, and mineral geography. See Rachel Laudan, *From Mineralogy to Geology: The Foundations of a Science, 1650-1830*. Chicago, IL: University of Chicago Press, 1987), 55.

⁵⁴ Porter, “Gentlemen and Geology,” 814.

of knowledge, and his development as a free, generous, and rational man.⁵⁵ Yet, the landed class's position not only provided them with the leisure and financial resources to purchase mineral specimens and costly equipment, their personal wealth and freedom from institutional barriers further allowed them to advance unorthodox ideas that were liable to draw religious and academic scrutiny within more formal, institutional spheres.

The amateur pursuit of geo-topography and geology was thus highly important in crystallizing communication and contacts on an informal level in the latter part of the eighteenth century. However, other crucial movements during this period, such as the spread of literacy, the commercialization of leisure and travel, and the rise of consumerism also created a demand for popularized science, such as geology, and a market for geological lectures, museums, and maps. Moreover, with the development of increased domestic travel, better roads and turnpikes, and the cultural emphasis on leisure as a mark of class, there was a change in provincial culture to serve travelers' needs. Locals supplied geological knowledge to tourists and were part of a rapidly growing market for geological and fossil specimens, tourist guides, landscape engravings, and souvenirs.

Finally, as Britain experienced agricultural and industrial change, there was a growing need for a professional class of expert scientific surveyors, coal-viewers, canal-engineers, and other members of a new managerial class, who could now make a living from their geo-topographical knowledge. As I detailed in the first chapter, the rise of the new managerial class, and the growth of positions such as colliery viewing, marked an important stage in geological professionalization in the eighteenth century. Geology was no longer simply the

⁵⁵ James Hutton, *A Dissertation Upon the Philosophy of Light, Heat, and Fire* (Edinburgh, printed for Messrs. Cadell, Junior, and Davies, London, 1794), v.

intellectual province of landed gentleman;⁵⁶ rather, late eighteenth-century geology was formulated by figures such as the geological technician and popularizer. Moreover, this period highlights the increasingly important part played by the middle classes in the consumption, distribution, and professionalization of geological knowledge.

In addition to factors that included a newly consolidated gentlemanly amateurism, a growing consumer interest in geology, and the rapid industrialization of the British countryside, institutions increasingly played a role in the growing practicality of geology, and its commercial applications. The establishment of learned societies, such as the Askesian Society of London (that was active between 1796 and 1807), the British Mineralogical Society (founded in 1799), The Geological Society of London (in 1807) and the Royal Geological Society of Cornwall (in 1814), promoted the shared geological and utilitarian interests of professionals, and provided an avenue for surveyors and engineers to legitimize and lobby for the growth of the field within practical institutions. Arthur Aikin's work for the Geological Society in 1808 followed the earlier precepts of the Royal Society, in conducting "network research" via a questionnaire sent to "the Miner, the Quarrier, the Surveyor, the Engineer, the Collier, the Iron Master, and even the Traveller in search of general information,"⁵⁷ to collect local information on specimens and mineral deposits, what Laudan calls an instance of "radical

⁵⁶ John Buddle Senior began as a miner and entered the viewing profession through school teaching. However, most viewers went through apprenticeships, including Buddle Senior's son. John Buddle Junior was assistant to his father at the Wallsend Colliery, and took over from him upon his death. It is also necessary to remark that in addition to their roles as consultants to landowners, they, themselves owned a significant amount of land and several collieries. Flinn notes that John Buddle Junior was "part-owner in five collieries," and became involved in other coal-related enterprises such as a steam-flour mill that supplied flour to mine owners at subsidized rates, that was then sold to the mines' pitmen. Buddle also speculated in hay and oats, and was an agent for the Butterly Iron Company and for the collieries to which it supplied machinery. Flinn, 63.

⁵⁷ *Geological Inquiries in Philosophical Magazine* 40 (1817): 421-422.

empiricism.”⁵⁸ However, Porter notes that despite the establishment of these learned societies, systematic and funded “Schemes for national mining schools, and regional mineral professorships” were met with general apathy from the British government and industry well into the first half of the nineteenth century.⁵⁹

Yet despite the informal nature of British geology in the late eighteenth century, and the lack of dedicated mining institutes and training programs for managerial positions such as colliery viewers, other institutions such as the Dissenting academies played an important role in the development of early commercial applications of mineralogy and geology. Dissent was geographically tied to areas of rapid industrialization; Ian Inkster notes that “it is commonly enough known that rational Dissent was particularly located in the industrializing areas of south Lancashire, south Yorkshire and Derbyshire, an outcome of social marginality widely accepted, then and now.”⁶⁰ Likewise, R.V. Holt asserts that throughout the eighteenth and nineteenth centuries, new Unitarian congregations sprung up and were most visible in industrial centers like Manchester, Birmingham, Nottingham, Liverpool, Sheffield, Leeds, and Newcastle.⁶¹ Rational Dissent was not only imbricated within industrial towns, but Dissenting academies trained professionals whose geographical and geological knowledge served utilitarian ends. Its members not only joined the ranks of professional, middle-class practitioners, but they also helped cement Earth science into a cohesive, well-funded, and

⁵⁸ Rachel Laudan, “Ideas and Organizations in British Geology: A Case Study in Institutional History,” *Isis* 68 (1977): 527-38.

⁵⁹ Porter, “Gentlemen and Geology,” 817.

⁶⁰ Inkster, 137.

⁶¹ See R.V. Holt, *The Unitarian Contribution to Social Progress in England* (London: Allen & Unwin, 1938), 31.

authoritative field.⁶² The emergence of the geological, managerial class called for a “diversity of skills” in the fields of geography, geology, mechanical engineering, labor relations, accounting, and politics of business negotiations, among other competencies.⁶³ Dissenting academies’ liberal educational model stressed this wide scientific and humanist approach, and the schools’ curriculum was designed to introduce students to these topics, and to help the student distinguish different classes of minerals by different chemical and empirical means. Harry Robinson builds on the role of Dissenting institutions in cementing the place of geotopographical curriculum, particularly within schools serving the interests in coal and mineral extraction among the rising middle class. He argues that Dissenting Academies across England, especially Warrington Academy, included geology and modern geography as an important facet of their commercially focused curriculum. Heringman further identifies the important role of the Dissenting academic model in the growing popularity of geology in the eighteenth century. He notes that the public’s interest in natural history was due, in part, to its “entrance into the secondary school curriculum through the Dissenting academies” after 1760.⁶⁴ He also contends that geology, as part of a wider natural history curriculum, transformed from the less prestigious branch of natural philosophy, and gained recognition as an “increasingly profitable middle-class avocation.”⁶⁵ Robert Mayhew similarly asserts that as

⁶² The Geological Society of London had “certainly begun with a sprinkling of utility-oriented Dissenters and practical chemists,” again, counting Arthur Aikin as one of its founding members. And despite the Society’s gentlemanly membership, its “counter-revolutionary” ethos under Greenough, and the refusal to invite practical men such as William Smith, John Farey, and Robert Bakewell to join its ranks, it pursued concentrated and ambitious geological research, regularly published in its *Transactions*—works which served as the “exemplar for geological expression” well into the nineteenth century. *Ibid.*, 821.

⁶³ Flinn, 68.

⁶⁴ Heringman, 15.

⁶⁵ *Ibid.*

part of a wider tradition of humanist education, geology and geography, and the texts designed to teach these fields, were tied to the commercial sphere. Inkster notes that despite Dissent's legal, religious, and educational separation from mainstream British culture, in fact, Britain continued to gain "culturally and technologically from a form of tenuous control over Dissent that not only allowed but also induced associational experiment, intellectual enquiry and technological application among significant, dynamic and urbane groups who considered themselves to be beyond the pale of the Anglican establishment."⁶⁶ Indeed, Dissent's promulgation of scientific knowledge, and its emphasis on geography and geological principles as important facets of its liberal educational model, played an important part in the wider dissemination of useful knowledge and of technological change throughout the nation.

One of the most famous Dissenting schools to contribute to this debate was Warrington Academy. Founded in 1757 and active until 1782, the school was situated between Manchester and Liverpool, and was called "the centre of liberal politics and the literary taste of the county of Lancashire."⁶⁷ Barbauld's father, John Aikin, taught classics and divinity there as part of its wider curriculum that prepared its students for careers in commerce, divinity, and other secular professions. David L. Wykes notes that while Dissenting academies played a "vital role in maintaining an educated ministry among Dissenters," many of the academies were open to both ministerial and lay students. Additionally, a number of tutors and students provided major contributions to the "development of ideas in theology, philosophy, literature and science"

⁶⁶ Inkster, 145.

⁶⁷ Leslie Stephen and S. Lee, *Dictionary of National Biography* (London: Oxford University Press, 1885-1900), 185.

during the eighteenth century.⁶⁸ He asserts that Warrington was renowned especially for its instruction in secular subjects: the teaching of science, languages and history. Indeed, McCarthy notes that “Its faculty was intellectually ‘modern’ and politically liberal, with a strong leaning towards the sciences.”⁶⁹ And while Warrington educated a significantly higher number of students than the other British Dissenting institutions, “just under 400 students between 1757 and 1782,” very few followed the divinity course, opting instead to pursue commercial and scientific paths.⁷⁰ At Warrington, Joseph Priestley advocated for its teaching: “Do not fail to teach geography along with the classics, for by this means your pupils will, indirectly, acquire much real knowledge.” He particularly advised that in pursuit of a liberal education, “more attention be given to geography [. . .] particularly to commercial geography, exhibiting the state of the world with respect to commerce, pointing out the most advantageous situations for carrying it on; and more especially noting those articles in the Natural History or countries which are, or may be, the proper subjects of commerce.”⁷¹ Like we see in Guthrie’s work, Priestley emphasizes “real knowledge,” predicated on his students’ middling class associations, and in service of enhancing practical, commercial knowledge of nature’s features, including its minerals. His thirty-six-lecture course in chemistry helped establish his premise that “arts and manufactures are derived from science,” and that “Every thing we are capable of doing by means of the steam-engine is derived from our knowledge of the properties of water

⁶⁸ See David L. Wykes, “The Revd John Aikin Senior: Kibwith School and Warrington Academy,” in *Religious Dissent and the Aikin-Barbauld Circle, 1740–1860* (Cambridge, UK: Cambridge University Press, 2012), 29.

⁶⁹ See William McCarthy, “The Invitation,” in Mrs. Barbauld, Elizabeth Kraft, and William McCarthy, *Selected Poetry and Prose* (Peterborough, Ont.: Broadview Press, 2002), f.n.1.

⁷⁰ Wykes, 42.

⁷¹ See John Towill Rutt’s *Life and Correspondence of Joseph Priestley, LL.D., F.R.S., &c.* (London: R. Hunter [etc.], 1831), 264.

in steam.”⁷² Dr. George Walker, mathematics tutor at Warrington from 1772-74, also stressed the commercial applications of geography in his lessons, and its relationship to hydrography, geology, and mineralogy, among other topics.⁷³ Warrington Academy’s propagation of geotopography and its curriculum’s focus on commercially valuable minerals and their geographical position, served to confer legitimacy to Dissenters’ middle-class and practical educational methods. While Mayhew emphasizes that Georgian geography was perpetually in a “transitional phase,” bifurcated between scholarly and commercial elements,” and the discipline lacked a cohesive and “progressive structure,”⁷⁴ Priestley’s and Walker’s curriculum illustrates that within the eighteenth-century Dissenting model, there was particular emphasis on modern geography and the crossover with geology as an integral part of its modern pedagogy--the library at Warrington possessed 82 books on the subject alone. More importantly, students were taught to appreciate the utilitarian and commercial value of geography, and the relationship between space, labor, and global commodities.

⁷² Joseph Priestley, *Heads of Lectures on a Course of Experimental Philosophy, particularly including Chemistry* (London, New College, Hackney: G. Smallfield, 1794), 2-4.

⁷³ Harry Robinson, “Geography in the Dissenting Academies.” *Geography* 36, no. 3 (1951): 184.

⁷⁴ John MacKenzie identifies the period between 1880 and 1960 as one in which geography flourished in British schools; especially works such as James Hewitt’s *Geography of the British Colonies and Dependencies* (1869), Edward Salmon’s *The Story of the Empire* (1902), and Rudyard Kipling’s *A School History of England* (1911). The popularity of these teaching texts coincides with the period of high imperialism when “a close relationship was established by the system of secondary schooling, propaganda and the concept of imperialism.” See John MacKenzie, *Propaganda and Empire: The Manipulation of British Public Opinion, 1880-1960* (Manchester: Manchester University Press, 1984), 174; see also Johanna M. Smith, “Constructing the Nation: Eighteenth-Century Geographies for Children,” *Mosaic* 34, no. 2 (June 2001): 138.

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Famous Dissenter,⁷⁵ Anna Letitia Barbauld's, 1773 topographical poem, "The Invitation: To Miss B*****," takes up the significant crossover between commercial geography, extraction, and labor, and addresses the irrefutable impact of coal mining and canals on Britain's rural landscape and on its local economies. A work that William McCarthy and Elizabeth Kraft identify as originally a series of letters exchanged between Barbauld and her second cousin, Elizabeth Belsham in the 1760s, "The Invitation" is an unconventional work: a topographical poem written in the style of Pope's *Windsor Forest* (1713), the poem invokes female friendship as it meanderingly describes a bucolic British countryside. Yet, the work also celebrates liberal progress and Dissenting educational principles in its evocation of female companionship and the rural landscape. Stephen Daniels and Paul Elliott pick up on the work's status as a topographical poem; they note that "The Invitation" serves as a "vehicle of geographic knowledge" within Barbauld's first published collection of *Poems*.⁷⁶ Daniel P.

⁷⁵ William McCarthy notes that

Of the leading English literary figures of her day, Barbauld was the one most embedded in Dissent, a third-generation Dissenter on mother and father's side. Moreover, as the daughter and granddaughter of divinity teachers she was, as it were, a theorized Dissenter, fully conscious of Dissent's intellectual heritage and social position in all their nuances and ambiguities.

He further asserts that British Protestant Dissent was "fractured and fractious," as it did not ascribe to a single doctrine and included every theological position from Calvinism to Universal Redemption; their "theological spread" was equally matched by their political and educational spread. See McCarthy, "How Dissent Made Anna Letitia Barbauld, and What She Made of Dissent," in *Religious Dissent and the Aikin-Barbauld Circle*, 55.

⁷⁶ The first collection of *Poems* was compiled by John Aikin, and sent to Joseph Johnson, who issued works by various members of the Warrington circle, notably Joseph Priestley. Lucy Aikin, notes in the memoir of her aunt, "By his persuasion and assistance, her Poems were selected, revised, and arranged for publication: and when all these preparations were completed, finding that she still hesitated and lingered—like the parent bird who pushes off its young to their first flight, he procured the paper, and set the press to work on his own authority." See Lucy Aikin, 'Memoir,' *The Works of Anna Lætitia Barbauld: With a Memoir* (Longman, Hurst, Rees, Orme, Brown, and Green, 1825), i; xii.

Watkins also asserts that the work signals a turn in Barbauld's geographical imagination and prophetic impulses, where she repositions her "visionary poetics on her home soil," casting herself as a "British poet dedicated to writing about British subject matter," and her vision "necessarily local."⁷⁷

However, while local in scope, her topography is neither static nor entirely natural; instead, Barbauld illustrates her position as a "modern" and "enlightened" liberal Dissenter,⁷⁸ as she integrates the man-made features and technologies into her poem, to illustrate a dynamic, moving, and modernizing landscape. In so doing, Barbauld "prioritizes geographical space as the narrative frame for charting change,"⁷⁹ and likewise, she coordinates and positions her female figures firmly within this landscape, illustrating that female spectatorship now plays an important role in viewing and experiencing these technologies and changes firsthand. Barbauld evokes these images of the Worsley coal pit and Bridgewater canal and highlights the larger epistemological exchange occurring, between topography and geology in this moment. Barbauld not only points to the role of industrial technology and canal building in the larger transformation of Britain's geographic boundaries, but she is also, in effect, creating a new regional, geological "map" for her readers that encompasses a new understanding of "here" and "now." In naming and describing the underlying geology of Lancashire, the "bosom of hard rock" and the coal "veins," she illustrates that an accurate geography of the area must now include its subterranean features. Moreover, Barbauld's inclusion of scenes of industry and extractive labor in her topographical poem signals an important change in how writers

⁷⁷ Daniel P. Watkins, *Anna Letitia Barbauld and Eighteenth-Century Visionary Poetics* (Baltimore: Johns Hopkins University Press, 2012), 67.

⁷⁸ McCarthy, 56.

⁷⁹ See Wigen and Winterer, 3.

were thinking about the rural British landscape. Barbauld shows how extractive labor is distinct from other forms of organic and agricultural labor; additionally, she shows how extraction itself is inextricable from the construction of the canal system that now characterizes and navigates the British interior. The canal system underlies and exposes the dynamic geologic features underneath the surface, and the geography of Lancashire's changing regional environment. Finally, Barbauld's inclusion of mines, canals, and extractive labor in "The Invitation" signals an important transformation of the common aesthetic registers of the topographic poem. While she certainly makes use of the form's common pastoral imagery--the green vales, agricultural scenes, and tranquil waterscapes— she also illustrates that even the rural countryside is not immune to the technological innovation and industrial features of the city.

