‘THE LANGUAGE OF THE HEAVENS’: WORDSWORTH, COLERIDGE AND ASTRONOMY

THOMAS OWENS

ST JOHN’S COLLEGE, OXFORD

SUBMITTED FOR THE DEGREE OF DOCTOR OF PHILOSOPHY IN ENGLISH LITERATURE

TRINITY 2013

ABSTRACT

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This thesis proposes that astronomical ideas and forces structured the poetic, religious and philosophical imaginings of William Wordsworth and Samuel Taylor Coleridge. Despite the widespread scholarly predilection for interdisciplinary enquiry in the field of literature and science, no study has been undertaken to assess the impact and imaginative value of mathematics and astronomy upon Wordsworth and Coleridge. Indeed, it is assumed they had neither the resources available to access this knowledge, nor the capacity to grasp it fully. This is not the case. I update the paradigm that limits their familiarity with the physical sciences to the education they received at school and at Cambridge, centred principally on Euclid and Newton, by revealing their attentiveness to the new world views promulgated by William Herschel, William Rowan Hamilton, Pierre-Simon Laplace, and the mathematicians of Trinity College, Cambridge, including John Herschel, George Peacock, and George Biddell Airy, amongst others.

The language of astronomy wielded a vital, analogical power for Wordsworth and Coleridge; it conditioned the diurnal rhythms of their thought as its governing dynamic. Critical processes were activated, at the level of form and content, with a mixture of cosmic metaphors and nineteenth-century discoveries (such as infra-red). Central models of Wordsworth's and Coleridge's literary and metaphysical inventions were indissociable from scientific counterparts upon which they mutually relied. These serve as touchstones for creative endeavour through which the mechanisms of their minds can be traced at work. Exploring the cosmological charge contained in the composition of their poems, and intricately patterned and pressed into their philosophical and spiritual creeds, stakes a return to the evidence of the Romantic imagination.

The incorporation of astrophysical concepts into the moulds of Wordsworth's and Coleridge's constructions manifests an intelligent plurality and generosity which reveals the scientific valency of their convictions about, variously, the circumvolutions of memory and the idea of psychic return; textual revision, specifically the ways in which language risks becoming outmoded; prosody, balance, and the minute strictures modifying metrical weight; volubility as an axis of conversation and cognition; polarity as the reconciling tool of the imagination; and the perichoretic doctrine of the Holy Trinity. The ultimate purpose is to show that astronomy provided Wordsworth and Coleridge with a scaffold for thinking, an intellectual orrery which ordered artistic consciousness and which they never abandoned.

WORD COUNT: 98, 799

To my parents, with all my love:

for making me read, and for teaching me to think back.

ACKNOWLEDGEMENTS

*

The rigours of this doctoral thesis have been both joyful and demanding. I have incurred many debts, academic and personal, and benefited from much help, which it is a pleasure to recognise.

Without the full award of the Arts and Humanities Research Council's BGP Studentship, which covered both my M.St. and D. Phil., I would not have been able to undertake this project, and I am thus most grateful for it. The beneficence of St John's College, Oxford, where I have lived and worked for the last four years, has been exemplary: the provision of conference, travel, and book grants has been invaluable for my research; winning the Alister Sutherland Award for an imaginative expedition in the high mountains permitted me to follow in Wordsworth's footsteps through the Alps in August 2012. This exhilarating trip culminated in an international conference in Switzerland, organised by the North American Society for the Study of Romanticism, at which I was only able to attend and deliver a talk courtesy of the Meyerstein and Maxwell Fund of the Oxford University English Faculty.

Many libraries, librarians and archives have aided this study: in Oxford, the Bodleian Libraries, particularly the Old Bodleian, English Faculty, Taylor Institution, and Radcliffe Science; the Museum of the History of Science Library; St John's College Library; in London, the British Library, the London Library, the Royal Society Library; in Bristol, the Bristol Central Library; in the Lake District, the Jerwood Centre, Grasmere. The kindnesses of Jeff Cowton, the curator at The Wordsworth Trust, have been great, as have those of the organisers and participants of the Wordsworth Summer Conference, from whom I was taught much on four separate occasions (2009-2012). To Richard Gravil, Nicholas Roe, and Pamela Woof I owe special thanks. I also profited considerably from conversations with Gillian Beer, Frederick Burwick, Graham Davidson and Nicholas Reid.

Interdisciplinary work incurs gratitude to people who, on a day to day basis, exert themselves in completely different areas to me. Steve A. Bell, Head of Her Majesty's Nautical Almanac Office, solved a celestial conundrum in Dorothy Wordsworth's *Alfoxden Journal*. The Astronomical Applications Department of the U.S. Naval Observatory primed me to use their electronic lunar tables – a constant resource. Helen Pearson, Chief Features Editor of the science journal *Nature*, and Alysoun Sanders, Archivist at Macmillan Publishers, assisted my exploits to establish the history of the Wordsworthian motto appended to *Nature* for nearly a century. Sebastián Pérez, Astrophysicist in the Department of Physics at Oxford University, and Jacqueline Mitton of Total Astronomy in Cambridge, showed me how to navigate around the planetary software *Stellarium*, with which I recreated a rare conjunction of Venus and Jupiter over Nether Stowey in 1809. This is included on a CD-ROM with the thesis.

