Pantheistic Poetry; Geological Touring; Chemical Experimentation: Coleridge and Davy in the Mountains and on the Page

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COLERIDGE'S CONTINUING ENGAGEMENT WITH PANTHEISM has been a staple of scholarly discussion since, at least, Thomas McFarland's *Coleridge and the Pantheist Tradition*.[1] More recently, historically-nuanced revisions of McFarland's account have been provided by Richard Berkeley, Nicholas Halmi, and Maximilien van Woudenberg.[2] In this process, the significance on Coleridge's philosophical and theological thought of his German sojourn of 1798-99 has come into renewed focus. In what follows I examine a less-discussed aspect of Coleridge's engagement with pantheism at Göttingen University—its imbrication with what is now called earth science but was then known as natural history. This imbrication, I suggest, shaped Coleridge's engagement with nature—the landscape—in 1799, allowing him to adopt a pantheistic view of the world purged of what he had come to see as the atheistic materialism of his mid-1790s influences. In turn, this Coleridgean engagement became one of the formative influences on the nascent culture of geological enquiry in England. It was taken up in the social practice of field investigation and in the model of enquiry adopted by Coleridge's friends, who went on, in 1807, to found the world's first geological society. I focus in particular on one of these friends—Humphry Davy. Coleridgean Spinozism became one of several shaping influences on Davy's conception of nature as a single dynamic 'economy' of processes. Insofar as Davy made important discoveries about nature—isolating new elements and revealing that the interaction of electrical and chemical forces held matter together—then this conception can be said to have had significant effects.

1. Pantheism before Germany

In Bristol in the 1790s, both Coleridge and Davy were influenced by Thomas Beddoes's pneumatic medicine, which operated on the basis of Joseph Priestley's and David Hartley's understanding of the mind as embodied—as matter.[3] Breathing in the gas that Priestley had isolated, oxygen, from one of Beddoes's air bags offered to change mental as well as bodily states. Coleridge declared after reading Priestley that he believed 'in the corporeality of thought.'[4] In 1795 he asked, in a poem concerning the effect of the sea breeze on the mind,

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1 Thomas McFarland, *Coleridge and the Pantheist Tradition* (Oxford: Clarendon Press, 1969).

2 Richard Berkeley, *Coleridge and the Crisis of Reason* (Basingstoke: Palgrave, 2007); Nicholas Halmi, *The Genealogy of the Romantic Symbol* (Oxford: Oxford University Press, 2007); Maximilien Van Woudenberg, *Coleridge and Cosmopolitan Intellectualism 1794-1804: the Legacy of Göttingen University* (London and New York: Routledge, 2018).

3 For recent scholarship on Beddoes's pneumaticism, see the Special Issue of *Essays in Romanticism*, ed. Tim Fulford and Dahlia Porter, 26.2 (2019).

4 CL, 1. 247.

> And what if All of animated Life
> Be but as Instruments diversly fram'd
> That tremble into thought, while thro' them breathes
> One infinite and intellectual Breeze?
> ('The Aeolian Harp' (1795/96, lines 44-47))[5]

Here, air, as metaphor for spirit or intelligence, is significantly material, as is the characterization of thought as the vibrations of an instrument. No origin for it in a divine act of creation is posited. Likewise, Davy's first scientific paper—published in 1799 by Beddoes after he employed Davy to make chemical experiments at the Bristol Pneumatic Institution—argued that light was a form of matter, combining with oxygen in the atmosphere and the body to produce life: 'No more sublime idea can be formed of the motions of matter, than to conceive that the different species are continually changing into each other.'[6] Neither Davy nor Coleridge needed a distinct soul or a separate, eternal God in their system: mind or spirit was determined by, or part of, a material world of constant transmutation as revealed by the oxygen/carbon dioxide cycle that Priestley and Ingenhouz had recently discovered. Coleridge, however, came, in 1796, to rebuke himself for the atheistic tendency in his Priestleian materialism—a pantheism in which God loses his eternal and personal status and becomes an intelligent substance of a material nature. 'How is it that Dr Priestley is not an atheist' he asked.[7]

If Coleridge was distancing himself from pantheism in 1796-97, his sojourn in the German states (1798-99) brought him back to it. Clement Carlyon, his fellow student at the University of Göttingen in 1799, explained that

> the doctrines of Spinoza were asserted by Zimmermann[8] to prevail, almost generally, among the literati of the North of Germany, at the time to which I am referring. Coleridge used frequently to make them the subject of our conversation, and took pains to explain them to us. His concentrated definition of Spinozism was, 'Each thing has a life of its own, and we are all one life."[9]

There's no evidence that Coleridge read Spinoza until later; in Germany the turn to his work came indirectly. In Göttingen, Coleridge attended J. F. Blumenbach's natural history lectures, wherein Blumenbach adopted a theory

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5 PW, 2, ii: 324.

6 'An Essay on Heat, Light and the Combinations of Light,' *Contributions to Physical and Medical Knowledge, Principally from the West of England, Collected by Thomas Beddoes, M.D.* (Bristol, 1799), p. 47. The 'Essay' was first drafted in 1798 while Davy was still in Cornwall; for an edition of the manuscript see Frank A. J. L. James, 'Humphry Davy's Early Chemical Knowledge, Theory and Experiments: An Edition of His 1798 Manuscript, "An Essay on Heat and the Combinations of Light" from The Royal Institution of Cornwall, Courtney Library, MS DVY/2', *Ambix*, 66:4, (2019): 303-45.