For Barbauld, progress and landscape changes are evident both in the growing canal system that cuts through the rural landscape, as well as the kinds of mineral produce and commerce it transports and facilitates. Barbauld's description of the canals and the coal mine convey her deep ambivalence regarding the rapidly industrializing British landscape. At once, she marvels at the feats of engineering and the labor that has gone into digging the Bridgewater and Sankey canals, and of the mineral riches available to circulate throughout England, intended for its continued economic benefit. However, she also questions the very nature of mapping in capturing the dynamic imaginary of the British landscape and the toll exacted on the miners and on the environment "hard bosom of rock" in her glimpse underground into capitalist modernity. Moreover, she interrogates what extractive labor does to the people who toil below the earth. To set up these multiple transformations and interrogations, Barbauld first invokes the local and rural landscape in the poem's opening topography, lauding traditional

forms of labor and the pastoral, organic economy as means for escape from the onslaught of modernity. At the poem's commencement, Barbauld's narrator seems to resist the kinds of progressive changes that have led to the creation of cities. Barbauld's narrator invites Delia to join her in a rural retreat through pastoral landscapes:

Will Delia, at the Muse's call, retire
To the pure pleasures rural scenes inspire?
Will she from crowds and busy cities fly,
Where wreaths of curling smoke involve the sky,
To taste the grateful shade of spreading trees,
And drink the spirit of the mountain breeze?⁸⁰

Barbauld establishes varying spatiotemporal coordinates and a strong geographic sensibility in the poem's opening lines; she employs anaphora, repeating the terms "Will" and "To" to not only request that Delia join her in the flight to the British countryside, but to simultaneously establish a speculative, future-oriented temporal framework that will bear out later in the poem. These terms also help map fantastical geographic coordinates away from the immediate "Where" of the city with its "wreaths of curling smoke." For Barbauld, "Where" signals a concrete and immediate urban locale that is degraded and polluted.⁸¹ Yet, while the narrator

⁸⁰ Emphasis mine. See Barbauld's "The Invitation: To Miss B****," in *Selected Poetry and Prose*, eds. Elizabeth Kraft and William McCarthy (Peterborough, Ont.: Broadview Press, 2002), lines 13-18.

⁸¹ This present-oriented, urban, and polluted "Where" seems to anticipate Anna Seward's future concept of Birmingham. Seward asserts that if extraction and progress are to continue unabated, Birmingham will soon become the kind of city Barbauld describes as already in existence. Barbauld's figures seek retreat from the present-oriented urban landscape, but not from their present moment in a rural setting, inflected by current technology. The uneasy oscillations between present and future-oriented time and place are a key feature of what Elizabeth Miller describes as "extractive time."

invokes Delia to join her in a feminine retreat from the overpopulation and the coal pollution of the cities, the poem simultaneously celebrates and interrogates the achievements of liberal progress and industrial technology, such as canal construction and coal mining. One such instance is found in its coal mining and canal section, in which Barbauld's narrator hastens Delia away from the silent glades, into the scene of the Worsley coal pits via the new Bridgewater canal system. She says,

Down the green slope *here* winds the laboring plow; *Here*
bath'd by frequent show'rs cool vales are seen. Cloath'd
with fresh verdure, and eternal green;
Here smooth canals, across th' extended plain,
Stretch their long arms, to join the distant main: The
sons of toil with many a weary stroke
Scoop the hard bosom of the solid rock.⁸²

Barbauld's repetition of "Here" converges the general pastoral scene with the present and immediate British canal system and working coal mine. The narrator also uses "Down" and "Here" to mark the important the visual and social coordinates within her topographical schema. These terms do two things: they first create a local frame within which Barbauld places the two women. They also illustrate that the mining landscape is a matrix not only of natural features but also of human labor that is situated below the surface. "Here," signifies that the modern and time-bound are now intermingled with a timeless pastoral scene, indicating that subtle changes are occurring within this rural landscape. She further signals movement between geographic scales and temporal registers in the "join[ing] of the distant

⁸² Emphasis mine, Barbauld, lines 52-60.

main”: as the newly dug canals merge with the ancient river Mersey and the long arms of the canals metaphorically convert into the laborers’ weary strokes.⁸³ Daniel P. Watkins points out that at “first glimpse, the canal system as Barbauld describes it, is not intrusion on the pastoral scene but rather, indeed, a complementary scene of beauty.”⁸⁴ However, in order to reach this complementary scene, Barbauld first makes the women travel through a temporally present and highly localized material world--the Worsley coal pit:

Now through the hidden veins of earth they flow,
And visit sulphurous mines and caves below;
The ductile streams obey the guiding hand,
And social plenty circles round the land.

The previous idyllic mix of the pastoral landscape and industrial development is troubled, as the women journey, against the water’s natural flow, into the bowels of the mine pit. What we see, as the women enter the mine, is a clear topographical transformation from an agricultural landscape to an extractive world. Additionally, Barbauld signals that these new forms of work—canal digging, coal extraction—also work against the natural “flow” of rural labor. Watkins reads Barbauld’s recognition of the coal pits as an articulation of a “diminishing presence of unadulterated and idyllic realms of peace and ease”⁸⁵ and her uncovering of the nightmare reality of hardship and environmental degradation brought about by “scoop [ing],” of the “hidden veins of earth.”⁸⁶ He further points out that “The organic beauty of the farmer

⁸³ In *Fossil Capital*, Andreas Malm speaks about coal’s unique role in capitalism’s propensity for temporal acceleration and spatial dislocation, as coal (and coal-fired Newcomen and Watt steam engines) is portable, self-moving and drives its own production.

⁸⁴ See Watkins, 70.

⁸⁵ Ibid.

⁸⁶ Barbauld, lines 75-76.

following his ‘laboring plow’ is countered in the construction of the canals.”⁸⁷ He argues, “Rather than working with the character and flow of the land, as the farm does, industrial laborers push against it: ‘Resistless, thro’ the stiff opposing clay, / With steady patience work their gradual way.’ The result of this negative relation to nature is the uncovering of the reality of hardship, as the laborers ‘compel the genius of th’ unwilling flood/Thro’ the brown horrors of the aged wood.’” Barbauld’s earlier theme of liberation from the tyranny of resource location and from the hardship of work, is now complicated by these new forms of extractive labor which become clear as the women enter the mine.

This marked change in Barbauld’s attention is emphasized, as the women enter the Worsley pit. Within the mine, Barbauld’s deixis now relies on contexts that emphasize the deeply material nature of the scene; likewise, the language used to describe the mine is, for at least a moment, present-oriented and literal. She uses “Now” and “here” to emphasize not only the travelers’ surprise, but the highly material and immediate nature of the scene: the “here” of the present mine is where pastoral work is now transformed into man’s “weary toil,” and where the air is poisoned by sulfur. In contrast to the pastoral landscape’s natural topography, a setting that offers the two women the ability to exchange the polluted city for the natural countryside, the mine’s “exchanges” are neither natural nor freeing. Instead, they evoke the kind of dystopian nightmare Jason W. Moore points to in the early days of extractive capitalism, where there exists an undetectable exchange of “capital and [fossil fuel] energy for labor.”⁸⁸ The men’s “weary toil illustrates what Gavin Bridge describes as “extraction as a primal pursuit, a business of wresting raw materials that can be converted into

⁸⁷ Watkins, 70.

⁸⁸ Lisa L. Moore, *The Collected Poems of Anna Seward Volume 1* (London: Routledge, 2016), 133.

value. From pits, wells and mines, raw geology is liquidated into energy and money, a double-alchemy at the heart of the modern capitalist economy.”⁸⁹ Barbauld indeed illustrates that the miner’s labor and his body have undergone a kind of alchemical transformation: in his toil, and his efforts to provide the social plenty for the nation, he is now indistinct from the material he mines. “Veins” and “bosom” now denote coal seams running beneath the surface, and “arms” symbolize canal transport of coal to Liverpool. Not only does Barbauld rely upon a substitutive logic to signal the way coal mining and canal building is changing laboring bodies, but this metonymic gesture also points to the entanglement of coal’s outputs with natural and human environments, what Allen MacDuffie calls “not simply a mere ‘transfer of materials’ but an irreversible [and often hidden] reconfiguration of them.”⁹⁰ For Barbauld, this is a mutual exchange; the miner has not only acquired the material properties of the object of his labor, but the extractive landscape also now appears like an organism, endowed with physical, veinous, and vital properties.⁹¹ Barbauld’s position seems to be one of conflicted admiration about the new extractive economy with its attendant technologies and innovations. She expresses a cognizance that in the pursuit of mineral riches and the construction of “ductile streams,” there is a high human cost to extractive labor.

Barbauld’s narrator appears both shocked and captivated by the vast canal network and

⁸⁹ See Bridge’s article, “Contested terrain: mining and the environment.” *Annual review of Environment and Resources* 29 (2004): 205.

⁹⁰ MacDuffie, 36.

⁹¹ The characterization of the earth as a vital being is seen in Seneca, as he speaks about the living character of the world organism, where the earth was organized “much after the plan of our bodies, in which there are both veins and arteries.” Leonardo Da Vinci expands upon this imagery in the 15th century, connecting the earth’s waterways to the flow of human blood through the veins and heart. In his schema, “The earth’s veinous system was filled with metals and minerals.” See Carolyn Merchant, *The Death of Nature: Women, Ecology, and the Scientific Revolution* (San Francisco: Harper & Row, 1980), 23-24.

by the scene of extraction unfolding before her very eyes. Jay Appleton explains in *The Experience of Landscape*, “It is precisely because of its lack of initial associations” that the landscape appears suddenly and surprisingly.⁹² This is not a familiar, pastoral setting; rather, the mine represents an entirely new landscape devoid of common markers and associations. The women view the “alter’d landscape with surprise” as they see “the “hidden veins of earth” meeting at their source, “the sulphurous mines and caves below” that provide the coal-- what she calls a “social plenty circles round the land” --for all of Britain. In these lines, Barbauld appears to nod to Britain’s natural geographical and geological advantage. Indeed, Britain’s wealth of coal was traditionally seen as an explanation for Britain’s economic success at the time of Barbauld’s composition. Joel Mokyr points out that the belief that ““geography is destiny’ is an old and venerable one,” as “accidents of nature as causal factors” were taken as self-evident after 1750.⁹³ David Levine further notes that “England [was] built upon an underground mountain of coal. Its exploitation was the motor-force in the revolution in production that created modern industrial society.”⁹⁴ Mokyr and Levine both point to the embeddedness of this narrative of Britain’s providential natural wealth,⁹⁵ one that

⁹² Appleton is speaking about the British tourist’s experience of the “raw American landscape,” and that without context, it needed to be “argued into respectability.” Barbauld articulates the women’s surprise at the lack of common landscape markers and confers the landscape legitimacy through what appears to be a rubric of the sublime here. See Jay Appleton, *The Experience of Landscape* (New York: Wiley, 1975), 41.

⁹³ See Mokyr, et al., *The British Industrial Revolution: An Economic Perspective*. 2nd ed (Boulder, CO: Westview Press, 1999), 32.

⁹⁴ David Levine, *Reproducing Families: The Political Economy of English Population History* (Cambridge, U.K.: Cambridge University Press, 1987), 97.

⁹⁵ It is important to note, however, that Mokyr interrogates the self-evident nature of Britain’s geographical and geological wealth as the key factors in technological innovation; he raises objections to Levine’s position on the impact of such natural “accidents,” as well as to William Parker’s and D.C. Coleman’s scholarship on this issue, and their claims that coal and iron were determining factors for British industrialization, rather than the existence of domestic industry. Mokyr, instead, argues that “Resource availability plays a somewhat bizarre role in the

Barbauld seemingly takes up in her characterization of the “hidden veins of earth” accessed by “ductile streams” that “obey the guiding hand.”⁹⁶ However, Barbauld does not simply naturalize Britain’s geographic and geological determinism. Instead, she notes that the coal stores are only accessed via the Bridgewater canal system,⁹⁷ and points to the fact that Britain’s advantageous geography and mineral wealth are aided by technology, and, more subtly, by capital.⁹⁸

Barbauld additionally complicates themes of providence, noting that that coal is not simply abundant and geographically dispersed throughout Britain in “hidden veins of earth,” it also “circles” --moving and flowing through physical and economic channels. Playing with themes of spatial and symbolic flow, Barbauld articulates a key notion throughout this section: that canals were starting to liberate the interior regions of Britain from their own material and geographical limitations, and that in concert with coal mining, “canals played a central role in Britain’s industrialization.”⁹⁹ This is evident as the canal evokes geographic

historiography of technological progress”; Mokyr questions the narrative around industry’s reliance on resource abundance, rather than innovation spurred by resource scarcity. He states, “Geography and physical endowment, like most other factors, are rarely either sufficient or necessary” for technological innovation. See Mokyr, 33.

⁹⁶ Barbauld also seems to be nodding towards the Stoics in her characterization of Britain’s providential mineral wealth—and humankind’s dominion over and transformation of earth’s resources for human benefit. See Merchant, 23.

⁹⁷ Barbauld’s own note in the 1797 version of “The Invitation,” clearly identifies the “smooth canals” of her poem: “The Duke of Bridgewater’s canal, which in many places crosses the road, and in one is carried by an aqueduct over the river Irwell. Its head is at Worsley, where it is conveyed by deep tunnels under the coal pits, for the purpose of loading the boats.” See Barbauld quoted in McCarthy, *Selected Poetry and Prose*, 51.

⁹⁸ Mokyr, 33.

⁹⁹ Gerard Turnbull, “Canals, Coal and Regional Growth During the Industrial Revolution.” *Economic History Review* 40, no. 4 (November 1987): 538. 538.

transformation and new economic flows as the result of extractive capitalism.¹⁰⁰ For instance, Barbauld uses the phrase “ductile streams” to denote the hydrologic flow in and out of the coal pit; “ductile,” a term denoting the bending and manipulation of metals, also denotes the shaping of the natural environment from its original form. Additionally, “circles” denotes the creation of a boundary around the nation. Coal marks Britain as distinct from other nations: it constitutes the nation’s subterranean features and drives its manmade innovations, and it reveals the nation as progressive and commercially minded.¹⁰¹ In fact, Barbauld makes resource location,¹⁰² and especially its flow and trade, a feature of Britain’s very character as a nation.

The Bridgewater canal plays an important role in this section: it is a technological wonder that plays upon the poem’s theme of “flight”; yet, for Barbauld, it is also a material and symbolic conduit, denoting the channels of extraction and trade that exist between the rural landscape and the city from which Delia and the narrator must escape. Built between 1758 and 1767, “the canal carried coal from [Francis, 3rd Duke of Bridgewater’s] mines to the river Mersey and thence to Liverpool. It was admired as a triumph of engineering technology.”¹⁰³ Joseph Banks commented upon viewing the canal in 1767: “The benefits

¹⁰⁰ Gerard Turnbull’s pivotal historiography of canals and coal is a departure from other canal studies, insofar as he reframes the literature about canals that tends to project them in national terms. Instead, Turnbull illustrates that the impact of canals was largely local and regional. However, he also notes that as the price of coal remained stable, and even fell, and that in relocating the production of coal to low-cost sites, canals benefitted the national economy, despite their regional character. *Ibid.*

¹⁰¹ See Stephen Daniels and Paul Elliott, “‘Outline Maps of Knowledge’: John Aikin’s Geographical Imagination,” in *Religious Dissent and the Aikin-Barbauld Circle, 1740–1860*, 97.

¹⁰² Ralph Crane points out that coal fields were “spread across the length and breadth of Britain,” quite literally, creating the nation’s geographic boundaries. See his work, *Coal: Nature and Culture*. Earth Series (London, UK: Reaktion Books, 2021), 35.

¹⁰³ See McCarthy’s note on “The Invitation,” 51.

accruing to the country are almost invaluable. Trade is opened between two very large towns [Manchester and Liverpool] before labouring under great inconveniences [. . .] and a plan is struck out before deemed impracticable which has already been followed in several parts of the kingdom.”¹⁰⁴ John Aikin notes the canal’s repute in his later famous account of Lancashire, *A Description of the Country from Thirty to Forty Miles Round Manchester* (1795). He notes that coal “brought from Lancashire” supplying a “large tract of the internal parts of Cheshire,” is the principal commodity carried “upwards.” Moreover, he observes that “The most striking” of its aqueducts was the bridge which carried it across the river Irwell “thirty-eight feet above the surface of the water, admitting the largest barges navigating the Irwell, to go through with masts and sails standing”. “[T]he extraordinary sight never before beheld in this country, of one vessel sailing over the top of another.”¹⁰⁵ Barbauld describes this very scene that Aikin later details:

The traveller with pleasing wonder sees
The white sail gleaming up thro’ the dusky trees;
And views the alter’d landscape with surprise,
And doubts the magic scenes which round him rise.
Now, like a flock of swans, above his head
Their woven wings the flying vessels spread;
Now meeting streams in artful mazes glide.
While each unmingled pours a separate tide;¹⁰⁶

¹⁰⁴ Banks quoted in Black, 235.

¹⁰⁵ John Aikin, *A Description of the Country from Thirty to Forty Miles Round Manchester. Embellished with Seventy-Three Plates* (London: Printed for J. Stockdale, 1795), 113-114.

¹⁰⁶ Barbauld, “The Invitation,” lines 67-74.

Watkins' claim that the canal is a complementary scene of beauty appears true in these lines, as "The most striking" aqueduct is viewed with "pleasing wonder," and the sails and barges are metaphorized as "flying vessels," a "flock of swans" with "woven wings." Barbauld naturalizes the industrial features of the canal and its vessels; this is now a scene marked by flight, flow, and liberation from realist representation, and an entrée into the speculative temporal and spatial parameters of extraction. Indeed, Barbauld plays upon the very themes of liberation and even sublimity in these lines, as the scene is one of "wonder," "surprise," and "magic."¹⁰⁷ This description of the Irwell aqueduct represents an important narrative and visual shift within the poem, as Barbauld's verse turns from largely realist description of landscape features, observed at the level of the narrator's eye, to verse filled with metaphor and allusion, denoting a new, fantastical world¹⁰⁸ soaring above the women's plane of vision.¹⁰⁹ This is, first, a key reversal of prospect: in place of the male landowner looking downwards upon a static landscape and his property boundaries from a fixed height, the

¹⁰⁷ The terms of sublimity coincide with what Mokyr identifies as a kind of "technological shock" that accompanied macroinventions like the steam engine, the canal, and other major innovations, or what he calls "radical technological events," during the Industrial Revolution. See Mokyr, 23.

