

## *Introduction*

About two miles from Bampton our road walled by the mountains – that on our left Walla Crag – a mountain whose constituent lines with infinite variety yet all in segment of Circles – the whole Crag a rude semicircle – the other Hills bare (save at their feet inclosed fields) the Walla’s *Toes* run into the Lake in Lingulis Where the foot of the Walla runs with its distinct Toes into the Lake, there the inclosures too from the opposite mountains run into it – & these form that narrow part of the lake, which as you first approach appears the termination / But standing a hundred yards high you behold a second reach – where no inclosures are seen, but the bare Mountain on the right which alone we see, forms a bay / a beautiful Crescent /

(*CN* 1:510; f. 52)

This book began when I opened the first two volumes of Coleridge’s *Notebooks* and started reading his descriptions of the landscape he passed through while scrambling among the fells, mountains, valleys, and hills of Britain between 1794 and 1804. The extraordinary rigor of Coleridge’s walking as well as the mode in which he experienced his own passage through rough and rugged terrain immediately intrigued me. In particular, Coleridge’s alertness to the lines of motion that run through and help define his surroundings caught my attention and alerted me to his calling upon what I came to term “the geometric idiom” to aid his capturing, and, at times, diagramming the shape of what he perceived. This recognition led me on a journey that commences with a description of his walking excursions, then discusses his idiosyncratic perspective when writing about what he saw or felt underfoot. Eventually this inquiry directed me to consider his indebtedness to his training in Euclidean geometry, an instruction that began at Christ’s Hospital School and continued, in earnest, at the University of Cambridge. Studying this discipline not only gave him a groundwork by which to measure and comprehend what emerged while tramping from place to place but also offered him a means

of understanding the natural world. Inevitably, Coleridge's sense of the tread and pace of his feet, his sensitivity to line, as well as his attention to geometry played a role when he composed his nature poetry.

That Euclid's *Elements* should have been such a basic text in the eighteenth and early nineteenth centuries in England is understandable. For centuries, Euclid – whose work first appeared in Greek during the third century BC – had been a means of working out the spatial arrangement of one's surroundings.<sup>1</sup> As Jacqueline Stedall, an historian of mathematics, points out, many manuscript translations from Arabic to Greek and to Latin would have been on the shelves of monastic libraries as well as in the libraries of fledgling universities in Paris, Oxford, and Cambridge during the twelfth and thirteenth centuries.<sup>2</sup> Indeed, the Bodleian Library owns the oldest extant copy, created in Byzantium in AD 888. Scholars would have been familiar with his work not only through these copies but also as a result of their reading Aristotle and Plato as well as their studying commentators like Proclus, who in 1533 annotated the first four books of Euclid's *Elements*. Of course, the reading of Proclus until the publication of Thomas Taylor's English translation at the turn of the eighteenth century would have been limited to those who knew Greek or Latin.<sup>3</sup>

In 1551, however, a change occurred. It was in that year that Robert Recorde (1510–58), a fellow of All Souls College, Oxford, and later associated with Cambridge, published *The Pathway to Knowledge*, a conceptual translation into English of Euclid's *Elements*. His desire was to make some parts of that work available to the “ordinary” Englishman.<sup>4</sup> Stedall suggests that he wanted to introduce geometry to a population that had hardly heard of such a subject so as to provide a practical geometrical knowledge for use in everyday life. Recorde had in mind those whose livelihood could be improved by a knowledge of geometry – such people as carpenters, joiners, masons, and farmers who measured the ground and

<sup>1</sup> It was not until the late nineteenth century that non-Euclidean mathematics was finally accepted in Britain.

<sup>2</sup> See Jacqueline Stedall's “*The Pathway to Knowledge* and the English Euclidean Tradition,” in *Robert Recorde: The Life and Times of a Tudor Mathematician*, ed. Gareth Ffowc Roberts and Fenny Smith (Cardiff: University of Wales Press, 2012), 57–72.

<sup>3</sup> For an exhaustive study of early English publications of Euclid's *Elements* see Diana M. Simpkins's “Early Editions of Euclid in England,” *Annals of Science* 22.4 (December 1966): 225–49.