7 CL, 1. 192.

8 Eberhard August Wilhelm von Zimmermann (1743-1815), himself a former student at Göttingen. Carlyon and Coleridge met him at Brunswick on their way to Britain.

9 Carlyon, *Early Years and Late Reflections*, 4 vols (London: Whittaker and Co, 1836-58), 1: 193-94. On Coleridge's (mostly later) grappling with Spinoza, see Berkeley, *Coleridge and the Crisis of Reason*, pp. 1-144.

of earth history derived from Jean-Andre De Luc's interpretation of the rock record (he published De Luc's letters to him on geology in German translation in 1796).[10] This divided the earth's past into six periods modelled on the six days of Creation outlined in Genesis. Evidence of animals and humans appears only in the sixth period. Between the periods are convulsions or catastrophes, after which the earth is remade anew—but not by the direct hand of the creator God acting from eternity. Blumenbach (adopting Kant's reworking of his own earlier concept) spoke instead of a nisus formativus, a formative power inherent in nature, allowing the re-creation of earth from within. He did not speculate on its origin, but did declare that it is 'not referable to any qualities merely physical, chemical, or mechanical.' It was a self-renewing power that, to all intents, enacted or even subsumed the creative power of God (who is relegated to first cause): Blumenbach held that all living organisms possess an inherent 'effort or tendency which, while life continues, is active and operative; in the first instance to attain the definite form of the species, then to preserve it entire, and, when it is infringed upon, so far as this is possible, to restore it.'[11] It individuated to many possible forms that were inherent development possibilities in it, in response to varied circumstances. Thus, it combined multiplicity and unity: its parts, Blumenbach stressed (adopting Kantian terms), 'so combine in the unity of a whole that they are reciprocally cause and effect of each other's form.'[12]

That Blumenbach's Kantian understanding of life science was implicitly Spinosistic is not surprising, for Kant had developed his response to Blumenbach's earlier work in the context of the bitter 'pantheism controversy' that had obsessed German intellectuals since the early 1780s, when F. H. Jacobi accused the recently deceased Gotthold Ephraim Lessing of having covertly embraced Spinosism. Coleridge had become interested in the pantheism controversy before going to Germany, probably via Beddoes's impressive library of German books and periodicals. In 1796 he referred to Lessing as 'the most formidable infidel' and intended to translate a text that precipitated Jacobi's attack on Lessing—the Wolfenbüttel Fragments, in which revealed religion and Jesus's divinity were denied.[13] This denial of a personal Christian God because proofs of his existence could not be made was, Jacobi suggested, the logical consequence of a philosophy dependent only on reason. Such philosophy, he argued, tended ineluctably to an atheistic Spinosism that reduced God to a substance, an aspect of a material universe. Feeling himself targeted, Lessing's collaborator Moses Mendelssohn defended his friend's interest in Spinoza, differentiating Lessing's pantheism from materialism. Kant then intervened in the debate by arguing that both Jacobi and Mendelssohn

[10] As shown by Rudwick, *Bursting the Limits of Time: The Reconstruction of Geohistory in the Age of Revolution* (Chicago: Chicago University Press, 2005), pp. 297-302.

[11] Blumenbach, 'Über die Bildungstrieb,' translated in James Cowle Prichard, *A Review of the Doctrine of a Vital Principle: As Maintained by Some Writers on Physiology* (London: John and Arthur Arch 1829), p. 216.

[12] Blumenbach's *Handbuch*, 1797 edition, quoted in Timothy Lenoir, 'Kant, Blumenbach, and Vital Materialism in German Biology', *Isis*, 71 (1980): 77-108 (p. 83).

[13] CL, 1. 197.

misconceived reason. Its speculative use in metaphysics led to contradictions – hence it could not be used to discover the origin of the nisus formativus. However, its practical use to postulate what it could not speculatively prove – God's existence, the soul's immortality – was a precondition for moral law.[14] After this, Lessing's position, accepting that the Bible could not demonstrate God's existence or Jesus's divinity, but postulating the existence of a 'soul of the all,' a 'one and all,' made pantheism popular, with Herder, Goethe and Schelling among those adopting Spinosistic positions[15] – as Zimmerman attested. God was not material, not a substance; but, it could be speculated if not proved, a universal spirit in which all things are immanent: one and many.

Coleridge's intention while attending university at Göttingen was to research a biography of Lessing, including 'the controversies, religious & literary' that his works occasioned;[16] it was the reinforcement of his reading about Lessing's Spinosism[17] by his exposure to Blumenbach's discussions of the nisus formativus that allowed him to remodel the pantheism he had grown suspicious of in Britain. He would remain preoccupied with the issue for much of his life, as his later notes on Jacobi, and on Fichte and Schelling, who became involved in the controversy, attest. He learned to understand natural history and geology as revealing the unity in multiplicity that Lessing conceptualized in his reading of Spinoza—a world of life-forms in individuating flow, in which mind, like body, and world were, as Marjorie Levinson explains, mutually co-created

> by defining motion as integral to matter and (through the concept of conatus) as the factor that individuates bodies, Spinoza asserts that the creation and evolution of both living and inanimate bodies is inherent in the properties of nature itself—in other words, a process of intrinsic mutation or what we might call today 'co-evolution' as distinct from adaptationism. He asserts too the systemic and dynamic wholeness of a nature that is also culture, a oneness that nonetheless preserves the functional differences of the two orders. Coleridge's famous coinage, 'multeity' ('multeity in unity), gains force from Spinoza's insistence on the entity status of the components of the organized unity. . . . As for freedom, . . . that occurs when we grasp our immersion in the whole of nature, for when we do, we see that nature cannot be said to act on the body. Rather, the bodymind participates actively—literally, mindfully—in the global play of motions and affections, giving as well as getting. Seeing

[14] In 'Was heißt: sic him Denen orientieren': see Berkeley, *Coleridge and the Crisis of Reason*, p. 66. My account of the controversy is indebted to Berkeley's (pp. 59-70).