¹⁰⁸ Percy Adams also notes that similar terms like "'New' (with its companions 'singular,' 'strange,' 'curious') are standard words that appear throughout eighteenth-century travel books denoting encounters with cultures "foreign to the writer's primary audience." This application seems true here, as Barbauld's topographical poem is, likewise, a travel narrative across an unfamiliar landscape. See Adams's "Perception and the Eighteenth-Century Traveler." *The Eighteenth Century* 26, no. 2 (1985): 153.

¹⁰⁹ This very canal scene reappears in Barbauld's and Aikin's later *Miscellaneous Pieces of Prose* (1773) in "The Canal and the Brook, a Reverie," that Stephen Daniels and Paul Elliott describe as a "an allegorical landscape based in actuality, the conjunction of the Duke of Bridgewater's canal crossing the aqueduct over the brook which was diverted into an underground passage." The piece stages a "dialogue between the Genius of the Canal and the Deity of the Stream," as they address claims of beauty and use, taste and commerce, and the tension between the "temporary influence of the canal and its infrastructure to hasten wealth and commerce before they become as useless and ruinous as 'monuments of Roman grandeur.'" See Daniels and Elliott, "Outline Maps of Knowledge," 97.

narrator instead turns the women travelers' vision overhead to moving, flowing images.

We see Barbauld further playing with themes of spatial dislocation,¹¹⁰ as she transforms the barges into swans and sails, the canal's water into a "tide," in effect, bringing the imagery of the seacoast inland. Turnbull argues that before canals, British trade was limited by access points on the coastlines. Indeed, coal itself was deemed "seacoal," based on its transport to London from the Newcastle or Northumberland coast.¹¹¹ In shifting the viewer's perspective upwards and by using naturalizing industrial imagery, Barbauld communicates that the canals are changing the very topography and geography of Britain's terrain—in effect, turning the landscape upside down. Indeed, Jeremy Black notes that in contrast to improving rivers that were largely geographically determined, canals provided a "new-build' capability that offered the possibility of reconceptualizing spatial links and therefore creating a new geography. This creation involved national, regional, and local understanding of space."¹¹² Barbauld's imagery communicates that innovations like the Irwell aqueduct are not only spatially liberatory, they also open new possibilities for

¹¹⁰ The temporal acceleration as a feature of canals is noteworthy; Barbauld uses the term "now" to impart a sense of the immediate and the new to the canal system. Indeed, in contrast to the earlier emphasis on improving river transport, a time-consuming and ultimately abandoned system, canal expansion was extremely rapid. Less than 50 years from the construction of the first inland canal, in 1790, the Oxford Canal was completed; it connected Oxford and the Midlands, and created the final link in the canal transport system that joined the rivers Trent, Mersey, and the Thames. Moreover, the network "enhanced the significance of relevant ports that acted as transshipment ports, notably Liverpool and Hull." See Black, 235.

¹¹¹ Peter Thorsheim explains, "In an age before canals and railroads, the difficulty and cost of transporting coal over land was enormous. Starting in the thirteenth century, however, coal began to be mined near the port city of Newcastle-upon-Tyne in northeastern England. From there it could be transported via ship to other coastal cities. By far the largest market, for coal and all other commodities in Britain, was London. Because of how coal from Newcastle reached them, Londoners long referred to it as sea-coal." See Thorsheim, 3.

¹¹² See Black. 235.

commerce and trade of commodities, once only available at the nation's periphery.¹¹³ In this scene, Barbauld calls the very idea of place, topography, and geography into question, as manmade canals now soar overhead, with the ability to dislocate the rivers and coasts to the interior. Indeed, the coal itself represents a kind of liberation from geographic determinism and what Jeremy Black calls "the pressures of distance." It was "readily transportable, and certainly more easily so than wood, and notably in energy equivalence [. . .] Coal could be mined throughout the year, whereas water mills were affected by ice, flooding, and summertime falls in water flow. Without transport, coal was of limited value, but coal with transport could serve as the basis for the creation of buoyant mixed-industrial regions with large pools of labor and demand and special services."¹¹⁴ Barbauld seems to recognize that coal has the capacity to liberate nature from itself and to open new territory for poetic representation.

Yet, what Barbauld cannot seem to resolve is that while the canals topographically liberate the landscape from the tyranny of resource location and from nature's restrictions, and possess the ability to exchange ground for air, below ground, they nonetheless require extractive labor, with its associated forms of toil and oppression. Barbauld's depiction of the Bridgewater canal and the Worsley coal pits are highly specific, and her geographical schema is, at first, regional and immersed solely within the Lancashire countryside. Barbauld uses local depictions to highlight the central role of canals and rivers in shaping the spatial dynamics of Britain's key modernizing regions, and engages in what Herson calls an

¹¹³ Mokyr notes that commodity trade, liberates a nation from "the arbitrary tyranny of resource location." Again, Barbauld is highly cognizant of the role canals play in trade and in "liberating" the interior of England from its own geographic determinism.

¹¹⁴ Black, 228.

“exploration of the relationship between economic activity and transport flows and the nature of links between producers, distributors, and consumers . . . [as well as] the costs and benefits to the national economy.”¹¹⁵ Barbauld continues themes of commerce and innovation as the women continue their journey out the bowels of the Worsley coal mine and pass in front of Warrington Academy. Barbauld describes the school in laudatory terms:

The Muses here have fixt their sacred seats.

Mark where its simple front yon mansion rears,

The nursery of men for future years!

Here callow chiefs and embryo statesmen lie,

And unfledg'd poets short excursion try.¹¹⁶

Employing the future-oriented temporality, characteristic of the topographical poem, Barbauld repeats the trope of flight and liberation, characterizing Warrington as a kind of nest for future leaders and statesmen. She again alludes to birds and the seacoast in these lines, using the terms “callow,” and “unfledg'd” to denote the young men’s future potential. However, “callow” also connects the Warrington pupils’ future success with the canal building and extractive schemes, as the term also denotes a top layer, in mineral extraction or quarrying, which must be removed to reach the material hidden below.¹¹⁷ In this, Barbauld alludes to the kind of pedagogical process involved in training the young students: this is precisely the kind

¹¹⁵ Herson quoted in Peter Maw, *Transport and the Industrial City: Manchester and the Canal Age, 1750–1850*. ([N.p.]: Manchester University Press, 2017), 4-5.

¹¹⁶ Barbauld, lines 80-84.

¹¹⁷ See “callow, adj.1 and n.1”. OED Online. December 2022. Oxford University Press. <https://www-oed-com.proxy.uchicago.edu/view/Entry/26472?rskey=KshVRd&result=1&isAdvanced=false> (accessed December 16, 2022).

of metaphoric crossover that evolves throughout her poem in reference to extraction and mining, and the connection of extraction to liberatory and future-oriented temporalities. In another series of exchanges, Barbauld then transforms the Bridgewater canal into the “Mersey’s gentle current,” and describes the Mersey as “a vulgar stream,/Reflects th’ ascending seats with conscious pride,/And dares to emulate a classic tide./Soft music breathes along each op’ning shade,/ And soothes the dashing of his rough cascade.”¹¹⁸ As we see earlier in the poem, Barbauld highlights the canal system as the result of scientific innovation, and waterways as crucial for the extraction and development of domestic national wealth; however, now, she connects these innovations to the Mersey and to Warrington and their role in the creation of future economic and political leaders that will represent Britain’s commercial interests abroad.¹¹⁹ Barbauld employs imagery that again evokes the seacoast and that ties Warrington and the Mersey ¹²⁰ to wider global parameters and to future transnational trade:

Thro’ the long perspective of distant years,
When this, this little group their country calls

¹¹⁸ Barbauld, lines 88-92.

¹¹⁹ In “Virtuous Commerce and Free Theology,” Gregory Claeys points out that commerce was part of the Dissenting academic curriculum starting in the eighteenth century. This was due, in part, to the popularity of the smaller, non-sectarian academies that catered to merchants’ sons and other interested in practical commercial education. Malachy Postlethwayt, proposed a two-year course of studies that would include foreign exchange, writing, accounting, funds an stocks, custom practices, modern languages and geography. Claeys asserts that this educational model was “also taken up by Defoe,” who, himself, was educated at Newington Green, Charles Morton’s dissenting academy. See Claeys’ article, “Virtuous Commerce and Free Theology: Political Economy and the Dissenting Academies 1750–1800.” *History of Political Thought* 20.1 (1999): 145-46.

¹²⁰ Barbauld’s description of the Mersey as a “vulgar stream” is important, as it alludes to its commercial purposes, rather than to its natural or aesthetic features. Indeed, Aikin later describes the Mersey solely in terms of its role in coal transport, calling it an object of “commercial speculation.” See Aikin, *A Description*, 108.

From academic shades and learned halls,
To fix her laws, her spirit to sustain,
And light up glory thro' her wide domain! [. . .]
While those, impell'd by some resistless force,
O'er seas and rocks shall urge their vent'rous course;
Rich fruits matur'd by glowing suns behold,
And China's groves of vegetable gold;
From every land the various harvest spoil,
And bear the tribute to their native soil:
But tell each land (while every toil they share,
Firm to sustain, and resolute to dare,)
MAN is the nobler growth our realms supply,
And SOULS are ripen'd in, our northern sky.¹²¹

Barbauld quite brilliantly anticipates the growth of overseas trade as an extension of the internal transformations occurring on Britain's home soil.¹²² Barbauld evokes themes of

¹²¹ Barbauld, lines 134-138;145-154.

¹²² J.E. Inikori astutely contends that Arthur Toynbee, who wrote what is considered the first "systematic and elaborate study" of the First British Industrial Revolution, is commonly read as attributing the cause of the Revolution to the change from mercantilism to *laissez faire* economic policy. However, Inikori asserts that when we look at other parts of Toynbee's study, namely Chapter IV, "England in 1760, Manufactures and Trade," we see that Toynbee considers the growth of overseas trade as the principal cause of change: what he calls "the all-corroding force of foreign trade" that destroyed "the old simple conditions of production and exchange." Toynbee also argued that trade with the Americas was primarily responsible for the growth of English foreign trade during the period of the Industrial Revolution. See J.E. Inikori, *Africans and the Industrial Revolution In England: a Study In International Trade and Development* (Cambridge [England]: Cambridge University Press, 2002), 93-94; see also Arnold Toynbee and Benjamin Jowett. *Lectures on the Industrial Revolution of the 18th Century in England: Popular Addresses, Notes and Other Fragments* (Humboldt, 188), 33-34.

providence and transport once again in this section, using the phrase “impell’d by some resistless force,” to signal that a guiding force is at hand in scaling up domestic extraction and conveyance. Here, the domestic coal veins and inland “coast” are transformed into the “seas and rocks,” smoothly guiding the men toward foreign climes. No longer do men “toil” against the hard bosom of rock, but instead, nature now works in concert with providence, acting as a kind of channel that connects Warrington with the world. Barbauld notes how Warrington’s curriculum, aided by “heav’n-born science” plumes her eagle wings.” In concert, these forces transport the Academy’s young leaders onto the global stage: “O’er seas and rocks shall urge their vent’rous course.” Barbauld calls these young adventurers ¹²³ the “nobler growth our realms supply,” denoting that humans will be the most valuable commodity transported across the seas, and that future capital will be human capital nurtured and developed according to Warrington’s particular curriculum--its “science.”¹²⁴ Barbauld’s characterization of the future leaders, taught Warrington’s scientific and commercial principles, do not work against the environment; instead, like the rocks and ocean, they are part of a larger, natural economic and scientific flow, serving as individual agents of Warrington’s commercial interests in the growing competition for world trade. In this imagined, future landscape, Barbauld finds the perfect mix of modern science, commerce, and interestingly, a resuscitated fantasy of pastoral

¹²³ Again, “adventuring” and its multiple iterations denote mine speculation and sinking during this period.

¹²⁴ Claeys asserts that “The most important of the Dissenting academies to take commercial subjects seriously” was Warrington. He states that this academy “had the largest proportion of students ‘intended for a life of Business and Commerce,’” (twenty-five percent of students between 1757 and 1783 focused on commerce) and the student body came from as far away as America and the West Indies. The commercial course was a three-year track, that included subjects such as ‘manufactures, traffick, coins,’ and was central to individual lecturers’ curricula. For instance, Joseph Priestley “esteemed chemistry as a prerequisite for commercial geography and as a subject necessary for the citizens of a state engaged in competition for world trade.” See Claeys, 146-47.

retreat. While England's city, and now its domestic, rural countryside is irrevocably marked by the extractive industry and toil, the "Rich fruits matur'd by glowing suns behold, / And China's groves of vegetable gold"¹²⁵ offer withdrawal from the darker aspects of modernity and industrial labor that have already taken hold at home; modern commerce, instead, promises Warrington students return to an organic, agricultural economy of the past.

In fact, Barbauld's path for future expansion is a dichotomy of regression and growth. The Warrington students, following the same route as Delia, hasten away from a rapidly industrializing world back into an unspoiled, pastoral landscape. There, labor will be mutually distributed between the Warrington leaders and their foreign subjects: "But tell each land (while every toil they share, / Firm to sustain, and resolute to dare,)," restoring the kind of ease and resistless work¹²⁶ that has disappeared from Britain's "native soil."¹²⁷ In this vision of shared, organic work, Barbauld appears to refute her earlier vision of arduous, vanquishing labor--what J.G.A. Pocock calls a fantasy of industrialization with "Economic man as

¹²⁵ Although a term for saffron, "vegetable gold" also seems to be a play on "black gold," another phrase for British coal. Moreover, Barbauld seems to be evoking the Silk Road commodity flow between China and Britain here, as gold was commonly transported from the British Isles to China until sea transportation resulted in the Silk Road's decline two centuries before the publication of "The Invitation."

¹²⁶ Priestley notes in his *Lectures*, "neither agriculture nor trade can flourish where the general ease does not begin with the class of labourers." Importantly, Priestley also connects a country's transport systems, its "good roads, or canals" to a general flourishing of agriculture and trade. See Priestley, *Lectures on History, and General Policy; to Which Is Prefixed, an Essay on a Course of Liberal Education for Civil and Active Life*. By Joseph Priestley (Dublin: printed by P. Byrne, 1788), 310.

¹²⁷ Carolyn Merchant notes that this vision of an agricultural utopia was an early-modern commonplace, in which "all parts of the natural and social community were interrelated in an organic unity in which both human and natural components were of equal value in the functioning of the whole," and that "the collective good was greater than the advancement of any one part over the others." See Merchant, 95.

masculine conquering hero.”¹²⁸ Barbauld’s economic man instead uses science and industrial innovation to bolster labor, “Firm to sustain.” And yet, Barbauld leaves the reader in ambiguous terrain at the conclusion of her glorious future vision of “Britain’s thunder,”¹²⁹ and the expansion of its home territory through intellectual labor and commercial circulation.¹³⁰

While Barbauld legitimizes an expanded intellectual empire based on Dissenting science, her model for colonial expansion is not without ambiguity. Despite her advocacy for intellectual labor, she envisions a kind of fracture occurring between the men, as “Some pensive creep along the shelly shore,” while others “trace with curious search the hidden cause/Of nature’s changes, and her various laws;/ Untwist her beauteous web, disrobe her charms, And hunt her to her elemental forms.”¹³¹ In contrast to the imagined union between nations, and subsequent communal work and commerce, Barbauld introduces a marked division of labor between the men,¹³² as they pursue individual scientific and economic

¹²⁸ See J.G.A. Pocock, *Virtue, Commerce, and History: Essays on Political Thought and History, Chiefly in the Eighteenth Century* (Cambridge: Cambridge University Press, 1985), 114.

¹²⁹ Barbauld, line 171.

¹³⁰ Isaac Kramnick contends that Joseph Priestley’s own theory of commerce included ideas around human perfectibility, drawn from Hartley’s associationist psychology, as well as human happiness. Priestley advocates for “industry and zeal,” and in his *Catechism for Children and Young Persons*, wherein he offers a negative reply to the question, “Will not an application to worldly business interfere with the duties of religion?” Instead, he remarks, “we please God the most, by doing that which makes ourselves and others the most happy.” See Joseph Priestley’s *A Catechism for Children and Young Persons* (London, 1787), 27. See also Isaac Kramnick’s “Eighteenth-Century Science and Radical Social Theory: The Case of Joseph Priestley’s Scientific Liberalism,” *Journal of British Studies* 25 no.1 (January 1986): 7.

¹³¹ Barbauld, lines 155; 160-162.

¹³² Adam Smith notes that “As by means of water-carriage a more extensive market is opened to every sort of industry than what land-carriage can afford.” He further connects the seacoast and banks of navigable rivers to industry “of every kind” that “naturally begins to subdivide and improve itself,” and these improvements extend themselves to the inland part of the country. Barbauld seems to be reversing course here, as she illustrates the movement from inland to the coast, and the division of labor as a consequence of the Warrington students going abroad. See Smith, I.22.

schemes abroad.¹³³ Moreover, she states that they “Untwist,” “disrobe,” and “hunt,” nature in their “ardent” expansion of Britain’s geographical boundaries, and in their quest for earth’s “elemental forms.”¹³⁴ In the end, it seems as if the same forces of science and industrialization at home, and the harsh material processes that accompany domestic coal extraction and circulation, also shape her ambiguous vision of future global growth. She portends a transcontinental future that does not mirror the ease of Britain’s preindustrial, agricultural past, but rather one that is an imminent reflection of its current brutality and laboriousness: the result of an “expanding economy based on inorganic, nonrenewable metallic wealth.”¹³⁵ Indeed, as she concludes her poem, and despite her “optimistic sense of scientific progress,” Barbauld states that the men’s work brings both the promise of “long posterity”/And pay a life of

¹³³ Barbauld’s introduction of a division of labor earlier in the poem, introducing marked differences between agricultural and extractive labor seems to lay the groundwork for this further division between the men, and the application of science and technological innovation and refinement. As Mokyr notes, “A division of labor between workers and engineers could create a special class of outsiders” who used their intellectual powers to observe and suggest improvements. Barbauld’s Warrington students and their applications of “science” do precisely this. See Mokyr, f.n. 65.