<sup>4</sup> Interestingly, Stedall in “*The Pathway to Knowledge*” points out that when Recorde translated Euclid from Greek and Latin, he had some difficulty, for there were no natural equivalents in English to some of the geometric terms, such as “triangle,” “trapezium,” and “acute angle.” He either had “to carry over Latin words into English, or he had to invent new English words to carry old meanings” (58).

calculated how to dig a ditch or build stacks of hay. But Recorde's perspective was not just limited to the pragmatic aspects of geometry; like many before and after him, he also recognized that geometry was not only useful for its practical applications but also valuable for its metaphysical insights – to “howe the divines also in their mysteries of Scripture doo use healpe of geometrie.”<sup>5</sup>


It is as if Recorde's book set into motion numerous subsequent translations of Euclid into English. Years later there was not only Henry Billingsley's lavish 1570 *The Elements of Geometrie of the Most Auncient Philosopher Euclide of Megara* that he considered helpful for “handy works” as well as “mind works”<sup>6</sup> but also, in centuries to come, multiple English editions of Euclid's *Elements* prepared for teaching geometry in schools and in universities. By the middle of the seventeenth century, there were, for instance, Thomas Rudd's *Euclide's Elements of Geometry* (1651), Isaac Barrow's 1660 *Euclide's Elements of Geometry*, written to appeal to Cambridge students, John Leake and George Serle's *Euclid's Elements of Geometry* (1661), and William Allingham's *Epitome of Geometry* (1695). By the time Coleridge was in school and at university, the number of English editions of Euclid had proliferated. What is more, their contents had become an essential part of a man's education. For many, including Coleridge, geometry was not just a discipline to be applied to pragmatic needs but also a passageway, a means to reach higher truths. Continuing its ancient applications, a knowledge of geometry was deemed essential if one was to think philosophically. It is not surprising that Coleridge was attracted, though as we shall see, not exclusively, to the geometric idiom when considering his surroundings. The discipline was, as Recorde had once pronounced, *The Pathway to Knowledge*.

The following study of Coleridge's appreciation of landscape takes into account not only the context of his and his culture's attention to Euclid but also other factors that were influencing Coleridge's perception, such as his keen sensual appreciation for what he saw, felt, and heard as he wandered through the countryside on foot. Indeed, the point of the book is not only to examine the role of the geometric idiom in his descriptions but also to illustrate how his sensitivity to the organic, fluid, lush phenomena populating his surroundings intermingled with this perspective to

<sup>5</sup> As quoted by Stedall, “*The Pathway to Knowledge*,” 65. Although Recorde did not devote many pages to the philosophical dimension of geometry, in the “Preface” to his translation, he stated that geometry was helpful in explaining “seemingly magical or unnatural occurrences” (Stedall, “*The Pathway to Knowledge*,” 65).

<sup>6</sup> Stedall, “*The Pathway to Knowledge*,” 70.

create such entries as the one that heads this Introduction and another that he hurriedly jotted down on November 11, 1799 in which he calls upon the figures of the wedge, the cone, the square, the circle, and the semicircle to help him describe the luminous, dynamic view of the “whole length of Basenthwait”:

From Ouse bridge, from the Inn Window, the whole length of Basenthwait, a simple majesty of water & mountains— / & in the distance the Bank rising like a wedge  — & in the second distance the Crag of Derwentwater / What an effect of the Shadows on the water! / — On the left the conical Shadow, On the right a square of splendid Black, all the area & intermediate a mirror reflecting dark & sunny Cloud / — but in the distance the black Promontory with a circle of melted Silver & a path of silver running from it like a flat Cape in the Lake — The snowy Borrodale in the far distance / & a ridge, nearer mountains sloping down as it were to the faint Bank of the Basenthwaite. (CN 1:536; f. 43)

These passages resemble many others composed during his walking years that intermingle Coleridge’s sensitivity to abstract, geometric forms with his keen appreciation for the shifting, sensuous particulars of his surroundings. For him the two modes of perception are not, as most might imagine, contradictory but complementary. Together they create a more complete sense of the world. This study acknowledges Coleridge’s appreciation for Euclidean geometry, a dimension that tends to be overlooked in critical studies of his early work. Furthermore, it concludes by considering how he also tangentially participated in the various challenges to Euclidean geometry.

The chapters in *Coleridge and the Geometric Idiom: Walking with Euclid* explore Coleridge’s use of the geometric figure while scrambling among the fells, mountains, valleys, and hills of Britain between 1794 and 1804 and when working out his ideas concerning religion, politics, literature, aesthetics, and philosophy. Coleridge periodically drew upon his mathematical training to help structure his thoughts. Immersed in a culture beholden to Euclid’s *Elements*, he valued the discipline both for its pragmatic function, such as a tool with which to measure the landscape, and for its role as a conduit to abstract thought. Schooled by those who continued geometry’s ancient applications and deemed a knowledge of geometry essential, he also valued it as a pathway to truth.