[15] On Goethe, Herder and Spinoza, see Robert J. Richards, *The Romantic Conception of Life: Science and Philosophy in the Age of Goethe* (Chicago and London: Chicago University Press, 2002), pp. 376-80. On Lessing's and Heine's Spinozism, see Willi Goetschel, *Spinoza's Modernity: Mendelssohn, Lessing and Heine* (Madison, WI: Wisconsin Univ. Press, 2004), pp. 231-78. On Schelling's and Fichte's positions, and Coleridge engagement with them, see Berkeley, *Coleridge and the Crisis of Reason*, pp. 145-210.

[16] Letter to Thomas Poole, 4 January 1799; CL, 1. 454-55.

[17] Van Woudenberg charts Coleridge's meticulous research about Lessing at Göttingen, noting that the periodical *Deutsches Museum* (of which Coleridge borrowed three volumes from the university library) carried articles on Kant's intervention in the pantheism controversy. *Coleridge and Cosmopolitan Intellectualism*, pp. 184-85n42.

> into the life of things and seeing ourselves there—that is, adequately knowing our position in the whole—is freedom.[18]

Spinoza's preservation of an actively knowing individual distinct but neither divided from or determined by the whole offered a pantheism without the determinism of Priestleian materialism, as did Lessing's understanding that all came to life in and as a world soul, rather than substance.

The hiking tour in the Harz mountains that Coleridge took from Göttingen gave him a chance to explore his pantheistic learning outside the library and the lecture hall. The tour was led by Blumenbach's son, and involved Carlyon, the Parry brothers and their fellow student George Bellas Greenough. It was social but also geological—the itinerary influenced by Blumenbach's interests. The walkers inspected rocks in caves; they descended mines to examine strata; they viewed landforms about which they had heard in Blumenbach's lectures. Coleridge offered pantheist commentary, declaring of the sound of wind in the pines at Rehberg 'what a one thing it is, a sound that impresses the dim notion of the Omnipresent.'[19] He improvised verse; in his 'Lines Written in the Album at Elbingerode' he depicted landscape in motion, as if the huge transformations that, Blumenbach had shown, affected the earth in the deep past were taking place before his eyes: 'I stood on Brocken's Sovran height & saw / Woods crowding upon woods, hills over hills / A surging Scene and only limited / By the blue Distance …' (lines 1-4).[20] Evidently the imaginative insight achieved in verse had a geological basis; Coleridge ends the poem feeling empowered to infer a unitary energy driving the 'surging' change that is the world: 'God is every where! The God who fram'd / Mankind to be one mighty Brotherhood, / Himself our Father and the World our Home' (lines 35- 37). This formulation, of course, verges on Spinosism: though it names a personal God, He appears to be the one and many that is nature, nature co-created by the self that it creates.

Having returned to Bristol, Coleridge met Davy for the first time between 15 and 22 October 1799 at Beddoes's Pneumatic Institution where Davy was in the process of a series of experiments on the effect on body and mind of nitrous oxide and other gases. Excited by each other's brilliance, the two men rapidly generated a shared language of enquiry in which both chemistry and poetry—contrasting organizations of mind—were valid ways of formulating an understanding of life in which the mind was formative of as well as formed by the play of matter.[21] Coleridge became a reader of chemistry keen to carry out experiments that offered to demonstrate the mutual co-creation of mind and matter, one and many. In his 1799 'Essay on Heat, Light and the Combinations

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[18] Marjorie Levinson, 'A Motion and a Spirit: Romancing Spinoza,' *Studies in Romanticism,* 46 (2007): 367-408 (pp. 381-2). Levinson develops, re Coleridge, the work of Spinoza scholars including Jonathan Irvine Israel, *Radical Enlightenment: Philosophy and the Making of Modernity, 1650-1750* (Oxford: Oxford University Press, 2001).

[19] CL, 1. 502; discussed by Dennis R. Dean, *Coleridge and Geology* (Ann Arbor MI: Scholars' Facsimiles & Reprints, 2004), pp. 49, 64.

[20] Sent in a letter to his wife 17 May 1799; CL, 1. 504-5.