¹³⁴ Again, in *The Death of Nature*, Carolyn Merchant traces the classical roots for this long-standing trope of mining as a sexual violation of a female Earth. She notes that Pliny warns in his *Natural History*, “We penetrate into her entrails, and seek for treasures . . . as though each spot we tread upon were not sufficiently bounteous and fertile for us!” He further connects gold mining to avarice and iron extraction as the source of human cruelty borne out in war, murder, and robbery. Ovid continues this theme of sexual plunder and violence in his *Metamorphoses*, stating that in the Golden Age,

people were unaggressive, and unanxious.
And Earth, untroubled,
Unharried by hoe or plowshare, brought forth all
That men had need for, and those men were happy, [. . .]
The rich earth
Was asked for more; they dug into her vitals,
Pried out the wealth a kinder lord had hidden
In stygian shadow, all that precious metal,
The root of evil.

See Pliny and Ovid quoted in Merchant, 30-32.

¹³⁵ Merchant, 61.

hardships by a line.” Her utopic, future-oriented vision for Britain’s expanded commerce includes the specter of adversity and toil: features that characterize current extractive labor at home. These hardships appear to overwhelm the poem’s muse, requiring her to withdraw from her poetic task, her own “lines too faint,” to properly accommodate a new geographic vision for Britain’s expanding borders, one that includes both the posterity and hardship that accompanies industrial bourgeois ideology. She, too, seeks retreat from this inevitable extractive world, and from the more oppressive features of her imagined liberal capitalist future; the Muse cannot live in or represent this world, and instead, she “hides her head in the green lap of spring.”¹³⁶

In sum, Barbauld’s topographical poem represents a new textual phenomenon and a revision of the genre’s own conventions. Its treatment of the Bridgewater canal system and Worsley coal mines, and the expansion of Britain’s geographic borders abroad through intellectual labor and extraction, illustrate Barbauld’s cognizance that Britain’s topography stands at a crucial intersection of geographical and industrial transformation. Barbauld deploys deixis and a concerted engagement with extractive labor in “The Invitation,” to illustrate that the canal system, in service of coal mining and transportation, possesses the ability to dramatically transform the British landscape, bringing the coast and trade inland, and spatially displacing the British rural countryside to realms above, below, and abroad. “The Invitation” is a poem that collapses “space and lessens difference as well as distance and a sense of distance,”¹³⁷ in its illustration of shifting regional dynamics, and the “extent to which what stimulated growth was not necessarily intrinsic to particular towns but to do with external

¹³⁶ Barbauld, line 188.

¹³⁷ Black, 233.

relationships in the shape of their linkages with town and country across at least a regional range.”¹³⁸ While “The Invitation” deploys the genre’s common poetic tropes—future-oriented time, meditations on major rivers, and scientific and geographic descriptions of the locale—Barbauld’s landscape is hard to pin down. Black notes that in this period, “there was a conventional character to the depiction of the country, and notably to the emphasis on county units and landed seats, a depiction that did not respond to coal.”¹³⁹ However, we see a completely different phenomenon happening in Barbauld’s depiction of rural Lancashire. Barbauld’s “Invitation” presents an entirely new prospect of the Lancashire countryside, and of the world beyond its inland parameters.¹⁴⁰ The county’s rivers have become overhead canals, its surface topography now includes the subterranean coal mine, its prospect becomes imbricated with extractive labor and toil, and its solitary male landowner has transformed into two women travelers, who witness and record these dramatic transformations in real time. In essence, Barbauld’s new topographical poem reflects the kind of change Brigitte Peucker famously describes occurring throughout the genre during the eighteenth century: “the topographical poem is not a medium of human transcendence or transformation but rather an emblem or mirror of the perambulatory figure in the foreground—of man as man.”¹⁴¹ For Barbauld, the foreground of human presence is reflected in technological innovations, the

¹³⁸ *Ibid.*, 231.

¹³⁹ *Ibid.*, 226.

¹⁴⁰ It is important to note that as coal production rose in counties like Lancashire as well as in Wales and Central Scotland, landlords ordered surveys and maps of their properties in helping search for and exploit reserves. For instance, William, 6th Earl of Derby, ordered surveys of his Lancastrian estate, Knowsley Park. Sir Richard Molyneux “followed suit,” and much of the coal mined in Lancashire was then exported through Liverpool and Wigan to Ireland. Jeremy Black notes that sea routes, like inland waterways, were important, for the overland transport of bulky goods remained expensive.” *Ibid.*, 227.

¹⁴¹ See Brigitte Peucker, “The Poem as Place: Three Modes of Scenic Rendering in the Lyric,” *PMLA* 96.5 (1981): 905.

canal and the coal mine, that bring movement, toil, and circulation to the rural countryside. Yet, the poem illustrates that “man as man” does not simply move through a prescribed landscape, guided by “knowledge of the topoi”¹⁴² and comforted by preconceived responses to its picturesque and natural, sublime features. Instead, Barbauld illustrates that the rural landscape of her moment lacks such stable guidance; in keeping pace with the burgeoning extractive economy, the landscape of “The Invitation,” is one of dizzying material and linguistic substitutions and spatial collapse—where coal energy and capital stand in for labor, “here” and “there” are interchangeable prospects, and artificial rivers soar overhead. Barbauld’s cognizance of the changing study and representation of coal not only provides insight into her middle-class sensibilities and the connection of Dissenters to commercial society, and global growth, but it is reflective of her wider engagement with the growing mineral economy in Britain in the latter half of the eighteenth century. As we see in “The Invitation,” she provides a valuable geo-topographical model for her readers that scales between the local and specific to the generalized and abstract and global, depicting individual scenes of coal mining and connecting the mine to larger channels and sites of commerce and utility.

¹⁴² *Ibid.*, 905.

Coda/Conclusion

Barbauld's poem concludes in ambiguous territory, leaving the reader with an impression of the exhausted Muse who denies the rapidly industrializing landscape before her, and instead, seeks refuge within a pastoral landscape. The modernizing British topography characterized by canals, mines and aqueducts is ultimately traded for an unnamed, idyllic, and poetic realm. Yet Barbauld's exploration of the effects of coal mining, its role as "social plenty," and alterations to standard textual forms, can be seen elsewhere in her literary canon: namely, in her later *Lessons for Children of Three Years Old* (1788). Like "The Invitation," in *Lessons*, Barbauld similarly insists on the liberating values for children of science, industry, and business,¹ and she illustrates how coal--or rather, coal as part of a larger grouping of elements--provides multiple material vectors that help her introduce different conceptual and formal planes to her young audience. Within *Lessons*, she uses coal as a kind of touchstone upon which to comment on the present state of the child's changing environment and to engage with a burgeoning fossil-fuel economy, all the while gesturing to the imaginative and visionary realms beyond her young reader's immediate surroundings. What is key in Barbauld's exploration of coal in *Lessons*, is the primacy she places on its role within a dynamic network of landscape transformation and scaling, and how a close examination of coal and its extraction unearths the larger networks that move and transport goods from the mine into the child's home and world.

Barbauld's brother, John Aikin, also picks up on the themes of industrial growth and canals from in his work for young readers, *England Delineated*, also published in 1788. Like

¹ Inkster, 134.

Barbault's work, *England Delineated* places special emphasis on the description of a "number of sites of the material world," including landscapes, regions, and a "spatial display of clearly ordered information."² Aikin offers what he calls a "general view of each county" of England and Wales "with respect to its geography, products natural and artificial, commerce, towns, and other principal objects."³ He looks at modern industrial centers, and connects domestic urban growth directly to the expansion of the British canal system. Stephens and Elliott assert that the canal is an important narrative device within Aikin's work, as it carries the young reader from place to place, across county boundaries and directly into various scenes of manufacture, commerce, and trade.⁴ For instance, Aikin notes about Liverpool, one of Lancashire's principal industrial cities,

Situated at the great inlet of this part of the county, by means of the Mersey and its communicating rivers, [it] has grown; in proportion to the increase of interior wealth and population, so as at length to have become, with respect to extent of commerce, undoubtedly the second port in the kingdom. Its harbor is artificial, consisting of large docks formed in the town, and communicating with the river Mersey. The entrance of this river is dangerous, though every direction is given to render it more secure. The trade of Liverpool is very general; but it is to be lamented that one of its principal branches is the inhuman traffic for slaves on the coast of Guinea, to supply the West India islands, from whence in return great quantities of sugar, cotton, and other

² Daniels and Elliott, 94.

³ John Aikin, *England delineated; or, a geographical description of every county in England and Wales: with a concise account of its most important products, natural and artificial. For the Use of Young Persons* (London: printed by T. Bensley, for J. Johnson, St. Paul's Church-Yard, M,DCC,LXXXVIII. [1788]),v.

⁴ Daniels and Elliott, 105.

products are imported.⁵

Here, Aikin maps Liverpool through multiple means, first spatially, describing its interior situation and proximity to geographical and natural features, the Mersey and its “communicating rivers.” He then importantly ties Liverpool’s geographic situation at “the great inlet” and its proximity to both natural and artificial waterways and ports, to its economic growth and “extent of commerce,” which includes it serving as one of the “principal branches,” of the transatlantic slave trade. The canal does not simply move raw materials from Britain’s interior to the periphery; instead, it is now a main conduit for the rising commercial culture within Britain, as it supplies the public with luxury consumer goods from the colonies. Importantly, Aikin illustrates how the domestic waterways—canals and communicating rivers, both natural and artificial—are part of a larger network of not only moving goods in and out of the interiors of England, but that these waterways are part of the larger system of moving humans from Africa to the colonies, a fact that Aikin laments, and yet one that he suggests is a matter and consequence of Lancashire’s regional economics and transport systems.

He further illustrates how commerce ties Liverpool to other global sites fundamental to the colonies—“the American, Baltic, and Portugal branches”—and notes that Liverpool’s “communication with Ireland is very extensive.” Aikin’s work, much like Barbauld’s earlier poem, illustrates how waterways create and connect regional centers of commerce and communication, and the ways domestic transport channels then open out onto a larger global scale. After describing the canal’s connection to global trade, Aikin turns his focus back to Liverpool’s regional aspect and to specific canal works, noting that “Liverpool

⁵ Aikin, 78.

communicates, by means of the Mersey, with Warrington, and with a canal called the Sankey canal, running to some coal-pits and other works a little way up the country; by means of the Irwell, and also the Duke of Bridgewater's canal, with Manchester;[. . .].”⁶ As we see in Barbauld's earlier “Invitation,” the canal is of central import within this regional network—here, the Sankey, Irwell, and Bridgewater canals link smaller towns such as Warrington⁷ with the Mersey River, and with larger ports like Liverpool--finally branching out into the Haydock coal pits and other major industrial works such as Staffordshire, which lie further afield.

Throughout *England Delineated*, Aikin threads the material and economic growth of what would later be recognized as the First British Industrial Revolution, by mapping its specific counties and by showing how the different waterways intersect and benefit the nation through manufacture and interconnected trade. Indeed, he illustrates that Warrington's urbanization, its connection to larger ports of trade, and its important role in supplying the British Navy are each the direct result of it being made navigable by the Sankey canal. Importantly, Aikin connects industrial prosperity within counties like Lancashire to “the uncommon plenty of coals of almost every kind in this county.”⁸ Aikin concludes his commentary on Lancashire with a description of the Duke of Bridgewater's canal, who began his “magnificent plans by the canal from his coal-pits to Manchester,” and are “carried by a

⁶ Ibid., 79.

⁷ Aikin notes Warrington's particular industry: the manufacture of sail-cloth, “which contributes much to the supply of the royal navy; and also of sacking. Glass-houses and copper-smelting works are likewise established here (the latter at present disused); and many hands are employed in pin-making. The cotton trade is now gaining ground in this place.” A nod to Adam Smith, Aikin picks up on Warrington's pivotal role in burgeoning localized, industrial growth, as well as its role in the larger cotton trade and military network, and indeed, within the division of labor in early capitalist schemes.

⁸ Ibid., 82.

noble aqueduct across the navigable river Irwell,” joining up with the principal one in Cheshire.⁹ Aikin nods to the fact that the Duke of Bridgewater uses the canal to exploit the market for coal, and that the building of the canal—its tunnels driven a “vast way underground, beneath the bottom of the coal-pits”—is a natural and obvious development in extracting and transporting Britain’s seemingly endless abundant mineral wealth via waterways, such as the coal from the Worsley pits.

However, what Aikin's writing does not reveal, is that the growing British canal system was borne out of exhaustion. By the middle of the eighteenth century, transport of coal and of goods across Britain’s natural water navigation network had hit its environmental limit; the extension of river transport had largely been exhausted, and the cost of inland coal transport across roads and wagonways was prohibitive.¹⁰ Indeed, E.A. Wrigley notes that before the building of canals, although inland water transport could facilitate economic exchange within a localized river basin, “it could not provide a solution to the problem of improving exchange between different river basins.”¹¹ This was the circumstance “prevailing in organic economies,” as the high cost of transport severely limited growth, the division of labor, and the expansion of markets.¹² Thus, the move to add more mileage to the natural waterway system, in effect, “creating a waterway where none had hitherto existed,” was necessary and as Aikin denotes in *England Delineated*, it was a process directly connected to the rising scale of coal extraction in Lancashire and in other rural parts of the country. Wrigley notes that mineral extraction was highly localized, what he calls “punctiform,” and that large volumes of

⁹ Ibid., 87.

¹⁰ Wrigley estimates that in the eighteenth century, the land carriage of coal doubled its pithead price within ten miles of the mine. See Wrigley, 103.

¹¹ Ibid., 102.

¹² Ibid.

coal were moved along a single or several small routes. He asserts that this highly concentrated phenomenon of both extraction and consumption—as much of the coal was consumed by a nearby large town, or by the pit itself—created a favorable environment for the investment into local transport infrastructure such as canals. However, as Michael Flinn also argues, creating canals, “a proceeding necessarily more expansive than the mere improvement of an existing waterway,” had to be justified by the fact that the carriage of coal would “both meet the interest on a large outlay of capital and undercut existing road or wagonway freight charges.”¹³ As the volume of extracted coal increased, so too did the need for cheap transport; individual collieries in this period were starting to measure their output in terms of tens of thousands of tons, and the “cost per ton-mile” of coal transported via waterways was one-twentieth of the price of land carriage.¹⁴ These kinds of calculations of the outlay of capital and prospective gain provided the impetus for the digging of canals and for the creation of a nationwide network that brought cheap coals into the hearths of British households, and provided an economical fuel source for a number of new industries. Although most canals were built to serve local needs, and the length of an average haul was approximately twenty miles, in fact, the cumulative impact of canal construction was momentous, as the Industrial Revolution gathered pace, driven and maintained by coal extraction and transport.

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As a conclusion to this study, it is necessary to return to Shelley’s *Defence* once again, and my earlier claim that, in describing the creative potential of the poet’s mind, Shelley uses

¹³ Flinn, 181.

¹⁴ *Ibid.*, 146.

the language of combustion, cataclysm, and ultimately, of exhaustion. As we see throughout the works addressed in this dissertation, from Jago's *Edge-Hill* to Aikin's *England Delineated*, exhaustion of natural resources such as navigable rivers and surface coal stores is a central issue that arises and is depicted throughout the literature and poetry of the period.

And yet, there exists no clear picture of mineral extraction and issues of finitude and depletion. The British public would not have possessed a conception of large-scale resource exhaustion, calculated by Jevons fully fifty years later than the period under examination. However, tangible exhaustion of natural landscape features spurred the canal-mania of the eighteenth and early nineteenth centuries, and writers such as John Williams' *Natural History of the Mineral Kingdom* (1789) and Henry Gray McNab's "Letters on the Coal Duty and Coal Supply" (1793) record their growing concern about the extent of Britain's coal measures, and the possibility that there is, in fact, a limit to the nation's abundant mineral wealth.¹⁵ Indeed, Williams notes the prevailing belief held by most "inhabitants of Great Britain," is that "our coal mines are inexhaustible." Yet Williams takes it upon himself to "make a fair representation" of the reality of exhaustion, stating, "When our coal mines are exhausted, the prosperity of this flourishing and fortunate island is at an end."¹⁶

Throughout my chapters, I argue that the writers and poets engage with and depict changes to the British landscape and to its social world, recording in verse and in prose responses of shock, wonder, disdain and ultimately, ambivalence, about the growing mineral economy and of modernity. What this project has attempted to trace is a concept of nature that

¹⁵ I am indebted to Fredrik Albritton Jonsson for pointing me to these works. He addresses Williams, in particular, in his work 2013 book, *Enlightenment's Frontier*.

¹⁶ John Williams, *The natural history of the mineral kingdom in three parts. Part I. Of the Natural History of the Strata of Coal, and of the Concomitant Strata*. Vol. 1. (Edinburgh: printed for the author, by Thomas Ruddiman, 1789), 159; 172.

is contingent, mobile, and ultimately, evolving, as the result of coal mining. As the Industrial Revolution gathered pace, and picturesque travel and the extractive industries opened up new touristic and visual access to geological forms—strata, fossils, fractures, faults—writers, too, engaged in a cultural discourse around depth, production, supply, industry, and temporality.

Contrary to Williams' claim that the British public possessed no conception of coal exhaustion, I argue that each of the writers in this study record conflicted response to landform changes, including a cognizance of exhaustion and an anxiety about the limits or lack thereof, of the burgeoning British coal industry. Throughout the project, this cognizance of extraction and attendant exhaustion appears in multiple guises. It emerges thematically and through formal registers: we see it in Marianne Dashwood's and Fanny Price's separate apostrophes to avenues of oaks upon the improving estate, in Anna Seward's cognizance of coal pollution in "To Colebrook Dale," it appears in Barbauld's topographical poem, "The Invitation," in her retreat from scenes of industry, and it is evident even in Jago's early celebration of the gentry's expanding prospect, as diluvian geology captures the imagination of the landed classes and offers them a way to increase their earnings, and to deepen their hold over rural production.