Coleridge’s vital relationship to this geometric perspective has either been glossed over or virtually ignored by commentators, who have chosen to concentrate on his interest in the sciences and his involvement in

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metaphysical, religious, political, social, and aesthetic matters. As a result, Coleridge's pervasive attachment to the geometric idiom in his notebooks, prose, and poetry begs to be recognized and explored. Calling upon this orientation, *Coleridge and the Geometric Idiom* offers a fresh and enlightening approach to Coleridge's mode of perceiving and recording the landscape of his rambling, of his eliciting geometric shapes in his philosophical work as well as in the composition of his so-called nature poetry. This study examines his keen sensuous appreciation for what he saw, felt, and heard as he wandered through the countryside on foot. The book illustrates how his appreciation for the geometric idiom intermingled with his sensitivity to the organic, fluid, lush phenomena populating his surroundings so as to create living, breathing pieces of writing. Moreover, *Coleridge and the Geometric Idiom* occasionally ranges beyond Coleridge's work and refers to ancient and contemporary philosophers as well as to artists like Paul Klee and Wassily Kandinsky, for whom Euclidean principles were as essential in defining shape and creating patterns of meaning as they were for Coleridge. With this approach, this study will appeal to scholars, students, and a reading public interested in all aspects of the work and life of Coleridge as well as theories of Romanticism and the period's writers and thinkers. This book will also be attractive to those who take a particular interest in the culture of walking and ways of perceiving a landscape. Furthermore, it will engage an audience interested in interdisciplinary studies, especially those who are fascinated by the intersection between the arts and mathematics, including readers interested in the concept of line, pattern, and form.

To guide the reader through this study, an outline of the book's argument and sequence of chapters follows.

Chapter 1 of *Coleridge and the Geometric Idiom* describes the rough and tumble of Coleridge's rambles between 1794 and 1804, which reflect his unique power as an observer – a discussion that prefaces and prepares the reader for an exploration of his use of the geometric idiom. This chapter opens by placing these excursions within a culture of walking, depicts his various undertakings, and, in particular, dwells on his propensity to be his own path-maker rather than follow either the directives of the picturesque guides or the assigned routes of maps. Entries in the pocket notebooks he carried with him reveal that Coleridge's understanding of a landscape was not exclusively based upon what his eyes could see but also upon what his feet could register. His was an orientation not necessarily based upon fashionable, aesthetic ways of seeing. Rather, during his spatial exploration of his surroundings, he also paid particular attention to the tread

(and condition) of his boots. In many respects, Coleridge emerges as a surveyor who measures the terrain with his feet. Often modeling his understanding of a landscape on the spirit of geometric exercises, Coleridge measured and counted his paces over a portion of ground and observed its lines and angles. Like the geometric caterpillar (*geometridae*) he once described in his book on logic, he periodically becomes the surveyor who walks out to plot the earth.

Taking its cue from this orientation, Chapter 2, “Lines of Motion,” demonstrates in what ways Coleridge was alert to the tangible lines that run through and lend character to a landscape. As anticipated in the previous chapter, during the period of his walking excursions, Coleridge visually traced their presence in the areas through which he rambled and, consequently, repeatedly attended to what he termed a landscape’s lines of motion. As a result, throughout his early notebook entries and letters, he plotted these lines to create diagrammatic sketches that recall the geometric idiom. Many critics tend to dismiss these sketches as being either extraneous or some scribbled afterthought. But, if one looks at Coleridge’s original notebooks housed in both the British Library and Victoria University at the University of Toronto (instead of their published renditions in the edited notebooks), one discovers that they are not. Rather, these line drawings are crucial to his meaning; they interact with, traverse the path of, extend, or emerge from his handwritten words. Indebted to this sensibility, Coleridge also “translated” Sir George Beaumont’s and Washington Allston’s watercolors into diagrams by attending to the various lines that organize each painting’s content – the intent was to transform these paintings into poems. Participating in a diagrammatic culture that was indebted to a culture of geometric modeling and one that influenced writers like Laurence Sterne to chart the motion of the corporal’s walking stick as it wafts through the air, Coleridge liked to capture the defining lines of a place and integrate them into his verbal descriptions. This habit reflects his obligation to the geometric spatial imagination. Indeed, his sense of the active lines that trace movement in a landscape has much in common with Klee’s and Kandinsky’s concept of line – a focus that reflects these artists’ own training in a Euclidean perspective. As Klee, thinking of Euclid’s definitions, once remarked, the point sets itself in motion, “moves off,” and a line comes into being – “it goes out for a walk.”<sup>7</sup> In all these instances, there is a geometric underpinning, a memory of geometric diagrams that utilize line to organize space and recall a

<sup>7</sup> Paul Klee, *The Thinking Eye*, ed. Jerry Spiller (London: Lund Humphries, 1961), 24, 105.