This doctorate has its origins in my Masters work on Wordsworth undertaken with Lucy Newlyn in Michaelmas 2009 and Trinity 2010. She provided vital encouragement to specialise on Romantic astronomy at a very early stage and I am deeply appreciative for the guidance she gave me that year. Her methodological approach to criticism strongly informs

the second chapter. Nicholas Halmi and Seamus Perry offered crucial conceptual feedback on the project at two important stages of its genesis. Chapter Five, in particular, owes much to their critiques. The Oxford Professor of Poetry Lectures, delivered by Geoffrey Hill, the incumbent in the Chair from Michaelmas 2010, have proved extremely stirring. The Oxford Romantic Graduate Forum was always a welcoming and encouraging colloquium in which to discuss work-in-progress, much as its counterpart, Romantic Realignments, was a ripe place to absorb ideas from others. As an undergraduate, at St Andrews, Susan Manly took a chance on me at the very start. It all started with her.

I have been incredibly lucky to have been supported by many caring and curious friends over the past four years. Doctoral pursuits exact an almost total imaginative commitment, which is both energising and tiring, and I could not have done without: the Alexander-Johnstons, Jamie Baxendine, Anna Camilleri, Jamie Castell, Guy Cuthbertson, Hannah Folan, Alasdair Forbes, James Hallinan, Alison and Richard Hutton, Abby Jamet, James Kightley, Jennifer Miller, Jonah Rosenberg, Julia Tejblum, Clare Tilbury, Charlie Ward, and Bonnie-Jean and Philip Wulff. Jessica Fay and Micha Lazarus have endured everything. To them *both* I say what Alexander William Mowbray Baillie (1843-1921) said of Gerard Manley Hopkins in June 1889: 'It is impossible to say how much I owe to him. He is the one figure which fills my whole memory of my Oxford life. There is hardly a reminiscence with which he is not associated. All my intellectual growth, and a very large proportion of my happiness of those Oxford days, I owe to his companionship'.[1]

The imaginative and intellectual generosity of my supervisor, Professor Stephen Gill, has been unparalleled. Speaking to him about these matters was akin to probing a divine concordance; it was an immense privilege and completely rewarding. He has been a constant and reassuring presence from the very beginning; always gracious, kind and minutely attentive; ever doing his utmost for my development; cheerily correcting errors whilst suggesting more sensible lines of enquiry; perpetually going out of his way to enliven the material; in short, he was magnificent.

It is impossible to do justice to the parental love and affection which I have been shown. My parents have always approached my labours with a remarkable and genuine interest. I dedicate my thesis to them because they have unceasingly given everything to me. Humble as this offering is by way of return, they must remember that, much like the 'gentle breeze', their care and devotion came 'To none more grateful than to me'.

Needless to say, all remaining fat-headedness in this thesis is regrettably of my own making.

[1] Baillie is quoted in 'Notes to Early Diaries', in Gerard Manley Hopkins, *The Journals and Papers of Gerard Manley Hopkins*, ed. Humphry House, rev. Graham Storey (1937; London: Oxford University Press, 1959), p. 296, n. 9.2.

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ABBREVIATIONS

*

CW	CHRISTOPHER WORDSWORTH
DW	DOROTHY WORDSWORTH
EQ	EDWARD QUILLINAN
HCR	HENRY CRABB ROBINSON
JW	JOHN WORDSWORTH
MW	MARY WORDSWORTH
SH	SARA HUTCHINSON
STC	SAMUEL TAYLOR COLERIDGE
WRH	WILLIAM ROWAN HAMILTON
WW	WILLIAM WORDSWORTH

(I) WORKS BY COLERIDGE

The Collected Works of Samuel Taylor Coleridge (*CC*), 16 vols. in 34, General Editor Kathleen Coburn, constitutes the seventy-fifth publication in the Bollingen Series (LXXV) published in London by Routledge & Kegan Paul and in Princeton by Princeton University Press (1969-2002).[2]

AR	*Aids to Reflection* (*CC* 9), ed. John Beer (1993).
BL	*Biographia Literaria; or, Biographical Sketches of My Literary Life and Opinions* (*CC 7*), ed. James Engell and W. Jackson Bate, 2 vols. (1983).
C & S	*On the Constitution of the Church and State* (*CC 10*), ed. John Colmer (1976).
CL	*Collected Letters of Samuel Taylor Coleridge*, ed. Earl Leslie Griggs, 6 vols. (Oxford: Clarendon Press, 1956-71). I, *1785-1800* (1956); II, *1801-1806* (1956); III, *1807-1814* (1959); IV, *1815-1819* (1959); V, *1820-1825* (1971); VI, *1826-1834* (1971). This edition is referred to serially as *CL*, I-VI.
CM	*Marginalia* (*CC* 12), 6 vols. (1980-2001). I, *Abbt to Byfield*, ed. George Whalley (1980); II, *Camden to Hutton*, ed. George Whalley (1984); III, *Irving to Oxlee*, ed. H.J. Jackson and George Whalley (1992); IV, *Pamphlets to Shakespeare*, ed. H.J. Jackson and George Whalley (1998); V, *Sherlock to Unidentified*, ed. H.J. Jackson and George Whalley (1999); VI, *Valckenaer to*

[2] Later volumes are only published by Princeton University Press.