As I think about future directions for this project, I return once again to the visible structures of combustion and exhaustion during the period, and new innovations and economic structures that arise amongst the coal-extracting sector in response to ideas around natural limits and resource depletion. What my research has shown is that that coal exhaustion, during the Romantic period, is, in fact, a reality. Throughout the study, the poems and prose works I examine each illustrate that exhaustion is a highly localized and what I would call a site-or mine-specific phenomenon. This is nowhere clearer than in Jago's *Edge-*

Hill, as he describes the exhaustion of surface reserves and how this form of mineral depletion leads to the landed classes' greater capitalization and investment into mines. Jago's depiction of exhaustion is a positive, or at least resilient, one. Within the poem, superficial exhaustion spurs new technologies, drives innovative mining methods, and introduces novel economic structures to ensure the continued viability of a working coal pit, and the future success of a colliery. Jago's poem is but one illustration of the multiple ways the gentry imbricates ideas of exhaustion into beneficial economic structures, such as rents and leases-- structures that ensure their continued viability into an unknown future, and which give rise to a new managerial class of surveyors and mine viewers who work in collaboration with the landed classes to spur on increased production and consumption. What *Edge-Hill* and the other works in this study do not address, but which merit further investigation are notions of output restrictions and fixed and tentable rent structures: measures used by the landed classes to ostensibly safeguard against exhaustion and overworking, but that also illustrate that exhaustion is, in fact, economically beneficial for the gentry. In fact, as I look to the future of this project, and the role of the social and literary worlds in describing and perpetuating the cultural discourse around extraction and exhaustion, it is necessary to look at how literature and poetry during the Romantic period further explores the complex relationship between limits to the organic landscape, visible structures of exhaustion, and the rise of innovations, technologies, and new discourses to contend with and capitalize on depletion.

Bibliography

“About the Red Books.” *The Morgan Library & Museum*, 2 Apr. 2014,

<https://www.themorgan.org/collection/Humphry-Reptons-Red-Books/About-the-Red-Books>.

Abrams, M. H. *The Correspondent Breeze: Essays on English Romanticism*. New York: Norton, 1984.

Abrams, M. H. *The Mirror and the Lamp: Romantic Theory and the Critical Tradition*. London ; New York: Oxford University Press, 1971.

Adams, Percy. “Perception and the Eighteenth-Century Traveler.” *The Eighteenth Century* 26, no. 2 (April 1, 1985): 139–57.

Addison, Joseph, and Adolph Charles Louis Guthkelch. *The Miscellaneous Works of Joseph Addison*. London: G. Bell and Sons Ltd., 1914.

Adickes, Sandra Elaine. “The Social Quest: The Expanded Vision of Four Women Travelers in the Era of the French Revolution.” Order No. 7808500, New York University, 1977.
<http://proxy.uchicago.edu/login?url=https://www.proquest.com/dissertations-theses/social-quest-expanded-vision-four-women-travelers/docview/302855619/se-2>.

Aikin, Arthur. *A Manual of Mineralogy*. London: Longman, [et al.], 1814.

Aikin, John. *A description of the country from thirty to forty miles round Manchester. Embellished with seventy-three plates*. London: Printed for J. Stockdale, 1795.

Aikin, John. *England delineated; or, a geographical description of every county in England and Wales: with a concise account of its most important products, natural and artificial. For the Use of Young Persons*. London: printed by T. Bensley, for J. Johnson, St. Paul’s Church-Yard, M,DCC,LXXXVIII. [1788].

Aikin, John. *Letters from a Father to His Son, on Various Topics, Relative to Literature and the Conduct of Life: Written in the Years 1792 and 1793, by J. Aikin, M.D.* London: printed for J. Johnson, 1793.

Albury, W. R., and D. R. Oldroyd. "From Renaissance Mineral Studies to Historical Geology, in the Light of Michel Foucault's 'The Order of Things.'" *The British Journal for the History of Science* 10, no. 3 (1977): 187–215.

A letter to a Member of Parliament, concerning The Naval Store-Bill, Brought in last Session. With Observations on the Plantation-Trade, and Methods proposed for rendering it more beneficial to Great Britain than hitherto it has been, by promoting the Exports of our Manufactures, and enlarging our Navigation. London: [s.n.], Printed in the Year M.DCC. XX. [1720]. *Eighteenth Century Collections Online* (accessed May 31, 2022).
https://link.gale.com/apps/doc/CW0100240654/ECCO?u=chic_rbw&sid=bookmark-ECCO&xid=1611f680&pg=6.

Angeletti, Gioia. "Women Re-Writing Men: The Examples of Anna Seward and Lady Caroline Lamb," In *Romantic Women Poets: Genre and Gender*, edited by Lilla Maria Crisafulli, and Cecilia Pietropoli, 241-258. *DQR Studies in Literature*. Amsterdam: Brill, 2007.

Angus, Ian. *Facing the Anthropocene: Fossil Capitalism and the Crisis of the Earth System*. New York: Monthly Review Press, 2016.

Annakin-Smith, Anthony. *The Neston Collieries, 1759-1855 : An Industrial Revolution in Rural Cheshire*. Chester: University of Chester Press, 2019.

Appleton, Jay. *The Experience of Landscape*. Rev. ed. Chichester ; New York: Wiley, 1996.

Arbuthnot, John. *An Essay Concerning the Effects of Air on Human Bodies: By John Arbuthnot*, .. London: printed for J. Tonson, 1733.

- Ashton, T. S. (Thomas Southcliffe). *The Industrial Revolution, 1760-1830*. [1997 ed.]. Oxford; New York: Oxford University Press, 1997.
- Austen, Jane, and James Kinsley. *Mansfield Park*. Oxford; New York: Oxford University Press, 1998.
- Austen, Jane, and James Kinsley. *Sense and Sensibility*. Oxford; New York: Oxford University Press, 1998.
- Austen-Leigh, William, Jane Austen, and Richard Arthur Austen-Leigh. *Jane Austen, Her Life and Letters: A Family Record*. 2d ed. New York: E.P. Dutton, 1914.
- Backscheider, Paula R. *Eighteenth-Century Women Poets and Their Poetry: Inventing Agency, Inventing Genre*. Baltimore, MD: Johns Hopkins University Press, 2005.
- Barchas, Janine. *Matters of Fact in Jane Austen: History, Location, and Celebrity*. Baltimore: The Johns Hopkins University Press, 2012.
- Bailes, Melissa. *Questioning Nature : British Women's Scientific Writing and Literary Originality, 1750–1830*. [S.l.]: University of Virginia Press, 2017.
- Barbauld, Anna Lætitia. *Lessons for children, of three years old. Part II*. London: printed for J. Johnson, No. 72, ST. Paul's Church Yard, [1788]. Eighteenth Century Collections Online (accessed November 25, 2022).
https://link.gale.com/apps/doc/CW0120057425/ECCO?u=chic_rbw&sid=bookmark-ECCO&xid=dcfd7c0c&pg=1.
- Barbauld, Mrs., Elizabeth Kraft, and William McCarthy. *Selected Poetry and Prose*. Peterborough, Ont.: Broadview Press, 2002.
- Barbauld, Mrs., and Lucy Aikin. *The Works of Anna Lætitia Barbauld: With a Memoir*. Longman, Hurst, Rees, Orme, Brown, and Green, 1825.

- Barnard, Teresa. "Anna Seward's "Terrestrial Year": Women, Poetry, and Science in Eighteenth-Century England." *Partial Answers: Journal of Literature and the History of Ideas* 7, no. 1 (2009): 3-17.
- Barrell, John. *English Literature in History, 1730-80: An Equal, Wide Survey*. New York: St. Martin's Press, 1983.
- Barrell, John. *The Idea of Landscape and the Sense of Place, 1730-1840: An Approach to the Poetry of John Clare*. Cambridge [Eng.]: University Press, 1972.
- Beck, Rudolf. "From Industrial Georgic to Industrial Sublime: English Poetry and the Early Stages of the Industrial Revolution." *Journal for Eighteenth-Century Studies* 27, no. 1 (March 1, 2004): 17-36.
- Bennett, Jane. *Vibrant Matter: A Political Ecology of Things*. Durham [N.C.]: Duke University Press, 2010.
- Bastiat, Frédéric. *Essays On Political Economy*. London: A.W. Bennett, 1850.
- Bate, Jonathan. *The Song of the Earth*. Cambridge: Harvard UP, 2000.
- Beaver, Stanley H. "The Iron Industry of Northamptonshire, Rutland, and South Lincolnshire." *Geography* 18, no. 2 (1933): 102-17.
- Bebbington, A., L. Hinojosa, D.H. Bebbington, M.L. Burneo and X. Warnaars. 2008. "Contention and Ambiguity: Mining and the Possibilities of Development." *Development and Change* 39: 887-914.
- Bennett, Betty T. *British War Poetry in the Age of Romanticism, 1793-1815*. New York: Garland Pub., 1976.

- Bergmann, Nicolas T., and Robert M. Briwa. "Re-Envisioning the Toxic Sublime: National Park Wilderness Landscapes at the Anthropocene." *Annals of the American Association of Geographers* 111, no. 3 (May 2021): 889–99.
- Bermingham, Ann. *Landscape and Ideology: The English Rustic Tradition, 1740- 1860*. Berkeley: U of California P, 1986.
- Bewell, Alan. "'Jacobin Plants': Botany as Social Theory in the 1790s." *The Wordsworth Circle* 20, no. 3 (July 1, 1989): 132–39.
- Black, Jeremy. *Geographies of an Imperial Power: The British World, 1688–1815*. Bloomington, Indiana: Indiana University Press, 2017.
- Bohls, Elizabeth A. *Women Travel Writers and the Language of Aesthetics, 1716–1818*. Cambridge Studies in Romanticism. Cambridge: Cambridge University Press, 1995.
- Bolus-Reichert, Christine. "The Landed Revolution: Humphry Repton, Arthur Young, and the Politics of Improvement." *Romanticism* 5.2 (1999): 202-215.
- Borgstrom, Georg. *The Hungry Planet: The Modern World at the Edge of Famine*. New York: Macmillan, 1965.
- Boyle, Robert. *Some Considerations Touching the Usefulness of Experimental Naturall Philosophy: Propos'd in a Familiar Discourse to a Friend, by Way of Invitation to the Study of It, by the Honorable Robert Boyle Esq ; Fellow of the Royal Society*. A second edition since the first published June 1663. Oxford: Printed by Hen : Hall printer to the University, for Ric : Davis, 1664.
- Boyson, Rowan Rose. "Air and Atmosphere Studies: Enlightenment, Phenomenology and Ecocriticism." *Literature Compass* 19, no. 1–2 (February 2022).
- Brewer, Daniel. "Lights in Space." *Eighteenth-Century Studies* 37, no. 2 (2004): 171–86.
- Bruce, Bertram C. *Thinking with Maps: Understanding the World Through*

- Spatialization*. Lanham, Maryland: Rowman & Littlefield Publishers, 2021.
- Brewer, Ebenezer Cobham, and Ivor H. Evans. *Brewer's Dictionary of Phrase and Fable*. 14th ed. / by Ivor H. Evans. New York: Harper & Row, 1989.
- Bridge, Gavin. Contested Terrain: Mining and the Environment.” *Annual review of Environment and Resources* 29 (2004): 205-59
- Brownrigg William. *Extract from an essay entitled On the use of a knowledge of mineral exhalations ... which was read before the Royal Society in April 1741*. 1765.
- Braudel, Fernand. *Civilization and Capitalism, 15th-18th Century*. Berkeley: University of California Press, 1992.
- Braun, Bruce. “Producing Vertical Territory: Geology and Governmentality in Late Victorian Canada.” *Ecumene* 7, no. 1 (January 1, 2000): 7–46.
- Burke, Edmund, and Adam Phillips. *A Philosophical Enquiry Into the Origin of Our Ideas of the Sublime and Beautiful*. Oxford World’s Classics. Oxford [England]: Oxford University Press, 1990.
- Burnet, Thomas. *The Theory of the Earth: Containing an Account of the Original of the Earth, and of All the General Changes Which It Hath Already Undergone, or Is to Undergo, Till the Consummation of All Things. The Two First Books, Concerning the Deluge and Concerning Paradise*. London: Printed by R. Norton, for W. Kettilby, 1684.
- Byrnes Sarah, and Chuck Collins, “The Equity Crisis: The True Costs of Extractive Capitalism.” In *The Community Resilience Reader: Essential Resources for an Era of Upheaval*, 95-109. Washington, DC: Island Press, 2017.
- “callow, adj.1 and n.1”. OED Online. December 2022. Oxford University Press. [https://www-](https://www-oed-)

com.proxy.uchicago.edu/view/Entry/26472?rskey=KshVRd&result=1&isAdvanced=false (accessed December 16, 2022).

Campbell, George. *The philosophy of rhetoric. By George Campbell, ... In two volumes. ...* Vol. 1. London: printed for W. Strahan; and T. Cadell; and W. Creech at Edinburgh, 1776. *Eighteenth Century Collections Online* (accessed February 7, 2023). https://link-gale-com.proxy.uchicago.edu/apps/doc/CW0113651519/ECCO?u=chic_rbw&sid=bookmark-ECCO&xid=edf9b2a3&pg=1.

Carlson, Allen, and Arnold Berleant, et al. *The Aesthetics of Natural Environments*. Peterborough, Ont.: Broadview Press, 2004.

Cartwright, James Joel. *Travels through England of Dr. Richard Pococke, Successively Bishop of Meath and of Ossory, during 1750, 1751, and Later Years. Volume I [Camden Society, New Series, XLII]*. Vol. Burlington, Ontario, Canada: TannerRitchie Publishing, 2015.

Cavert, William M. *The Smoke of London: Energy and Environment in the Early Modern City*. Cambridge: Cambridge University Press, 2016.

Carroll, Siobhan. *An Empire of Air and Water: Uncolonizable Space in the British Imagination, 1750-1850*. Philadelphia, Pa.: University of Pennsylvania Press, 2015.

Chaney, E. "Gibbon, Beckford and the Interpretation of Dreams, Waking Thoughts and Incidents," *The Beckford Society Annual Lectures*. London (2004) 25–50.

Chaudhuri, Supriya, et. al. *Commodities and Culture in the Colonial World*. Abingdon, Oxon: Routledge, an imprint of the Taylor & Francis Group, 2018.

Claeys, Gregory. "Virtuous Commerce and Free Theology: Political Economy and the Dissenting Academies 1750-1800." *History of Political Thought* 20, no. 1 (1999): 141-

72.

Clark, Gregory. "Too Much Revolution: Agriculture in the Industrial Revolution, 1700-1860" In *The British Industrial Revolution: An Economic Perspective*, edited by Joel Mokyr, 206-240. Boulder, CO: Westview Press, 1999.

Clark, Nigel. *Inhuman Nature: Sociable Life on a Dynamic Planet*. Los Angeles ; London: SAGE, 2011.

Clarke, Bruce. *Energy Forms: Allegory and Science in the Era of Classical Thermodynamics*. Ann Arbor: University of Michigan Press, 2001.

Clary, Renee. "William Smith's Mapping Milestone: An Interactive Historical Vignette Celebrating the Bicentennial of the First National Geologic Map." *The Science Teacher* 82, no. 7 (2015): 36-42.

"Coal and Air Pollution." Union of Concerned Scientists. Accessed February 8, 2023. <https://www.ucsusa.org/resources/coal-and-air-pollution>.

"Coal Combustion." *Environmental Impacts of Coal Mining & Utilization: A Complete Revision of Environmental Impacts of Expanded Coal Utilization*. Chadwick, M.J., N.H. Highton and N. Lindman, eds. New York: Pergamon Press, 1987. 87-104.

Coffey, Donna. "Protecting the Botanic Garden: Seward, Darwin, and Coalbrookdale." *Women's Studies: An Interdisciplinary Journal* 31, no. 2 (March 2002): 141-64.

Colbert, Benjamin. "Aesthetics of Enclosure: Agricultural Tourism and the Place of the Picturesque." *European Romantic Review*, 13, no.1 (2002): 23-34.

Colletta, Lisa. *The Legacy of the Grand Tour: New Essays on Travel, Literature, and Culture*. Lanham, Maryland: Fairleigh Dickinson University Press copublished by the Rowman & Littlefield Publishing Group, Inc., 2015.

- Colquhoun, Patrick. *A Treatise on the Wealth, Power, and Resources of the British Empire, in Every Quarter of the World, Including the East Indies ...* London: Printed for J. Mawman, H. Bryer, 1814.
- Connor, Steven. *The Matter of Air: Science and the Art of the Ethereal*. London: Reaktion Books, 2010.
- Constantine, Mary-Ann. "Consumed Landscapes: Coal, Air and Circulation in the Writings of Catherine Hutton." *Romanticism: The Journal of Romantic Culture and Criticism* 27, no. 2 (July 2021): 122–34.
- Copley, Stephen. "William Gilpin and the Black-Lead Mine." In *The Politics of the Picturesque: Literature, Landscape and Aesthetics since 1770*, edited by Stephen Copley and Peter Garside, 42–61. Cambridge, Eng.: Cambridge University Press, 1994.
- Copley, Stephen, and Peter Garside, et al. *The Politics of the Picturesque: Literature, Landscape, and Aesthetics Since 1770*. Cambridge ; New York: Cambridge University Press, 1994.
- Corfield, Penelope J., et al. *Land and Society in Britain, 1700-1914: Essays in Honour of F.M.L. Thompson*. Manchester [England]; New York: Manchester University Press : distributed exclusively in the USA and Canada by St. Martin's Press, 1996.
- Corfield, Penelope J. "The Rivals: Landed and Other Gentlemen." In *Land and Society in Britain, 1700-1914: Essays in Honour of F.M.L. Thompson*. Manchester [England]; New York: Manchester University Press: distributed exclusively in the USA and Canada by St. Martin's Press, 1996.
- Cosgrove, Denis E. *Social Formation and Symbolic Landscape*. Totowa, N.J.: Barnes & Noble Books, 1985.