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mathematical set of relations. Far more than in the work of his fellow poets and writers, this groundwork is very much at play in Coleridge's landscape descriptions.<sup>8</sup>

Chapter 3, "A Geometric Frame of Mind," discusses the extent to which Coleridge relied upon geometric forms to describe his surroundings and to construct aspects of his abstract thoughts. The chapter opens with a discussion of his use of these in his landscape descriptions when he would fill his notebooks with references to triangles, perpendiculars, ellipses, parallelograms, convex semicircles, squares, ovals, and spheres. These helped him record the shapes of the mountains, streams, rivers, and clouds he passed by. But the question arises: Given Coleridge's fascination with the irregular and wild scenery of his rambles, why would he utilize the fixed, abstracted geometric idiom, removed from time? This chapter addresses this seeming contradiction by suggesting that his attraction to the geometric figure in his descriptions is neither incongruous nor paradoxical, but rather an expression of being immersed in a culture that nurtured such a frame of mind and believed in a mathematical ordering of the entire universe. Beginning with his training both at Christ's Hospital School and at the University of Cambridge, Coleridge inherited a deeply ingrained conviction that one should take Euclid seriously. Moreover, he recognized that a knowledge of Euclid's *Elements* was a prerequisite to comprehending both the phenomenal world and intellectual thought. As a result, he often used a geometric shape as a scaffolding and as a process of reasoning by which to work out his ideas about marriage, faith, aesthetics, and other metaphysical matters. It was the vestibule of thought. Most particularly, Coleridge respected a geometrical perspective not only because of his training but also because the discipline sharpened the powers of attention, abstraction, and an *a priori* intuition, all of which increased his ability to see and organize what engaged him.

Ultimately, in spite of its conceptual character, Coleridge's attachment to a geometric perspective did not contradict his attraction to the sensual details of his surroundings. For him, there was little disparity between the realm of geometric abstraction associated with the pure, non-sensible Platonic idea or Kant's understanding of intuited knowledge and the sensory, experiential world. Rather than accepting, as so many of his

<sup>8</sup> There has been the occasional study that acknowledges William Wordsworth's indebtedness to his geometrical training. See, for instance, L. M. Johnson. *Wordsworth's Metaphysical Verse: Geometry, Nature, and Form* (London: University of Toronto Press, 1982). This study, however, dedicates itself to Wordsworth's symbolic use of geometrical patterns and the abstract notion of form.

contemporaries did, the differences between these seemingly dissimilar ways of regarding one's surroundings, Coleridge intertwined the two. He entangled the movements, sounds, and colors of his natural surroundings with the geometric so that neither detracted from nor competed with the other. Neither precluded nor sullied the other but rather, in their intermingling, the two created a more complex and richer sense of the surrounding world.

With this context in mind, Chapter 4, "*Ars Poetica*," turns to Coleridge's nature poetry and examines what remnants of his sensitivity to the tread and feel of his feet as well as to his lineal and geometric orientation – all discussed in the previous chapters – helped sculpt these verses.

This chapter begins by focusing on how the imprint of his feet moving through a landscape, discussed in Chapter 1, significantly contributed to the ways in which Coleridge shaped the contours of his nature poems and bestowed upon them a feeling of immediacy. Their uneven, erratic rhythms suggest the stride of his walking and, thereby, introduce a sense of sequential immediacy to the poetic line. Little attention has been directed to this aspect of his art. The progress of these peripatetic poems, such as "Lines Composed while climbing the Left Ascent of Brockley Coomb, Somersetshire, May 1795,"<sup>9</sup> brings to mind his reference to a serpent that makes it way along a path by pausing and half retreating so as to collect the force with which to carry itself forward. So, as well, do the irregular, back and forth, here and there movements of Coleridge's footsteps propel him and his ideas along his poetic lines.

When composing his nature poetry, Coleridge, as if extending the path made by the tread of his feet, also occasionally resuscitated his keen sensitivity to the lines of motion, examined in Chapter 2, that run through and diagram the landscapes described in his notebooks. As a result, he often paid close attention to the pattern of a poem's lines – to their arrangement on a page. Taking a cue from Euclidean geometry and appreciating that lines are essential to the shaping and construction of a poem, he carefully considered how each poetic line emerged from one point and traveled to another. Together they generate the surface of the poem.