[21] On Coleridge's and Davy's intense relationship in 1799 and 1800, see Jan Golinski, *The Experimental Self: Humphry Davy and the Making of a Man of Science* (Chicago: University of Chicago Press, 2016).

of Light,' Davy had speculated about the reciprocal formation of body, feeling and consciousness; 'we cannot entertain a doubt but that every change in our sensations and ideas must be accompanied with some correspondent change in the organic matter of the body. These changes experimental investigation may enable us to determine. By discovering them we should be informed of the laws of our existence, and probably enabled in a great measure to destroy our pains and to increase our pleasures.'[22] Excited by the prospect that Davy's nitrous oxide experiments were indeed determining the mutual changes—the laws of our existence—Coleridge gave him the benefit of the latest German researches into life, both scientific and philosophical. On 7 June 1800 he told Davy about his idea of translating Blumenbach's 'manual of natural History.' After listing its contents, and recommending Beddoes be consulted as to its importance, he asked Davy to 'state your metaphysical system of Impressions, Ideas, Pleasure, & Pains,' so that he could discover where it differed from Spinoza and Leibnitz, whom he intended to read. 'Blumenbach's Book,' he continued, 'contains references to all the best writers on each subject.'[23] Davy's reply to this nudge that he should relate his scientific theory to Blumenbach's Kantian development of the pantheist controversy came in the form of verse. By October he had sent Coleridge a new poem called 'The Spinosist'—Coleridge returned appreciative comments:[24]

The Spinosist
Lo oer the earth the kindling spirits pour
The spark <seeds> of life that mighty <bounteous> nature gives. —
The liquid dew becomes the rosy flower
The sordid dust awakes & moves & lives.—
All, All is change, the renovated forms
Of ancient things arise & live again.
The light of suns the angry breath of storms
The everlasting motions of the main
Are but the engines of that powerful will. —
The eternal link of thoughts where form resolves
Has ever acted & is acting still
Whilst age round age & world round world revolves.
2 Linked to the whole the human mind displays
1 No sameness & no <deep> identity divine
Changeful as the surface of the seas
4 2 Impressible as is the blue moving sky
To scattered thoughts some unknown laws are given
By which they join and move in circling life. —

[22] 'An Essay on Heat, Light and the Combinations of Light,' p. 144. Here, I develop a point made by Trevor H. Levere, *Poetry Realized in Nature: Samuel Taylor Coleridge and Early Nineteenth-century Science* (Cambridge: Cambridge University Press, 1981), p. 23.
[23] CL, 1. 590-91.
[24] CL, 1. 630-34; letter of 9 October 1800.

Being of aggregate the power of love
Gives it the life the joy of moments bids it rise
In the wild forms of mortal things to move
Fix'd to the earth below the eternal skies
To breath <the> ether; & to feel the form
Of orbed beauty through its organs thrill
To press the limbs of life with rapture warm
And drink of transport from a living rill. —
To view the heavens with solar morning radiance white bright
Majestic mingling with <the> still blue ocean ocean blue. —
Filled by a thousand silver streams
& played upon by ten thousand cloudless breezes
To view the meadows <forests> green the mountains white
The peopled plains of rich and varied hue. —
To feel the social flame to give to man
Ten thousand signs of kindling burning energy.
The nothingness of human words to scan
The nothingness of human <things> cares to fly. —
To live in forests mingled with the whole
Of natures forms, to die beneath upon feel the breezes play
O'er the parched forehead <brow> to see the planets roll
oer their grey head their life diffusing ray
To die in agony & In many days
To give to Nature all her stolen powers
Etherial fire to feed the solar rays
Etherial dew to feed the earth in showers.[25] .

The argument of this poem is a development in an explicitly Spinozistic direction of the concepts in Davy's 'Essay' published in the previous year. Mutual influence of mind, body and nature is still endorsed, but now there is explicitly no personal or biblical God—no deist's designer either—but an ever-transmutative world-will that is the 'eternal link of thoughts where form resolves' and of which nature is the 'engine.' No heaven or hell, no release of the soul, but a return to earth to renew the life-force whence new lives with new thoughts generate. Life is a self-renewing cycle taking place across the universe (many solar systems) and over the deepest of timescales ('age round age'). Form as well as content is significant in this poetry. Using verse rather than prose or laboratory apparatus, Davy conducts a thought-experiment. In this process, the individual energy of his embodied mind is reshaped by its encounter with one of the many systems external to it—by means of the subjection of its expression to formal rules (rhyme/metre). Davy is also more Coleridgean in manner than he had been before. He uses effusive, ecstatic utterances, apparently overflowing in a moment of excited speech, as in 'The

[25] Sharon Ruston, 'From "The Life of the Spinosist" to "Life": Humphry Davy, Chemist and Poet', in *Literature and Chemistry: Elective Affinities*, ed. Margaret Hagen and Margery Skagen (Aarhus: Aarhus University Press, 2013), pp. 77-97; Royal Institution MS HD/13C: 17-10.

Aeolian Harp' and 'Lines Written in the Album at Elbingerode.'

An exchange of letters from the same period, autumn 1800, shows Coleridge incorporating Davy in the other legacy of his German-influenced Spinosism—the geologizing hiking tour. Coleridge's letter, sent from the northern Lake District on 18 October, is a narrative intended to summon Davy as a virtual companion, as if to replace by correspondence the stimulating group of walkers Coleridge had enjoyed in person in the Harz. The letter shows that he is faithfully upholding the mode of proceeding—the pantheist language—shared in his and Davy's poetic exchange.