- Coss, Peter. *The Foundations of Gentry Life: The Multons of Frampton and their World 1270-1370*. The Past & Present Book Series. Oxford: Oxford Academic, 2010.
- Cox, Jeffrey N. *Romanticism in the Shadow of War: Literary Culture in the Napoleonic War Years*. Cambridge: Cambridge University Press, 2014.
- Cox, Leslie Reginald, and Yorkshire Geological Society. *New Light on William Smith and His Work*. Wakefield: West Yorkshire Printing Co., 1942.
- Craig, Sheryl. *Jane Austen and the State of the Nation*. Houndmills, Hampshire and New York, NY: Palgrave Macmillan, 2015.
- Crane, Ralph. *Coal : Nature and Culture*. Earth Series. London, UK: Reaktion Books, 2021.
- Crisafulli, Lilla Maria, and Cecilia Pietropoli. *Romantic Women Poets : Genre and Gender*. DQR Studies in Literature. Amsterdam: Brill, 2007.
- Daggett, Cara New. *The Birth of Energy: Fossil Fuels, Thermodynamics, and the Politics of Work*. Durham: Duke University Press, 2019.
- Dalton, John, 1709-1763, and William Brownrigg. *A Descriptive Poem, Addressed to Two Ladies, At Their Return From Viewing the Mines Near Whitehaven: to Which Are Added, Some Thoughts On Building And Planting, to Sir James Lowther, of Lowther-Hall, Bart.* London: Printed for J. and J. Rivington, and R. and J. Dodsley, 1755.
- Daniels, Stephen, and Paul Elliott. “‘Outline Maps of Knowledge’: John Aikin’s Geographical Imagination.” Chapter. In *Religious Dissent and the Aikin-Barbould Circle, 1740–1860*, edited by Felicity James and Ian Inkster, 94–125. Cambridge: Cambridge University Press, 2011.

- Davies, John E. "The Cawllors as Industrial Landowners." In *The Changing Fortunes of a British Aristocratic Family, 1689-1976: The Campbells of Cawdor and Their Welsh Estates*, NED-New edition., 99-136. Boydell & Brewer, 2019.
- Davies, Jeremy. "Romantic 'Ghost Acres' and Environmental Modernity." *Studies in Romanticism* 61, no. 2 (2022): 203–27.
- Davy, Humphry. "On the Fire-Damp of Coal Mines, and on Methods of Lighting the Mines So as to Prevent Its Explosion." *Philosophical Transactions of the Royal Society of London*. 1816.
- Dean, Dennis R. *James Hutton and the History of Geology*. Ithaca: Cornell University Press, 1992.
- Deleuze, Gilles, and Félix Guattari, *A Thousand Plateaus: Capitalism and Schizophrenia*. Minneapolis: University of Minnesota Press, 2005.
- Donovan, Arthur. *Antoine Lavoisier: Science, Administration, and Revolution*. Oxford, UK; Cambridge, Mass., USA: Blackwell, 1993.
- Durling, Dwight Leonard. *Georgic Tradition in English Poetry*. New York: Columbia University Press, 1935.
- Doody, Margaret Anne. *Jane Austen's Names: Riddles, Persons, Places*. Chicago: The University of Chicago Press, 2015.
- Drum, Alice. "Pride and Prestige: Jane Austen and the Professions." *College Literature* 36, no. 3 (2009): 92–115.
- Duckworth, Alistair M. *The Improvement of the Estate: A Study of Jane Austen's Novels*. Baltimore: Johns Hopkins Press, 1971.

- Dugan, Sally, and David Dugan. *The Day The World Took Off: The Roots of The Industrial Revolution*. Channel 4 Books. London: Macmillan, 2000.
- Durham Mining Museum. "Mining Occupations." Accessed 10 January, 2023.
<http://www.dmm.org.uk/mindex.html>.
- Edwards, Elizabeth. "'A Kind of Geological Novel': Wales and Travel Writing, 1783–1819." *Romanticism* 24, no. 2 (January 1, 2018): 134–47.
- Egenolf, Susan B. *The Art of Political Fiction in Hamilton, Edgeworth, and Owenson*. Farnham, England ; Burlington, VT: Ashgate, 2009.
- Egenolf, Susan. "The Cyclops in the Vale: Mythological and Fantastic Representations of Industry." *Studies in Eighteenth Century Culture* 47 (January 2018): 53–70.
- Elliott, Paul, and Stephen Daniels. "'No Study so Agreeable to the Youthful Mind': Geographical Education in the Georgian Grammar School." *History of Education*. January 1, 2010.
- Escobar, Arturo. "The 'Ontological Turn' in Social Theory. A Commentary on 'Human Geography without Scale', by Sallie Marston, John Paul Jones II and Keith Woodward." *Transactions of the Institute of British Geographers* 32, no. 1 (January 1, 2007): 106–11.
- Favret, Mary A. "Coming Home: The Public Spaces of Romantic War." *Studies in Romanticism*, vol. 33, no. 4, 1994, pp. 539–548.
- Favretti, Maggie. "The Politics of Vision, Anna Barbauld's 'Eighteen Hundred and Eleven.'" *Women's Poetry in the Enlightenment, The Making of a Canon, 1730-1820*, edited by Isobel Armstrong and Virginia Blain, Macmillan Reference USA; St. Martin's,

- with Centre for English Studies, School of Advanced Study, University of London, 1999, pp. 99–110.
- Finkelman, Robert B. (Robert Barry), and Geological Survey (U.S.). *Health Impacts of Coal Combustion*. Online version 1.0. [Reston, Va.]: U.S. Dept. of the Interior, U.S. Geological Survey, 2000.
- Flinn, Michael. *The History of the British Coal Industry*. Oxford [Oxfordshire] : New York: Clarendon Press ; Oxford University Press, 1984.
- Flint, Christopher. "'The Family Piece': Oliver Goldsmith and the Politics of the Everyday in Eighteenth-Century Domestic Portraiture." *Eighteenth-Century Studies* 29, no. 2 (1995): 127-152.
- Ford, Thomas H. *Wordsworth and the Poetics of Air: Atmospheric Romanticism in a Time of Climate Change*. Cambridge, United Kingdom: Cambridge University Press, 2018.
- Forster, Jean-Paul. *Eighteenth-Century Geography and Representations of Space: In English Fiction and Poetry*. Austria: Peter Lang AG, Internationaler Verlag der Wissenschaften, 2014.
- Foster, John Wilson. "A Redefinition of Topographical Poetry." *The Journal of English and Germanic Philology* 69, no. 3 (1970): 394–406. <http://www.jstor.org/stable/27705885>.
- Foster, John Wilson. "The Measure of Paradise: Topography in Eighteenth-Century Poetry." *Eighteenth-Century Studies* 9, no. 2 (1975): 232–56.
- Fowler, Corinne. "Revisiting Mansfield Park: The Critical and Literary Legacies of Edward W. Said's Essay 'Jane Austen and Empire' in Culture and Imperialism (1993)." *Cambridge Journal of Postcolonial Literary Inquiry* 4, no. 3 (2017): 362–81.

- Fraiman, Susan. "Jane Austen and Edward Said: Gender, Culture, and Imperialism." *Critical Inquiry* 21, no. 4 (1995): 805–21.
- Freese, Barbara. *Coal: A Human History*. Cambridge, MA: Perseus Pub., 2003.
- Fulford, Tim. *Landscape, Liberty and Authority: Poetry, Criticism and Politics from Thomson to Wordsworth*. Cambridge: Cambridge UP, 1996.
- Galperin, William H. *The Historical Austen*. Philadelphia: University of Pennsylvania Press, 2003. Print.
- Geurts, Anna P.H. "Gender, Curiosity, and the Grand Tour: Late-Eighteenth-Century British Travel Writing." *Journeys* 21, no. 2 (December 1, 2020): 1-23.
- Gilpin, William. *A dialogue upon the gardens of the Right Honourable the Lord Viscount Cobham, at Stow in Buckinghamshire*. London: printed for B. Seeley, Bookseller in Buckingham, and sold by J. and J. Rivington, in St. Paul's Church-Yard, MDCCXLVIII. [1748]. *Eighteenth Century Collections Online* (accessed January 16, 2023). https://link.gale.com/apps/doc/CW0102384904/ECCO?u=chic_rbw&sid=bookmark-ECCO&xid=e23e80df&pg=48.
- Gilpin, William. *Observations, Relative Chiefly to Picturesque Beauty, Made in the Year 1772: On Several Parts of England; Particularly the Mountains, and Lakes of Cumberland, and Westmoreland. ... By William Gilpin, ..* London: printed for R. Blamire, 1786.
- Gilroy, Amanda, et al. *Romantic Geographies: Discourses of Travel, 1775-1844*. Manchester: Manchester University Press, 2000.
- Gold, Barri J. *Energy, Ecocriticism, and Nineteenth-century Fiction: Novel Ecologies*. Basingstoke: Palgrave Macmillan, 2021.

- Goldsmith, Oliver. *The Traveller: A Poem. By Dr. Goldsmith*. London: printed for the booksellers, in town and country, 1780.
- Golinksi, Jan. *The Experimental Self: Humphry Davy and the Making of a Man of Science*. Chicago ; London: The University of Chicago Press, 2016.
- Gómez-Barris, Macarena. *The Extractive Zone: Social Ecologies and Decolonial Perspectives*. Durham: Duke University Press, 2017.
- Gould, Charlotte, and Sophie Mesplède. *British Art and the Environment : Changes, Challenges, and Responses Since the Industrial Revolution*. British Art: Histories and Interpretations Since 1700. New York, NY: Routledge, 2022.
- Great Britain. Parliament. House of Commons., and Great Britain. Commissioners of His Majesty's Woods, Forests and Land Revenues. *The third report of the Commissioners appointed to enquire into the state and condition of the woods, forests, and land revenues of the Crown, and to sell or alienate fee farm and other unimproveable rents. Dated 3d June 1788*. Printed in the year, 1788. *Eighteenth Century Collections Online*, link.gale.com/apps/doc/CB0132945575/ECCO?u=chic_rbw&sid=bookmark-ECCO&xid=21cde6ff&pg=43. Accessed 31 May 2022.
- Grindle, Nick. "Virgil's Prospects: The Gentry and the Representation of Landscape in Addison's Theory of the Imagination." *Oxford Art Journal* 29, no. 2 (2006): 185–95.
- Guillory, John. "The English Common Place: Lineages of the Topographical Genre." *Critical Quarterly* 33, no. 4 (1991): 3–27.
- Guthrie, William. *A new geographical, Historical, and Commercial grammar; and present state of the several kingdoms of the world. Containing I. The Figures, Motions, and Distances of the Planets, according to the Newtonian System and the latest Observations. II. A*

general View of the Earth considered as a Planet; with several useful Geographical Definitions and Problems. III. The grand Divisions of the Globe into Land and Water, Continents and Islands. IV. The Situation and Extent of Empires, Kingdoms, States, Provinces, and Colonies. V. Their Climate, Air, Soil, vegetable Productions, Metals, Minerals, natural Curiosities, Seas, Rivers, Bays, Capes, Promontories, and Lakes. VI. The Birds and Beasts peculiar to each Country. Vii. Observations on the Changes that have been any where observed upon the Face of Nature since the most early Periods of History. Viii. The History and Origin of Nations: their Forms of Government, Religion, Laws, Revenues, Taxes, naval and military Strength. IX. The Genius, Manners, Customs, and Habits of the People. X. Their Language, Learning, Arts, Sciences, Manufactures, and Commerce. XI. The chief Cities, Structures, Ruins, and artificial Curiosities. XII. The Longitude, Latitude, Bearings, and Distances of principal Places from London. With a table of the coins of all nations, and their value in English money. By William Guthrie, Esq. Illustrated with a new and correct set of maps, Engraved by Mr. Kitchin. London: printed for J. Knox, at No 148, near Somerset-House, in the Strand, MDCCLXX. [1770]. Eighteenth Century Collections Online (accessed January 4, 2023).

https://link.gale.com/apps/doc/CW0125806254/ECCO?u=chic_rbw&sid=bookmark-ECCO&xid=8a15e9c1&pg=127.

Hamblyn, Richard. "Landscape and the Contours of Knowledge : The Literature of Travel and the Sciences of the Earth in Eighteenth-Century Britain" (PhD dissertation, University of Cambridge, January 1, 1994), <https://search-ebSCOhost-com.proxy.uchicago.edu/login.aspx?direct=true&db=edsble&AN=edsble.336534&site=eds-live&scope=site>.

- Hammersley, G. "The Charcoal Iron Industry and Its Fuel, 1540-1750." *Economic History Review* 26, no. 4 (November 1973): 593–613.
- Hanley, Keith. "Wordsworth's Grand Tour." In *Romantic Geographies: Discourses of Travel 1775-1844*, edited by Amanda Gilroy, 71–92. Exploring Travel. Manchester, England: Manchester University Press, 2000.
- Hasperg, Keith. "'Saved by the Historic Page': Charlotte Smith's Arun River Sonnets." *Studies in Romanticism* 53, no. 1 (April 1, 2014): 103–31.
- Hawley, Duncan. "William Smith's 1815 Geological Map: 'A Delineation of the Strata of England and Wales with Part of Scotland ...'" *Geography* 101, no. 1 (2016): 35–41.
- Heringman, Noah. "Deep Time in the South Pacific: Scientific Voyaging and the Ancient/Primitive Analogy." In *Marking Time: Romanticism and Evolution*, edited by Joel Faflak, 95–121. Toronto, ON: University of Toronto Press, 2017.
- Heringman, Noah. *Romantic Rocks, Aesthetic Geology*. Ithaca, N.Y.: Cornell University Press, 2004.
- Hesiod and M. L. West. *Theogony; and, Works and Days*. Oxford [Oxfordshire] ; New York: Oxford University Press, 1988.
- Heydt-Stevenson, Jillian. *Austen's Unbecoming Conjunctions: Subversive Laughter, Embodied History*. New York: Palgrave Macmillan, 2005.
- Hindle, Maurice. "Humphry Davy and William Wordsworth: A Mutual Influence." *Romanticism* 18, no. 1 (April 2012): 16-29.
- Jerrold E. Hogle --, et al. *Cambridge Companion to Gothic Fiction*. New York: Cambridge University Press, 2002.

Holland, John. *The History and Description of Fossil Fuel, the Collieries, and Coal Trade of Great Britain*. Whittaker, 1835.

Hooke, Robert. *The Posthumous Works of Robert Hooke, ... Containing His Cutlerian Lectures, and Other Discourses, Read at the Meetings of the Illustrious Royal Society. ... Illustrated with Sculptures. To These Discourses Is Prefixt the Author's Life, ... Publish'd by Richard Waller,.* London: printed by Sam. Smith and Benj. Walford, 1705.

Horrocks, Ingrid. "'Circling Eye' and 'Houseless Stranger': The New Eighteenth-Century Wanderer (Thomson to Goldsmith)." *ELH* 77, no. 3 (October 1, 2010): 665–87.

Houghton, John. *A Collection of Letters for the Improvement of Husbandry and Trade*. Vol. 1683. London: John Houghton, 1683.

Hume, David. *The Complete Works and Correspondence of David Hume*. Charlottesville, VA: InteLex Past Masters, 1997.

Hunter, Michael. *John Aubrey and the Realm of Learning*. London: Duckworth, 1975.

Hurd, Richard. *Dialogues on the Uses of Foreign Travel: Considered as a Part of an English Gentleman's Education: Between Lord Shaftesbury and Mr. Locke. By the Editor of Moral and Political Dialogues*. London: printed by W. B. for A. Millar, in the Strand; and W. Thurlbourn and J. Woodyer, in Cambridge, 1764.

Hutton, James. *A Dissertation Upon the Philosophy of Light, Heat, and Fire*. Edinburgh, printed for Messrs Cadell, Junior, and Davies, London, 1794.

Hutton, James. *Theory of the Earth, : With Proofs and Illustrations. In Four Parts. By James Hutton, M.D. & F.R.S.E.* Edinburgh: printed for Messrs. Cadell, Junior, and Davies, London; and William Creech, Edinburgh, 1795.

- Inikori, J. E. *Africans and the Industrial Revolution in England: A Study in International Trade and Development*. Cambridge [England]: Cambridge University Press, 2002.
- Inkster, Ian. “‘Under the Eye of the Public’; Arthur Aikin (1773–1854), the Dissenting Mind and the Character of English Industrialization.” In *Religious Dissent and the Aikin-Barbauld Circle, 1740–1860*. Edited by James, Felicity, and Ian Inkster, 126-155. Cambridge, UK: Cambridge University Press, 2012.
- Jacobson, Mark Z. *Atmospheric Pollution: History, Science, and Regulation*. Cambridge, U.K.: Cambridge University Press, 2002
- Jago, Richard, and Charles Grignion. *Edge-Hill; Or, The Rural Prospect Delineated and Moralized: A Poem, in Four Books*. London: Printed for J. Dodsley, in Pall-Mall, 1767.
- James, Felicity, and Ian Inkster. *Religious Dissent and the Aikin-Barbauld Circle, 1740–1860*. Cambridge, UK: Cambridge University Press, 2012. <https://search-ebshost-com.proxy.uchicago.edu/login.aspx?direct=true&db=e000xna&AN=409052&site=eds-live&scope=site>.
- Jameson, Fredric. *Archaeologies of the Future: The Desire Called Utopia and Other Science Fictions* (London; New York: Verso, 2005
- Jameson, Fredric. “The End of Temporality.” *Critical Inquiry* 29, no. 4 (2003): 695–718.
- Janowitz, Ann. “Land.” *The Romantic Age: British Culture 1776-1832*. Ed. Iain McCalman. Oxford: Oxford U.P., 1999. Print.
- Jensen, Helle Juel, Mads D. Jessen, and Niels Johannsen. *Excavating the Mind : Cross-Sections Through Culture, Cognition and Materiality*. Aarhus: Aarhus University Press, 2012.