Coleridge's attention to line in his verses connects to a larger understanding that a poem, like a geometric figure, is basically an arrangement of

<sup>9</sup> The capitalization and punctuation in titles of Coleridge's poems are taken from *The Complete Poetical Works of Samuel Taylor Coleridge*, ed. Ernest Hartley Coleridge, 2 vols. (Oxford: Clarendon Press, 1957).



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lines in space – a circumstance that prompts a consideration of the relationship between the two. Acutely aware that an understanding of the phenomenal world can be enhanced by geometric reasoning and that mathematics is the natural language of pattern and form – an orientation discussed in Chapter 3 – Coleridge was not always averse, when composing his verses, to thinking geometrically. To reach a better understanding of how this inclination works, this chapter turns to “Frost at Midnight” and then to “This Lime-Tree Bower My Prison” to illustrate how circular and triangular forms ultimately shape and unite what initially seems separated or disconnected.

The chapter concludes by recognizing that the topography of Coleridge’s nature poetry is not just determined by the geometric outline of its structure but rather finds its vibrancy in the selection of its sensual details – a condition that recalls the potency of his notebook entries that intermingle the geometric figure with the surrounding sights, movements, sounds, and colors to create a fuller sense of the landscape that emerges before his consideration. In the end, even though alert to abstract geometric figures, Coleridge’s nature poetry primarily grounds itself within the realm of the poet’s physical contact with the earth. These poems dwell among the emerging shadows created by the shifting light and find some semblance of order within the timeless geometric form. Both perspectives work together to create one graceful and intelligent whole.

Chapter 5 of *Coleridge and the Geometric Idiom*, “Youth and Age: Coleridge and the Shifting Paradigm of Geometric Thought,” examines the changes through time in Coleridge’s indebtedness to the Euclidean idiom. In particular, this chapter explores the challenges to Euclid’s tenacious hold on the British imagination in the late eighteenth and early nineteenth centuries. During Coleridge’s lifetime there were rumblings about Euclid’s inaccuracies. As the decades passed, debates concerning these matters gained momentum so that eventually British geometers were catching up with and joining their European counterparts. A number of these mathematicians began carefully considering both the form and the arrangement of Euclid’s propositions so that they could be presented in a more perfectly logical sequence. In particular, Euclid’s fifth proposition concerning the validity of parallel lines disturbed them. This and other concerns created a group of “rivals” who questioned, though never fully discounted, parts of Euclid’s system.

After giving an overview of these various challenges, this final chapter discusses their possible effect on Coleridge’s use of the geometric idiom. Recognizing that Coleridge was by no means actively involved in the

various arguments and technical discussions brewing among mathematicians on the Continent and eventually in Britain, the chapter suggests that Coleridge, who was persistently responsive to Continental thought and was conversant with philosophical treatises about the nature of geometry, was probably peripherally aware of the debates concerning the validity of Euclid's ascendancy. With this in mind, the concluding section of the book explores Thomas Reid's section "Of the Geometry of Visibles" in his *An Inquiry into the Human Mind: On the Principles of Common Sense* (1764) and demonstrates how Coleridge in his notebook entries loosely approximates Reid's understanding that there is a need to consider an alternate geometry.

The chapter then remarks on Coleridge's sensitivity to the curvature of space and suggests that it peripherally recalls Carl Friedrich Gauss's development of a non-Euclidean geometry. Coincidentally both Gauss and Coleridge were in Göttingen around the same time and had climbed the Brocken in the Harz Mountains. Although there are significant differences between their accounts of their rambles among this landscape, Coleridge's descriptions and their attention to the curvature of those surroundings unsettle, as did Gauss's measurements, a Euclidean perspective. He, like Gauss, is alert to the curvature of the earth's surface. In the end, Coleridge, though still recognizing and paying homage to his mathematical training, finds that he must breach its limits and compellingly introduce a wild geometry that breaks out of the set forms associated with Euclid. In his own, yet enigmatic way, then, Coleridge modifies Euclid and unwittingly becomes yet another of his rivals. Though he does not participate in a mathematician's precise, numerical, and technical methods, he keeps company with those, such as Gauss, who at the same time as being beholden to the ancient geometry also recognize Euclid's shortcomings. In the end, both the traditional geometric figures and the wilder geometry worked for him. Each was Coleridge's companion.