> On this mountain Carrock, at the summit of which are the remains of a vast Druid Circle of Stones, I was wandering [. . .] the wind became so fearful & tyrannous that I was apprehensive, some of the stones might topple down upon me. So I groped my way further down, and came to 3 Rocks, placed in this wise each supported by the other like a Child's House of Cards, & in the Hollow & Screen which they made I sate for a long while sheltered as if I had been in my own Study, in which I am now writing—Here I sate, with a total feeling worshipping the power & 'eternal Link' of Energy. The Darkness vanished, as by enchantment [. . .] I descended by the side of a Torrent, & passed or rather crawled (for I was forced to descend on all fours) by many a naked Waterfall, till fatigued & hungry (& with one finger almost broken, & which remains swelled to the size of two Fingers) I reached the narrow vale, & the single House nested in Ashes & Sycamores.[26]

Here Coleridge's prose style should not be mistaken for the dispassionate empiricism and factuality that the Royal Society and Admiralty encouraged scientific travellers to adopt. Rather, it is an attempt to render a subjective, novel and extreme experience in the moment. Coleridge uses parentheses and dashes to avoid a syntax of cause and effect and to suggest spontaneous notetaking. The shifting point-of-view suggests that knowledge occurs through motion, changing moment to moment. He shifts tense to transport the reader from the time of experience to the time of writing and back again. The prose strives to revive experientially, rather than just distantly describe, an overwhelming bodily and mental encounter with nature that enables the intuition of a power and energy linking everything.

Davy replied on 26 November:

> Oh that the organiser of the universe *pleasurable sensation* or *love* would give to impressions exactly the same laws of motion as it has given to ideas, then should my torpid organs that now rest confined in a *prison* of *civilisation* ie a house, be where their ideas are, with you, wandering over majestic mountains, cooled by the breezes of health, or sleeping upon brown leaves beneath the unclouded heaven or floating on lakes coloured by the suns of evening.

[26] CL, 1. 637-39.

> . . . Request the spirit that dwells in the woods & mountains to become concentrated with all its powers of modification in your organs, & no task will be easier than that of changing the conditions of health life & disease—I thank you for your poem.[27]

Here Davy's excited language echoes Coleridge's, assuring his friend that Davy shares his experience vicariously because his letter is so vivid. Behind both is the pneumatic medicine of their mentor Beddoes, who treated consumptives with oxygen and attributed diseases to air pollution. In the mountain breezes, both men suggest, lies a cure for body and embodied mind. The physiological assumptions they share are pantheist: to breathe the 'spirit that dwells in the woods' is to share in the power & 'eternal Link of Energy.' Here, Coleridge's 'eternal link' is a quotation from Davy's Spinosist poem. In return, Davy's phrase 'spirit that dwells in the woods' refers to Wordsworth's lyrical ballad 'Tintern Abbey' (which Davy was seeing through the press at Coleridge's suggestion). Thus poetic allusion is used to confirm a shared 'in' language: Coleridge and Davy each recognizes that the other will understand his allusion and know that it registers their pantheistic alignment of human spirit, material things, and the eternal energy that drives both spirit and things. In this process, poetry and the language of their letters (structured so as to seem spontaneously overflowing) are implicitly endorsed as the right media for a mode of enquiry that both men practise. The mountains, meanwhile, are the right venue not just for pneumatic but also for geological reasons: it is by the immediate bodily and mental involvement with the rocks and crags that the earth is known, close-up. Carrock Fell, moreover, was worth exploring close-up: it is a geological rarity, rich in rare minerals, as Coleridge knew from William Hutchinson's county history.[28]

2. Davy's Geologising Tours

Having been encouraged in pantheistic poetry and geological tourism, Davy was soon inducted into the circle of students with whom Coleridge had hiked in the Harz. His Spinosist poem became a ticket of entry to Coleridge's walking group. By the start of 1801 Carlyon, Davy's former schoolfellow, had been sent a copy. On 3 January Carlyon sent a transcription to Greenough[29]—a sign of the importance to the Harz men both of poetic responses to landscape and of pantheism. In mid-August 1801 Carlyon and Greenough, having received their copies, sought Davy out in Penzance and went walking on the

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[27] Morgan Library and Museum, Misc English Coleridge, MA 1857.

[28] William Hutchinson, *The History of the County of Cumberland*, 2 vols (Carlisle, 1794), 2: 382. It also featured what was interpreted as a henge.

[29] See Dean, *Coleridge and Geology*, p. 49 and University College London (UCL) Greenough MS 29/1. On the poem and its history in MS and print, see Amin, Wahida. *The Poetry and Science of Humphry Davy* PhD dissertation, University of Salford, 2013. http://usir.salford.ac.uk/30795/1/Wahida_Amin_-_The_Poetry_and_Science_of_Humphry_Davy_-_23.01.14.pdf, pp. 113-30. On the portrayal of the scientific enquirer in the poem, see Ted Underwood, *The Work of the Sun: Literature, Science and Political Economy, 1760–1860* (New York and Basingstoke: Palgrave Macmillan, 2005), pp. 67-71. As Ruston ('From "The Life of the Spinosist" to "Life"', p. 85) points out, the version sent by Carlyon to Greenough does not reflect the changes that Coleridge advised Davy to make. See also June Z. Fullmer, 'The Poetry of Sir Humphry Davy', *Chymia,* 6 (1960): 102-26.

coast with him, viewing the unusual variety of rock formations. Their mutual friend Thomas Underwood had preceded them by two weeks: he later remembered that Davy had walked with him round the Lizard peninsula:

> the enthusiastic delight with which he dwelt upon the description of the Serpentine rocks, polished by the waves, and reflecting the brightest tints from their surfaces, seemed inexhaustible [. . .]
>
> His views of Nature, and her sublime operations, were expressed without reserve, as they rapidly presented themselves to his imagination: they were the ravings of genius; but even his nonsense was that of a superior being.'[30]

Perhaps the 'The Spinosist' was recited on this trip, as a spontaneous overflow of feeling instancing Davy's romantic sensitivity to a land and seascape that he understood as interactive, with water, light, rock, and walker in dynamic relationship—an understanding with geological implications. Not 'nonsense,' but a paradigm of enquiry of which a vital element was poetic apprehension of a material world in which mind was in play.