- Jerndal, Emma C. "Merleau-Ponty on Painting and the Problem of Reflection." *European Journal of Philosophy* 29, no. 1 (March 2021): 74–89.
- Johnson, Samuel. *The lives of the English poets; and a criticism on their works. By Samuel Johnson*. Vol. 1. Dublin: printed for Messrs. Whitestone, Williams, Colles, Wilson, Lynch, Jenkin, Walker, Burnet, Hallhead, Flin, Exshaw, Beatty, and White, M. DCC.LXXIX. [1779].
- Jones, Darryl. *Jane Austen*. Basingstoke, Hampshire; New York: Palgrave Macmillan, 2004.
- Jones, Peter M. *Industrial Enlightenment : Science, Technology and Culture in Birmingham and the West Midlands 1760–1820* (Manchester, UK: Manchester University Press, 2008.
- Kairoff, Claudia Thomas. *Anna Seward and the End of the Eighteenth Century*. Johns Hopkins University Press, 2012.
- Kairoff, Claudia Thomas. "Anna Seward and the Sonnet: Milton's Champion." *ABO : Interactive Journal for Women in the Arts 1640-1830* 1, no. 1 (March 1, 2011): 1-17.
- Kitson, Christopher. *Legacies of the Sublime : Literature, Aesthetics, and Freedom From Kant to Joyce*. SUNY Series, Studies in the Long Nineteenth Century. Albany: SUNY Press, 2019.
- Klein, Naomi. *This Changes Everything: Capitalism Vs. the Climate*. Toronto: Knopf Canada, 2014.
- Knezevich, Ruth. "Margins and Modernity: A Geocritical Approach to Anna Seward's Llangollen Vale." *Romanticism* 25, no. 1 (April 2019): 69–80.
- Knox-Shaw, Peter. *Jane Austen and the Enlightenment*. Cambridge, UK: Cambridge University Press, 2004.

- Kramnick, Isaac. "Children's Literature and Bourgeois Ideology: Observations on Culture and Industrial Capitalism in the Later Eighteenth Century." In *Culture and Politics from Puritanism to the Enlightenment*, 203–40. Berkeley, 1980. <https://search-ebscohost-com.proxy.uchicago.edu/login.aspx?direct=true&db=lsdar&AN=ATLA0001122555&site=eds-live&scope=site>.
- Kramnick, Isaac. "Eighteenth-Century Science and Radical Social Theory: The Case of Joseph Priestley's Scientific Liberalism." *Journal of British Studies* 25, no. 1 (1986): 1–30.
- Lane, Maggie. *Jane Austen and Names*. Bristol: Blaise Books, 2002.
- Laudan, Rachel. *From Mineralogy to Geology: The Foundations of a Science, 1650-1830*. Chicago: University of Chicago Press, 1987.
- Laudan, Rachel. "Ideas and Organizations in British Geology: A Case Study in Institutional History." *Isis* 68, no. 4 (1977): 527–38.
- LeCain, Timothy James. "Against the Anthropocene. A Neo-Materialist Perspective." *International Journal for History, Culture and Modernity* 3, no. 1 (April 1, 2015): 1–28.
- LeCain, Timothy J. *The Matter of History: How Things Create the Past*. Cambridge; New York: Cambridge University Press, 2017.
- Levine, David. *Reproducing Families: The Political Economy of English Population History*. Cambridge, U.K.: Cambridge University Press, 1987.
- Levinson, Marjorie. *Thinking Through Poetry: Field Reports On Romantic Lyric*. First edition. Oxford: Oxford University Press, 2018.
- Lewis, Jayne Elizabeth. *Air's Appearance: Literary Atmosphere in British Fiction, 1660-1794*. Chicago ; London: The University of Chicago Press, 2012.

- Linda Hall Library, William B. Ashworth, and Bruce Bradley. *Theories of the Earth, 1644-1830, the History of a Genre: An Exhibition of Rare Books from the History of Science Collection*. Kansas City, Mo.: Linda Hall Library, 1984.
- Linthicum, Kent. “‘King COAL, the mighty hero of the mine’—Acculturating to Coal in Scafe’s King Coal’s Levee.” NASSR. June 2018.
- Lyle, Paul. *The Abyss of Time: A Study in Geological Time and Earth History*. Edinburgh: Dunedin Academic Press, 2015.
- Macarthur, John. *The Picturesque: Architecture, Disgust and Other Irregularities*. London ; New York: Routledge, 2007.
- MacDuffie, Allen. *Victorian Literature, Energy, and the Ecological Imagination*. Cambridge University Press, 2014.
- Macinnis, Peter. *Bittersweet: The Story of Sugar*. St. Leonards, N.S.W.: Allen & Unwin, 2002.
- MacKenzie John. *Propaganda and Empire: The Manipulation of British Public Opinion, 1880-1960*. Manchester: Manchester University Press, 1984.
- Major, Emma. “Nature, Nation, and Denomination: Barbauld’s Taste for the Public.” *ELH* 74, no. 4 (2007): 909–30.
- Makdisi, Saree. *Romantic Imperialism: Universal Empire and the Culture of Modernity*. Cambridge, U.K. ; New York: Cambridge University Press, 1998.
- Malm, Andreas. *Fossil Capital: The Rise of Steam Power and the Roots of Global Warming*. London: Verso, 2016.
- Malthus, T. R. (Thomas Robert). *An Essay On the Principle of Population, As It Affects the Future Improvement of Society: With Remarks On the Speculations of Mr. Godwin, M. Condorcet, and Other Writers*. London: Printed for J. Johnson, 1798.

- Marder, Michael. *Energy Dreams*. New York, NY: Columbia University Press, 2017.
- Maw, Peter. *Transport and the Industrial City: Manchester and the Canal Age, 1750–1850*. [N.p.]: Manchester University Press, 2017.
- Mayhew, Robert J. “The Effacement of Early Modern Geography (c .1600–1850): A Historiographical Essay.” *Progress in Human Geography* 25, no. 3 (September 2001): 383.
- Mayhew, Robert J. “On the Cusp of Modern Geography: Fieldwork and Textuality in the Career of James Rennell, 1764-1830.” *Enlightenment Geography: the Political Languages of British Geography, 1650-1850*. New York: St. Martin’s Press, 2000.
- Mayhew, Robert J., and Charles W. J. Withers. *Geographies of Knowledge: Science, Scale, and Spatiality in the Nineteenth Century*. Medicine, Science, and Religion in Historical Context. Baltimore: Johns Hopkins University Press, 2020.
- Mazzeo, Tilar J. *Plagiarism and Literary Property in the Romantic Period*. Philadelphia: University of Pennsylvania Press, 2007.
- McCarthy, William. *Anna Letitia Barbauld: Voice of the Enlightenment*. Baltimore: Johns Hopkins University Press, 2008.
- McCarthy, William. “How Dissent Made Anna Barbauld, and What She Made of Dissent,” in *Religious Dissent and the Aikin-Barbauld Circle, 1740–1860*, ed. Felicity James and Ian Inkster. Cambridge: Cambridge University Press, 2011.
- McKusick, James C. *Green Writing: Romanticism and Ecology*. New York: St. Martin's Press, 2000.

- McMaster, Juliet. "Class." In *The Cambridge Companion to Jane Austen*, Cambridge. Edited by Edward Copeland and Juliet McMaster, 100-114. Cambridge: Cambridge University Press, 1997.
- Menely, Tobias. "Anthropocene Air." *Minnesota Review*, vol. 83 no. 1, 2014, pp. 93-101. Project MUSE, muse.jhu.edu/article/563072.
- Menely, Tobias. *Climate and the Making of Worlds: Toward a Geohistorical Poetics*. Chicago: The University of Chicago Press, 2021.
- Menely, Tobias. "'Like a Force of Nature': The Form and Scale of Anthropocene Energy Transitions." Scaling Forms Symposium. University of Chicago. April 2016.
- Menely, Tobias, and Jesse O. Taylor. *Anthropocene Reading: Literary History in Geologic Times*. University Park, Pennsylvania: The Pennsylvania State University Press, 2017.
- Merchant, Carolyn. *The Death of Nature: Women, Ecology, and the Scientific Revolution*. San Francisco: Harper & Row, 1980.
- David Meredith, *The Path to Sustained Growth: England's Transition from an Organic Economy to an Industrial Revolution*, by E.A. Wrigley, *The English Historical Review*, Volume 133, Issue 561, April 2018, 439–441. <https://academic.oup.com/ehr/article-abstract/133/561/439/4827623>.
- Merleau-Ponty, Maurice, 1908-1961. *The Primacy of Perception: And Other Essays On Phenomenological Psychology, the Philosophy of Art, History, And Politics*. Evanston: Northwestern University Press, 1964.
- Mészáros, István. *The Necessity of Social Control*. New York: Monthly Review Press, 2014.
- Miller, Christopher R. "Shelley's Uncertain Heaven." *ELH* 72, no. 3 (2005): 577–603.

- Miller, D. A. *Narrative and Its Discontents: Problems of Closure in the Traditional Novel*. Princeton, N.J.: Princeton University Press, 1981.
- Miller, Elizabeth Carolyn. "Drill, Baby, Drill: Extraction Ecologies, Open Temporalities, and Reproductive Futurity in the Provincial Realist Novel." *Victorian Literature and Culture* 48, no. 1 (2020): 29–56.
- Miller, Elizabeth Carolyn. *Extraction Ecologies and the Literature of the Long Exhaustion*. Princeton: Princeton University Press, 2021.
- Mingay, G. E. *English Landed Society in the Eighteenth Century*. London: Routledge and Paul, 1963.
- Mingay, G. E. *The Gentry: The Rise and Fall of a Ruling Class*. London; New York: Longman, 1976.
- Mokyr, Joel, et al. *The British Industrial Revolution: An Economic Perspective*. 2nd ed. Boulder, CO: Westview Press, 1999.
- Moore, Jason W. *Capitalism in the Web of Life*. New York: Verso, 2015.
- Moore, Lisa L. *The Collected Poems of Anna Seward Volume 1*. The Collected Poems of Anna Seward. London: Routledge, 2016.
- More, Hannah. *Essays on Various Subjects, Principally Designed for Young Ladies*. London: printed for J. Wilkie, in St. Paul's Church-Yard; and T. Cadell, in the Strand, MDCCLXXVII. [1777].
- Morris, Steven. "Larch Forests of South Wales Fall Victim to Disease." *The Guardian*. Guardian News and Media, May 17, 2015. <https://www.theguardian.com/uk-news/2015/may/17/larch-forests-south-wales-fall-victim-disease>.
- Mumford, Lewis. *Technics and Civilization*. New York: Harcourt Brace Jovanovich, 1934.

Murphy, Olivia. *Anna Letitia Barbauld : New Perspectives*. Transits. Lewisburg: Bucknell University Press, 2013.

Nef, John Ulric. *The Rise of the British Coal Industry*. London: George Routledge & Sons, Ltd., 1932.

Neill, Edward. *The Politics of Jane Austen*. Basingstoke: New York: Macmillan ; St. Martin's Press, 1999.

Newton, Isaac. *Opticks: or, a treatise of the reflections, refractions, inflections and colours of light. The fourth edition, corrected. By Sir Isaac Newton, Knt.* London: printed for William Innys at the West-End of St. Paul's, MDCCXXX. [1730]. *Eighteenth Century Collections Online* (accessed February 7, 2023). https://link-gale-com.proxy.uchicago.edu/apps/doc/CW0108038749/ECCO?u=chic_rbw&sid=bookmark-ECCO&xid=7d8a941f&pg=137.

Nixon, Rob. *Slow Violence and the Environmentalism of the Poor*. Cambridge, Mass.: Harvard University Press, 2011.

Offord, Mark. *Wordsworth and the Art of Philosophical Travel*. Cambridge, United Kingdom: Cambridge University Press, 2016.

Ogden, Henry V. S., and Margaret S. Ogden. *English Taste in Landscape in the Seventeenth Century*. Ann Arbor: University of Michigan Press, 1955.

Park, Julie. "What the Eye Cannot See: Interior Landscapes in 'Mansfield Park.'" *The Eighteenth Century* 54, no. 2 (July 1, 2013): 169–81.

Pearson, Frank. "Caverns Of The Mind: Exploring The Relationship Between Science, Aesthetics And Ethics In Eighteenth-Century Representations Of The

- Underground.” *Forum For World Literature Studies* 4 (2015): 668. *Literature Resource Center*. Web. 26 July 2016.
- Peeples, Jennifer. “Toxic Sublime: Imaging Contaminated Landscapes.” *Environmental Communication* 5, no. 4 (December 2011): 373–92.
- Pennant, Thomas. *A Tour in Wales*. Vol. 1. London: Printed for Benjamin White, at Horace’s Head in Fleet Street, MDCCLXXXIV. [1784].
- Peša, Iva, and Corey Ross. “Extractive Industries and the Environment: Production, Pollution, and Protest in Global History.” *The Extractive Industries and Society* 8, no. 4 (December 1, 2021). <https://search-ebscohost-com.proxy.uchicago.edu/login.aspx?direct=true&db=e000xna&AN=681461&site=eds-live&scope=site>.
- Peucker, Brigitte. “The Poem as Place: Three Modes of Scenic Rendering in the Lyric.” *PMLA* 96, no. 5 (1981): 904–13.
- Phillips, John. *Memoirs of William Smith, Author of the “Map of the Strata of England and Wales.”* London: J. Murray, 1844.
- Pijpers, Robert Jan, and Thomas Hylland Eriksen. *Mining Encounters : Extractive Industries in an Overheated World*. [Place of publication not identified]: Pluto Press, 2018.
- Pocock, J.G.A. *Virtue, Commerce, and History: Essays on Political Thought and History, Chiefly in the Eighteenth Century*. Cambridge: Cambridge University Press, 1985.
- Pococke, Richard, and James Joel Cartwright. *The Travels Through England of Dr. Richard Pococke, Successively Bishop of Meath and of Ossory, During 1750, 1751, and Later Years*. Searchable text edition. Burlington, Ontario, Canada: TannerRitchie Publishing in

collaboration with the Library and Information Services of the University of St Andrews, 2015.

Pomeranz, Kenneth. *The Great Divergence: China, Europe, and the Making of the Modern World Economy*. Princeton: Princeton University Press, 2009.

Pope, Alexander. *An Essay on Man: In Epistles to a Friend. Epistle I. Corrected by the Author*. London: printed for J. Wilford, 1733.

Porter, Dennis. *Haunted Journeys: Desire and Transgression in European Travel Writing*. Princeton, N.J.: Princeton University Press, 1991.

Porter, Roy. "Gentlemen and Geology: The Emergence of a Scientific Career, 1660-1920." *The Historical Journal* 21, no. 4 (1978): 809–36.

Porter, Roy. *The Making of Geology: Earth Science in Britain, 1660-1815*. Cambridge [Eng.]; New York: Cambridge University Press, 1977.

Postlethwayt, Malachy. *Britain's commercial interest explained and improved; in a series of dissertations on several important branches of her trade and police: Containing A Candid Enquiry into the secret Causes of the present Misfortunes of the Nation. With Proposals for their Remedy. Also The great Advantages which would accrue to this Kingdom from an Union with Ireland*. By Malachy Postlethwayt, Esq; Author of the Universal Dictionary of Trade and Commerce, &c. ... Vol. 1. London: printed for D. Browne, without Temple-Bar; A. Millar, in the Strand; J. Whiston and B. White, and W. Sandby, in Fleet-Street, MDCCLVII. [1757]. Eighteenth Century Collections Online (accessed June 5, 2022).

https://link.gale.com/apps/doc/CW0105080562/ECCO?u=chic_rbw&sid=bookmark-ECCO&xid=740f3db3&pg=1.

- Price, Uvedale. *An Essay on the Picturesque, as Compared with the Sublime and the Beautiful; and, on the Use of Studying Pictures, for the Purpose of Improving Real Landscape, by Uvedale Price, Esq.* London: printed for J. Robson, 1794.
- Priestley, Joseph. *A Catechism for Children, and Young Persons: By Joseph Priestley, LL.D. F.R.S.* The sixth edition, with improvements. Birmingham: printed by Thomas Pearson. For J. Johnson, London, 1791.
- Priestley, Joseph. *Experiments and Observations On Different Kinds of Air: Vol. III. By Joseph Priestley.* London: printed for J. Johnson, 1777.
- Priestley, Joseph. *Heads of Lectures on a Course of Experimental Philosophy, particularly including Chemistry.* London, New College, Hackney: G. Smallfield. 1794.
- Priestley, Joseph. *Lectures on History, and General Policy; to Which Is Prefixed, an Essay on a Course of Liberal Education for Civil and Active Life. By Joseph Priestley.* Dublin: printed by P. Byrne, 1788.
- Raab, Thomas, and Robert Frodeman. "What Is It Like to Be a Geologist? A Phenomenology of Geology and Its Epistemological Implications." *Philosophy and Geography* 5, no. 1 (February 1, 2002): 69–81.
- Rajan, Rajeswari Sunder, et al. *The Postcolonial Jane Austen.* London; New York: Routledge, 2000.
- Ready, Kathryn. "Anna Letitia Barbauld's 'To Mr. Barbauld, with a Map of the Land of Matrimony' and the History of Sentimental Cartography." *History of European Ideas* 42, no. 3 (January 1, 2016): 350–63.
- Repton, Humphry. *Sketches and hints on landscape gardening. Collected from designs and observations now in the possession of the different noblemen and gentlemen, for whose*

- use they were originally made. The Whole Tending to Establish Fixed Principles in the Art of Laying out Ground. By H. Repton, Esq.* London: printed by W. Bulmer and Co. Shakspeare printing-office, and sold by J. and J. Boydell, Shakspeare Gallery ; and by G. Nicol, Bookseller to his Majesty, Pall-Mall, [1794]. *Eighteenth Century Collections Online* (accessed June 3, 2022).
- Ricardo, David. *On the Principles of Political Economy, and Taxation*. London: J. Murray, 1817. Print.
- Richardson, Ben. *Sugar: Refined Power in a Global Regime*. Houndmills, Basingstoke, Hampshire; New York: Palgrave Macmillan, 2009.
- Richardson, Jonathan. *The Works of Mr. Jonathan Richardson: Consisting of I. The Theory of Painting. II. Essay on the Art of Criticism, ... III. The Science of a Connoisseur. All Corrected and Prepared for the Press by His Son Mr. J. Richardson*. London: printed for T. Davies, 1773.
- Robinson, Harry. "Geography in the Dissenting Academies." *Geography* 36, no. 3 (1951): 179–86.
- Robbins, Sarah. "Lessons for Children and Teaching Mothers: Mrs. Barbauld's Primer for the Textual Construction of Middle-Class Domestic Pedagogy." *The Lion and the Unicorn* 17, no. 2 (January 1, 2009): 135–51.
- Rohrbach, Emily. *Modernity's Mist: British Romanticism and the Poetics of Anticipation*. New York: Fordham University Press, 2016.
- Rosenbaum, Susan. "'A Thing Unknown, without a Name': Anna Laetitia Barbauld and the Illegible Signature." *Studies in Romanticism* 40, no. 3 (2001): 369–99.