Pedestrian tours now became the modus operandi of the Harz men, with Davy a more pivotal figure than Coleridge, and with both mineralogical collection and hilltop prospects a key feature. In 1802 Greenough went through Switzerland, Italy and to Mount Etna on Sicily, investigating the nature of basalt and granite (a crux in contemporary theories of the earth). At the Valais on 8 August Greenough rhapsodized about the sublimity of the geological evidence, taking a prospect-view influenced by Blumenbach's theory of a world repeatedly destroyed and remade by convulsions:

> If it be delightful to wander lost in meditation amid the ruins of some weather-beaten castle overgrown with melancholy ivy, how much grander is the spectacle which seems to represent the ruins of our world! Everything around us bore testimony of the convulsions which at some former time nature must have suffered.[31]

While Greenough was in the Alps, Davy was in North Wales with Coleridge's friend Samuel Purkis, inspecting rocks and collecting minerals. Purkis later remembered how 'we visited every place possessing [. . .] any curious productions of nature or art, and every spot distinguished by romantic and picturesque scenery. [. . .] Every mountain we beheld, and every river we crossed, afforded a fruitful theme for his scientific remarks.' [32] Of the hilltop view from Arran Benllyn, Purkis noted, 'we seemed to feel ourselves like beings of a higher order in a celestial region, looking down on the lower world with conscious superiority.' For Davy, the vantage-point enabled landforms, weather-systems, and the works of humankind to be visualised as one organic

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[30] Quoted in John Ayrton Paris, *The Life of Sir Humphry Davy, Bart. LL. D.*, 2 vols (London: Henry Colburn and Richard Bentley, 1831), 1: 125-26.

[31] UCL Greenough MS 7/10: 52 quoted in John. F. Wyatt, 'George Bellas Greenough: a Romantic Geologist', *Archives of Natural History*, 22 (1995): 61-71 (p. 66).

[32] Quoted in Paris, *Life of Sir Humphry Davy*, 1: 153-54.

system. He responded in a burst of 'unmeasured blank verse, highly animated and descriptive, at once poetical and philosophical.'

Davy did not write down his spontaneous effusion on this occasion (unless it was, unbeknownst to Purkis, a version of 'The Spinosist'), but his poetry featured again in early 1804 when the Harz tourists were reunited in London. Sometime between 26 January and 25 March, Coleridge, Carlyon and Greenough met for dinner in town, with Thomas Poole and Davy also there.[33] Davy recited 'The Spinosist'—almost by now, one suspects, the group anthem. The conversation must have featured geological touring, for Coleridge was being prepared for his trip to Malta and Sicily. During these months, Greenough read the journal of his Sicilian tour and exploration of Mount Etna to Coleridge;[34] Coleridge then recorded the names of different kinds of rocks found in the area and noted that 'views from Etna & such Heights are sublime / for they are a true Language / crinkle crankle withered dried up lines.'[35] Evidently, he hoped to repeat Greenough's trip to the volcano and to gain a vantage point from which the syntax, grammar and pagination of nature's language[36] could be comprehended. To assist him, Greenough gave him a copy of René Just Haüy's *Traité de Minéralogie* as a farewell gift.[37] Coleridge visited Sicily in October and was 'twice on the top of Mount Etna.'[38] He travelled there again in October 1805 and recorded the view 'from the mountain to the cloud, from the Cloud to the blue depth of Sky, which, as on top of Etna in a serene atmosphere, seems to go *behind* the Sun, all is *gradation*, that precludes division indeed, but not distinction.'[39] Nature, to follow his language analogy, was articulated by the walker from on high as a complex, dynamic, expressive whole—articulate rather than single. It belied the explanations of 'corpuscular materialism' (Priestley), but its distinct but undivided quality suggested Spinoza's 'conatus'—the co-creation of unity and multiplicity.

While Coleridge repeated Greenough's pedestrian tourism alone in the Mediterranean, Davy explored the basalt and granite of Scotland and Ireland (summers 1804 and 1805), gleaning information for his geological lectures.[40] Greenough attended these in 1805,[41] and thus listened to Davy presenting enquiry as an outdoor process made while touring a landscape rather than as

[33] The dinner is recalled by Carlyon over thirty years later, but misdated to autumn 1803 (*Early Years and Late* Reflections, 1: 198-99; 236). But Coleridge came to London only on 26 January 1804—staying with Poole there for 2 months and renewing his friendship with Davy.

[34] On 5 or 6 February 1804: see CL, 2. 1059.

[35] CN, 2. 1886 (the rocks), 1889 (the lines).