- Rudwick, M. J. S. *Bursting the Limits of Time: The Reconstruction of Geohistory in the Age of Revolution*. University of Chicago Press, 2005.
- Rudwick, Martin J.S. “Cognitive Styles in Geology,” in *Essays on the Sociology of Perception*. Edited by Mary Douglas, 219-241. Mary Douglas: Collected Works. London: Routledge, 2003.
- Rudwick, Martin J. S. “The Emergence of a Visual Language for Geological Science 1760—1840.” *History of Science* 14 (May 9, 2015): 149–95.
- Runge, Laura. *Gender and Language in Eighteenth-Century Literary Criticism, 1660–1790*. Cambridge: Cambridge University Press, 1997.
- Rutt, John Towill. *Life and Correspondence of Joseph Priestley, LL.D., F.R.S., &c.* London: R. Hunter [etc.], 1831.
- Saglia, Diego. “The Aesthetics of the Present: Commerce, Empire and Technology in Late Eighteenth-Century Women’s Poetry.” *Textus* 18, no. 1 (January 2005): 205–20.
- Said, Edward W. *Culture and Imperialism*. New York: Knopf, 1994.
- Salmon, William. *Polygraphice: Or, the Arts of Drawing, Engraving, Etching, Limning, Painting, Vernishing, Japaning, Gilding, &c. In Two Volumns [sic]. ... The Eighth Edition. Enlarged, ... By William Salmon, M.D* (London: printed for A. and J. Churchill. And J. Nicholson, 1701), 35. Jonathan Richardson in his 1715 *Theory of Painting*, also notes that painting, like other arts, gives us so much pleasure at the sight of natural pictures, a prospect, a fine sky, a garden, &c.” See Richardson, *The Works* (London: printed for T. Davies, 1773).
- Santesso, Aaron. “William Hogarth and the Tradition of Sexual Scissors.” *SEL Studies in English Literature 1500-1900* 39, no. 3 (1999): 499-521.

- Sargent, John. *The Mine: A Dramatic Poem*. By John Sargent, Esquire. London: printed for T. Cadell, 1785.
- Schabas, Margaret. *The Natural Origins of Economics*. Chicago: University of Chicago Press, 2005.
- Schabas, Margaret, and Neil De Marchi, et al. *Oeconomies in the Age of Newton*. Durham, N.C.; London: Duke University Press, 2003.
- Schlegel, Friedrich von, Ernst Behler, and Roman Struc. *Dialogue on Poetry and Literary Aphorisms*. [University Park: Pennsylvania State University Press, 1968.
- Scott, Heidi C. M. *Fuel: An Ecocritical History. Environmental Cultures*. London: Bloomsbury Academic, 2018. Accessed June 13, 2022.
- Seaton, Anthony. *Farewell, King Coal: From Industrial Triumph to Climatic Disaster*. Edinburgh: Dunedin Academic Press, 2018.
- Select essays on commerce, agriculture, mines, fisheries, and other useful subjects*. London: printed for D. Wilson, and T. Durham, at Plato's Head, in the Strand, MDCCLIV. [1754]. Eighteenth Century Collections Online (accessed November 18, 2022). https://link.gale.com/apps/doc/CW0106550366/ECCO?u=chic_rbw&sid=bookmark-ECCO&xid=a0bb9d4a&pg=291.
- Setzer, Sharon. "'Pond'Rous Engines' in 'Outraged Groves': The Environmental Argument of Anna Seward's 'Colebrook Dale.'" *European Romantic Review* 18, no. 1 (January 2007): 69–82.
- Seward, Anna, and Archibald Constable. *Letters of Anna Seward: Written between the Years 1784 and 1807*. Edinburgh: A. Constable and Company, 1811.

- Seward, Anna, and Walter Scott. *The Poetical Works of Anna Seward: With Extracts From Her Literary Correspondence*. Edinburgh: London: John Ballantyne and co.; Longman, Hurst, Rees, and Orme, 1810.
- Sha, Richard. *Imagination and Science in Romanticism*. Baltimore: Johns Hopkins University Press, 2018.
- Shaw, Philip, et al. *Romantic Wars: Studies in Culture and Conflict, 1793-1822*. Aldershot [Hampshire, England]; Burlington [Vt.]: Ashgate, 2000.
- Shelley, Percy Bysshe, et al. *Shelley's Poetry and Prose: Authoritative Texts, Criticism*. 2nd ed. New York: Norton, 2002.
- Sherlock, Robert Lionel, and Arthur Smith Woodward. *Man as a Geological Agent: An Account of His Action on Inanimate Nature*. London: H. F. & G. Witherby, 1922.
- Sigler, David. *Fracture Feminism: The Politics of Impossible Time in British Romanticism*. SUNY Series, Studies in the Long Nineteenth Century. Albany: SUNY Press, 2021.
- Simpson, David. *Wordsworth, Commodification and Social Concern: The Poetics of Modernity*. New York: Cambridge University Press, 2009.
- Simpson, Samuel, et al. *'The Most Extraordinary District in the World': Ironbridge & Coalbrookdale: An Anthology of Visitors' Impressions of Ironbridge, Coalbrookdale and the Shropshire Coalfield*. 3rd ed. Chichester, West Sussex: Phillimore, 2005.
- Smil, Vaclav. *Energy: A Beginner's Guide*. Oxford: Oneworld, 2006.
- Smith, Johanna M. "Constructing the Nation: Eighteenth-Century Geographies for Children." *Mosaic: An Interdisciplinary Critical Journal* 34, no. 2 (2001): 133–48.

- Smith, Adam, William Strahan, and T. (Thomas) Cadell. *An Inquiry Into the Nature and Causes of the Wealth of Nations*. London: Printed for W. Strahan, and T. Cadell, in the Strand, 1776.
- Steer, Philip, and Nathan K. Hensley. "Signatures of the Carboniferous: the Literary Forms of Coal." *Ecological Form: System and Aesthetics in the Age of Empire*. New York: Fordham University Press, 2018.
- Stephens, Michael D., and Gordon W. Roderick. "Middle-Class Non-Vocational Lecture and Debating Subjects in 19th-Century England." *British Journal of Educational Studies* 21, no. 2 (1973): 192–201.
- Strauss, Helene. "Energy Archives: Of Rocks, Rubbish, and Feminist Feeling in Aliko Saragas's Strike a Rock." *Subjectivity* 13, no. 4 (2020): 254-80.
- Taine, Hippolyte. *The Ancient Régime*. New York: H. Holt, 1881.
- Taylor, John, and Thomas Fowell Buxton Sir. *Statements Respecting the Profits of Mining in England, Considered in Relation to the Prospects of Mining in Mexico: In a Letter to Thomas Fowell Buxton, Esq. M.P.* Cambridge, MA, United States: Kress Library of Business and Economics, Harvard University, 1825.
- Theodoridis, Dimitrios, Paul Warde, and Astrid Kander. "Trade and Overcoming Land Constraints in British Industrialization: An Empirical Assessment." *Journal of Global History* 13, no. 3 (January 1, 2018): 328–51.
- Thomson, William. *Prospects and Observations; on a Tour in England and Scotland: Natural, Oeconomical, and Literary. By Thomas Newte, Esq.* London, United Kingdom: British Library, 1791.

- Thorsheim, Peter. *Inventing Pollution : Coal, Smoke, and Culture in Britain Since 1800*. Ohio University Press Series in Ecology and History. Athens, Ohio: Ohio University Press, 2006.
- Tilley, Christopher. *Interpreting Landscapes: Geologies, Topographies, Identities; Explorations in Landscape Phenomenology 3*. Geologies, Topographies, Identities; Explorations in Landscape Phenomenology 3. Walnut Creek: Routledge, 2010.
- Toadvine, “The Elemental Past.” *Research in Phenomenology* 44, no. 2 (January 1, 2014): 262–79.
- Tobin, Beth Fowkes. *Superintending the Poor: Charitable Ladies and Paternal Landlords in British Fiction, 1770-1860*. New Haven [Conn.]: Yale University Press, 1993.
- Toner, Anne. “Landscape as Literary Criticism: Jane Austen, Anna Barbauld and the Narratological Application of the Picturesque.” *Critical Survey* 26, no. 1 (January 1, 2014): 3.
- Torrens, H. S. “Arthur Aikin’s Mineralogical Survey of Shropshire 1796–1816, and the Contemporary Audience for Geological Publications.” *The British Journal for the History of Science* 16, no. 2 (1983): 111–53.
- Torrens, H. S. “Timeless Order: William Smith (1769-1839) and the Search for Raw Materials 1800-1820.” *Special Publication-Geological Society of London*, no. 190 (January 1, 2001): 61–84.
- Towner, John. “The Grand Tour. A Key Phase in the History of Tourism.” *Annals of Tourism Research* 12, no. 3 (January 1, 1985): 297-333.
- Trinder, Barrie. *The Making of the English Industrial Landscape*. Gloucester: Alan Sutton, 1987.

- Trinder, Barry. *'The Most Extraordinary District in the World': Ironbridge & Coalbrookdale: an Anthology of Visitors' Impressions of Ironbridge, Coalbrookdale and the Shropshire Coalfield*. Chichester, West Sussex: Phillimore, 2005.
- Tuan, Yi-Fu. *Romantic Geography: In Search of the Sublime Landscape*. Madison: University of Wisconsin Press, 2013.
- Tuan, Yi-fu. *Space and Place: The Perspective of Experience*. Minneapolis: University of Minnesota Press, 1977.
- Turnbull, Gerard. "Canals, Coal and Regional Growth during the Industrial Revolution." *The Economic History Review* 40, no. 4 (November 1, 1987): 537–60.
- Turner, Raymond. "English Coal Industry in the Seventeenth and Eighteenth Centuries." *The American Historical Review* 27, no. 1 (October 1, 1921): 1–23.
- Tuttle, Carolyn. *Hard at Work in Factories and Mines: The Economics of Child Labor During the British Industrial Revolution*. Boulder: University of Colorado Press, 1999.
- Urgursal, Ismet. "Energy Use and Energy Conservation." In Gerard M Crawley. *World Scientific Handbook Of Energy, The. World Scientific Series in Materials and Energy*. Edited by Gerald M. Crawley, 481-511. Singapore: World Scientific, 2013.
- Vener, Leucha. "Provincial Geology and the Industrial Revolution." *Endeavour (English Ed.)* 30, no. 2 (January 1, 2006): 76–80.
- Vogler, Thomas A. "Romanticism and Literary Periods: The Future of the Past." *New German Critique*, no. 38 (1986): 131–60.
- Voskuil, Lynn. "Sotherton and the Geography of Empire: The Landscapes of 'Mansfield Park.'" *Studies in Romanticism* 53, no. 4 (2014): 591–615.

- Warde, Paul. *The Invention of Sustainability: Nature and Destiny, C. 1500-1870*. Cambridge, United Kingdom; New York, NY: Cambridge University Press, 2018.
- Warren, Erasmus. *Geologia: Or, a Discourse Concerning the Earth Before the Deluge*. London: Printed for R. Chiswell, 1690.
- Watkins, Daniel P. *Anna Letitia Barbauld and Eighteenth-Century Visionary Poetics*. Baltimore: Johns Hopkins University Press, 2012.
- Wheeler, David. "Placing Anna Seward: the 'Genius of Place,' Coalbrookdale, and 'Colebrook Dale.'" *New Perspectives on the Eighteenth Century* 5, no.1 (2008): 30-40.
- Widmayer, Anne F. "Mapping the Landscape in Addison's 'Pleasures of the Imagination.'" *Rocky Mountain Review of Language and Literature* 50, no. 1 (1996): 19–29.
- Wigen, Kären , and Caroline Winterer. *Time in Maps : From the Age of Discovery to Our Digital Era*. Chicago: University of Chicago Press, 2020.
- Williams, Charles Wye, 1779-1866. *The Combustion of Coal And the Prevention of Smoke: Chemically And Practically Considered*. London: J. Weale, 1854.
- Williams, John. *The natural history of the mineral kingdom in three parts. Part I. Of the Natural History of the Strata of Coal, and of the Concomitant Strata. Part II. Of the Natural History of Mineral Veins, and other Beds and Repositories of the precious and useful Metals. Part III. Of the Natural History of the Prevailing Strata, and of the principal and most interesting Phaenomena upon and within the surface of our Globe. By John Williams, Mineral Surveyor, F. S. S. A. In two volumes. ... Vol. 1*. Edinburgh: printed for the author, by Thomas Ruddiman, 1789. *Eighteenth Century Collections Online* (accessed February 10, 2023). <https://link-gale->

com.proxy.uchicago.edu/apps/doc/CW0107042395/ECCO?u=chic_rbw&sid=bookmark-ECCO&xid=984cabda&pg=228.

Williams, Michael A. "Pillars of Smoke and Flame at Ironbridge." *The Victorian Web*, published June 21, 2018. <https://victorianweb.org/technology/ir/responses/3.html>.

Williams, Raymond. *The Country and the City*. London: Chatto and Windus, 1973.

Williams, Raymond. *Keywords: A Vocabulary of Culture and Society*. Cary: Oxford University Press, Incorporated, 1985. Accessed June 10, 2022. ProQuest Ebook Central.

Williamson, Bethany. "Inexhaustible Mines and Post-Lapsarian Decay: The End of Improvement in Defoe's Tour." *Eighteenth Century Fiction* 32, no. 1 (Fall 2019): 79–99.

Wilson, Sheena, Adam Carlson, and Imre Szeman. *Petrocultures : Oil, Politics, Culture*. Montreal: McGill-Queen's University Press, 2017.

Winchester, Simon. *The Map That Changed the World: William Smith and the Birth of Modern Geology*. New York: HarperCollins, 2001.

Withers, Charles W.J., "Eighteenth-Century Geography: Texts, Practices, Sites." *Progress in Human Geography* vol. 30. no. 6 (2006): 711-729.

Withers, Charles W. J. *Placing the Enlightenment : Thinking Geographically About the Age of Reason*. Chicago: University of Chicago Press, 2007.

Wordsworth, William, and W. Basil Worsfold. *The Prelude*. London : Boston: Chatto and Windus; J.W. Luce, 1907.

Wotton, Henry, Izaak Walton, and Edward Hyde Clarendon. *Reliquiae Wottonianae. Or, A Collection of Lives, Letters, Poems; with Characters of Sundry Personages: And Other Incomparable Pieces of Language and Art*. London: Printed by Thomas Maxey, for R. Marriot, G. Bedel, and T. Garthwait, 1651.

Wrigley, E. A. *Continuity, Chance and Change: The Character of the Industrial Revolution in England*. Cambridge [England] ; New York: Cambridge University Press, 1988.

Wrigley, E.A. *Energy and the English Industrial Revolution*. Cambridge: Cambridge U.P., 2010.

Yager, Patricia. Introduction. "Editor's Column: Literature in the Ages of Wood, Tallow, Coal, Whale Oil, Gasoline, Atomic Power, and Other Energy Sources." *PMLA* 126.2 (March 2011): 305-310.

Yalden, Thomas. *A Poem On the Mines Late of Sir Carbery Price. Dedicated to Sir Humphry Mackworth.: Written By Mr. Tho. Yalden Fellow of St. Mary Magdalen College in Oxford*. The second edition. London: Printed for J. Nutt near Stationer's-Hall, 1701.

Young, Arthur. *A six weeks tour, through the southern counties of England and Wales. ... In several letters to a friend. By the author of the Farmer's letters*, 2nd ed. Dublin: printed for J. Milliken, 1771. *Eighteenth Century Collections Online* (accessed January 14, 2023).

https://link.gale.com/apps/doc/CW0102247168/ECCO?u=chic_rbw&sid=bookmark-ECCO&xid=e7f428a2&pg=1.

Young, Arthur. *The farmer's letters to the people of England: containing the sentiments of a practical husbandman, on various subjects of great Importance: Particularly The Exportation of Corn. The Balance of Agriculture and Manufactures. The present State of Husbandry. The Circumstances attending large and small Farms. The present State of the Poor. The Prices of Provisions. The Proceedings of the Society for the Encouragement of Arts, &c. The Importance of Timber and Planting. Emigrations to the Colonies. The Means of promoting the Agriculture and Population of Great Britain, &c. &c. To which are added, SylvÆ: or, occasional tracts on husbandry and rural oeconomics*, 2nd ed.

London: printed for W. Nicoll, at the Paper-Mill, No. 51, in St. Paul's Church-Yard, MDCCLXVIII. [1768]. *Eighteenth Century Collections Online* (accessed January 14, 2023).

Young, Thomas. *A Course of Lectures on Natural Philosophy and the Mechanical Arts: (Miscellaneous Papers, Reprinted with Corrections)*. London: Printed for Joseph Johnson, by William Savage, 1807.

Yusoff, Kathryn. *A Billion Black Anthropocenes or None*. Minneapolis, MN: University of Minnesota Press.

Zajchowski, Chris A. B., and Jeff Rose. "Sensitive Leisure: Writing the Lived Experience of Air Pollution," *Leisure Sciences* 42, no. 1 (2020): 1–14.