[36] On Coleridge's development, from the philosophy of George Berkeley, of an understanding of nature as language see Alan Bewell, 'Coleridge and Communication.' *Romanticism and Victorianism on the Net*, 61 (2012). https://doi.org/10.7202/1018598ar

[37] CN, 2. 2014; see Wyatt, 'George Bellas Greenough,' 63; Donald Sultana, *Samuel Taylor Coleridge in Malta and Italy.* (Oxford: Blackwell, 1969), pp. 85-87. See also M. J. S. Rudwick, 'Hutton and Werner Compared: George Greenough's Geological Tour of Scotland in 1805', *The British Journal for the History of Science*, 1 (1962): 117–35.

[38] CN, 2. 2714.

[39] BL Add. MS 47, 518 ff.128-29v. Cited in *Coleridge's Writings Volume 5: On the Sublime*, ed. David Vallins (Basingstoke and New York: Palgrave Macmillan, 2003), p. 78.

[40] On Davy's mineral collecting as an attempt to improve finances and promote science at the Royal Institution, see Frank A. J. L. James, 'Negative Geology: Humphry Davy and Forming The Royal Institution's Mineral Collection, 1803–1806', *Earth Sciences History*, 37 (2018): 309–32.

[41] They continued annually until 1811 and constituted the first such course to be offered in Britain.

the instrumental manipulation of mineralogical specimens:

> every mine or quarry that is opened, every new surface of the earth that is laid bare, and every new country that is discovered offers to him novel sources of information. . . . And the beauty, the majesty, and sublimity of the great forms of nature have their effect in the imagination rather increased than diminished by being connected with the views of philosophy. . . . The most sublime speculations are awakened, the present is disregarded, past ages crowd upon the fancy, and the mind is lost in admiration of the designs of that great power who has established order in which at first view appears as confusion.[42]

Aesthetic experience, here, stimulates a mental process in which the elements of the scene are elaborated upon, and their observed relationships potentially rearranged or supplemented. The empirical is subsumed within imaginative fantasy, but that fantasy is not merely playful: it allows an inference of order to be made in what at first appeared to be confusion. Thus, it is a knowledge-forming process. It is, in fact, productive to be 'lost in admiration,' for loss is followed by the gain of new insight. Davy begins in aesthetic feeling and ends in an apprehension of the imagination's power to intuit an order-establishing 'great power' as the principle of nature. Interestingly, he does not name God as the source of order: 'that great power' is a phrase that, ambiguously, could refer to a Biblical Jehovah, to a deist designer, or to a pantheist immanent force.

Davy illustrated the aesthetic effect of nature on the natural philosopher's imagination by quoting his own translations of classical verse-responses to landforms. In the first lecture, he offered his own rhyming translation of a passage from the hymns of Orpheus that theorizes about the earth:

> Almighty Jove, the first, the last,
> The present, future, and the past
> Source of all existing things,
> From thee created springs.
> From thee the heavens derive their birth,
> From thee arose the solid Earth,
> From thee the radiant solar light,
> From thee the stars that gild the night.
> Thine is the morning changeful hue,
> Thine is the ether bright and blue,
> Thine is the warmth of summer days,
> Thine is the land, the air, the seas.
> Thy substance is our vital breath,
> Thy spirit raises life from death.[43]

[42] *Humphry Davy on Geology: the 1805 Lectures for the General Audience*, ed. Robert Siegfried and Robert H. Dott, Jr. (Madison WI: University of Wisconsin Press, 1980), p. 13.
[43] *Humphry Davy on Geology*, pp. 16-17.

While this and the other verse-quotations identified poetry as not just an ancient but also a contemporary discourse of scientific enquiry, because it inferred and modelled creative order, they also hinted at an underlying pantheism as the paradigm within that discourse operated. Here, it is the penultimate line, identifying 'our vital breath'—perhaps air—as the substance of God that threatens to collapse the distinction between Creator and created, eternal and temporal, as Spinozism and materialism tended to do.

Greenough must have been encouraged by what he heard in the lectures, for in July 1806 he accompanied Davy to the far west of Ireland.[44] Davy's journal of that tour demonstrates the importance of sociable field trips to the development of geology: he shared views and experiences with Greenough as he had with Purkis and Carlyon in previous years; he also questioned local people. Then, in November 1807, while Davy was continuing his triumphant series of experiments exposing alkali earths by harnessing electricity, he and Greenough founded the Geological Society of London (the world's first such society).[45] Their fellow founders included friends who had accompanied them on tours through hill regions, collecting minerals, observing rocks, and angling.[46] The Society now formalized a culture and a group that dated from the Harz tour and had, insofar as Davy influenced several of its members, a distinctly Coleridgean aspect: pantheist in philosophy and eclectic in method—involving poetic appreciation as well as specimen collection. As a social practice it reflected the student excursion—groups of young, middle-class men discovering, beyond the library and the laboratory, a common masculine identity as they enjoyed liberty from business and from hierarchy while roving the hills.[47]

3. Publishing the Philosophy of Nature

In *The Friend* (1818) Coleridge extolled Davy's experimental discovery of the alkali metals as a realization of the law governing both mental and material development:

> Such, too, is the case with the assumed indecomponible substances of the laboratory. They are the symbols of elementary powers, and the exponents of a law, which, as the root of all these powers, the chemical philosopher, whatever his theory may be, is instinctively labouring to extract. This instinct, again, is itself but the form, in which the idea, the mental correlative of the law, first announces its incipient germination in

[44] Davy's 1806 Irish journal is published, in part, in John Davy, *Memoirs of the Life of Sir Humphry Davy,* 2 vols (London: Longman, Rees, Orme, Brown, Green & Longman, 1836), 1: 274–91. For Greenough's journal see UCL MS Greenough/7/13.

[45] On the foundation of the Society, see the essays in *The Making of the Geological Society of London*, ed. Cherry Lewis and S. J. Knell (London and Bath: Geological Society of London, 2009). See also M.J.S. Rudwick, 'The Foundation of the Geological Society of London: Its Scheme for Cooperative Research and its Struggle for Independence', *British Journal for the History of Science*, 1 (1963): 325-55.

[46] See Lewis, 'Doctoring Geology: the Medical Origins of the Geological Society,' in *The Making of the Geological Society of London*, p. 76. Also, Simon J. Knell, *The Culture of English Geology, 1815–1851* (Aldershot: Ashgate, 2000).

[47] See Roy Porter, 'Gentlemen and Geology: the Emergence of a Scientific Career, 1660–1920.' *The Historical Journal*, 21 (1978): 809-36.

> his own mind: and hence proceeds the striving after unity of principle through all the diversity of forms [. . .] It is the sense of a principle of connection given by the mind, and sanctioned by the correspondency of nature. Hence the strong hold which in all ages chemistry has had on the imagination. If in Shakspeare we find nature idealized into poetry, through the creative power of a profound yet observant meditation, so through the meditative observation of a Davy, a Wollaston, or a Hatchett;
>
> > By some connatural force,
> > Powerful at greatest distance to unite
> > With secret amity things of like kind,
>
> we find poetry, as it were, substantiated and realized in nature,—yea, nature itself disclosed to us, *geminam istam naturam, qua: fit et facit, et creat et creatur,* as at once the poet and the poem![48]

This high praise positioned Davy's chemical thought as being akin to Shakespearian poetic composition. Productive as it was of elemental discoveries, it was an exemplification of that which it discovered in matter—a deposition of mental and material creativity that revealed their underlying unity as parts of a single complex nature. It was thus implicitly pantheistic—(Coleridge's 'connatural force' echoing Spinoza's 'conatus') with God, the Creator, unstably reserved apart from his dynamic creation.

It was in his last works that Davy responded self-consciously to his hiking friends' model of enquiry, presenting a fictionalized account of his scientific thought-process that echoed Coleridge's dynamic theory and revived the discussions of his old geological excursions. *Consolations in Travel* (1830) is a prose rendition of an imaginary dialogue, held on the side of Vesuvius, that is akin to but not directly mimetic of the conversations that Davy had held with his geologizing friends on hillsides in Cornwall, Wales, and Ireland. As in the Spinosist poem of 1800, the dialogic process is itself, in a pantheistic argument, seen as one manifestation of an ever-changing life force. 'I believe,' says one of the speakers

> in the immortality of the sentient principle in man; destruction of life is only a change of existence, and supposing the new existence a superior one it is a gain. To the Supreme Intelligence the death of a million of human beings is the mere circumstance of so many spiritual essences changing their habitations, and is analogous to the myriad millions of larvæ that leave their coats and shells behind them and rise into the atmosphere, as flies in a summer day.[49]

This vision of the world—spiritual and material—as an endless cycle of

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[48] *Friend*, 2. 470-71. The Latin means, 'the dual nature, which made and makes, both creates and is created.'

[49] *Consolations in Travel*, *Or, The Last Days Of A Philosopher* (London: John Murray, 1830), p. 88. On this text, see James A. Secord, 'Fantastic Voyages: Humphry Davy's *Consolations in Travel*', chapter one of *Visions of Science: Books and Readers at the Dawn of the Victorian Age* (Chicago: Chicago University Press, 2014).

transmutation itself recycles the Coleridge-influenced vision of 1800. It implies, as Golinski points out, the 'eternity of matter and autonomy of its active powers.'[50] It also implies the continuing practice of pantheist poetry as a mode of describing and also modelling, in microcosm, those active powers. In 1827 Davy wrote this verse in his notebook, invoking, rather than a separate God who created from eternity, a world-spirit very similar to the natura naturans or nisus formativus:

> an intelligence, a power
> Which is the principle of life & thought
> Nay life itself e'en as in our own minds
> There is a one presiding principle
> Which for the body acts. Een so in this
> The visible universe, a spirit moves Omnipotent.
> And in the birth of Man & in his history.
> There is destiny [illegible] forth
> a knowledge of futurity. (RI MS HD 14e 176–5)

Conclusion

Davy proved to be Coleridge's best invention. Coleridge is present in the literary forms of the prose dialogue and prospect-view verse that Davy adopted, and in the persistent pantheism of Davy's view of natural processes. Under the aegis of a distinctly Spinosistic and Göttingengian philosophy of nature, Davy uncovered new elements and revealed that nature is bonded by electro-chemical forces. The influence also persisted in the sociality of the field trips that Davy made with various of Coleridge's fellow explorers in the Harz mountains. These in turn led to the institutionalisation of geology in Britain—as a social practice and a mode of enquiry—, in the Geological Society of London. In these respects it is apparent that the ramifications of Coleridge's encounter with Spinoza and Blumenbach are detectable in some of the most significant scientific developments of the nineteenth century.

[50] Golinski, *Experimental Self*, p. 167. See also David M. Knight, 'Higher Pantheism', *Zygon*, 35 (2000): 603-12.