	Zwick, ed. H.J. Jackson and George Whalley (2001). This edition is referred to serially as *CM*, I-VI.
CN	*The Notebooks of Samuel Taylor Coleridge*, 5 double vols. (London and Princeton: Routledge & Kegan Paul and Princeton University Press, 1957-2002). I, *1794-1804*, ed. Kathleen Coburn (1957); II, *1804-1808*, ed. Kathleen Coburn (1961); III, *1808-1819*, ed. Kathleen Coburn (1973); IV, *1819-1826*, ed. Kathleen Coburn and Merton Christensen (1990); V, *1827-1834*, ed. Kathleen Coburn and Anthony John Harding (2002). This edition is referred to serially as *CN*, I-V.[3]
EOT	*Essays on His Times in "The Morning Post" and "The Courier"* (*CC* 3), ed. David V. Erdman, 3 vols. (1978).
Friend	*The Friend* (*CC* 4), ed. Barbara E. Rooke, 2 vols. (1969).
Lects 1795	*Lectures 1795: On Politics and Religion* (*CC* 1), ed. Lewis Patton and Peter Mann (1971).
Lects 1808-1819	*Lectures 1808-1819: On Literature* (*CC* 5), ed. R.A. Foakes, 2 vols. (1987).
LHP	*Lectures 1818-1819: On the History of Philosophy* (*CC* 8), ed. J.R. de J. Jackson, 2 vols. (2000).
Logic	*Logic* (*CC* 13), ed. J.R. de J. Jackson (1981).
LS	*Lay Sermons* (*CC* 6), [being *The Statesman's Manual* and *A Lay Sermon*], ed. R.J. White (1972).
Op Max	*Opus Maximum* (*CC* 15), ed. Thomas McFarland with the assistance of Nicholas Halmi (2002).
PW	*Poetical Works* (*CC* 16), ed. J.C.C. Mays, 3 double vols. (2001). I.1, *Poems (Reading Text)*; I.2, *Poems (Reading Text)*; II.1, *Poems (Variorum Text)*; II.2, *Poems (Variorum Text)*; III.1, *Plays*; III.2, *Plays*.
SW & F	*Shorter Works and Fragments* (*CC* 11), ed. H.J. Jackson and J.R. de J. Jackson, 2 vols. (1995).
TT	*Table Talk Recorded by Henry Nelson Coleridge (and John Taylor Coleridge* (*CC* 14), ed. Carl Woodring, 2 vols. (1990).

[3] The first two volumes in this series were also published in New York by Pantheon Books.

Watchman	*The Watchman* (*CC* 2), ed. Lewis Patton (1970).

(II) WORKS BY WILLIAM AND DOROTHY WORDSWORTH

DWJ	Dorothy Wordsworth, *The Grasmere and Alfoxden Journals*, ed. Pamela Woof (2002; Oxford: Oxford University Press, 2008).
Fenwick	*The Fenwick Notes of William Wordsworth*, ed. Jared Curtis (London: Bristol Classical Press, 1993).
Prose	*The Prose Works of William Wordsworth*, 3 vols. (Oxford: Clarendon Press, 1974).
WL	*The Letters of William and Dorothy Wordsworth*, 8 vols. (2nd ed.; Oxford: Clarendon Press, 1967-93). I, *The Early Years, 1787-1805*, ed. Chester L. Shaver (1967); II, *The Middle Years, pt. 1: 1806-1811*, ed. Mary Moorman (1969); III, *The Middle Years, pt. 2: 1812-1820*, ed. Mary Moorman and Alan G. Hill (1970); IV, *The Later Years, pt. 1: 1821-1828*, ed. Alan G. Hill (1978); V, *The Later Years, pt. 2: 1829-1834*, ed. Alan G. Hill (1979); VI, *The Later Years, pt. 3: 1835-1839*, ed. Alan G. Hill (1982); VII, *The Later Years, pt. 4: 1840-1853*, ed. Alan G. Hill (1988); VIII, *A Supplement of New Letters*, ed. Alan G. Hill (1993). This edition is referred to serially as *WL*, I-VIII.

The *Cornell Wordsworth* series, 21 vols., General Editor Stephen Parrish, is published in Ithaca and London by Cornell University Press (1957-2007). Volumes cited, listed alphabetically by abbreviation, are:

Borderers	*The Borderers*, ed. Robert Osborn (1982).
Evening Walk	*An Evening Walk*, ed. James Averill (1984).
Excursion	*The Excursion*, ed. Sally Bushell, James A. Butler, and Michael C. Jaye with the assistance of David García (2007).
Last Poems	*Last Poems, 1821-1850*, ed. Jared Curtis (1999).
Lyrical Ballads	*Lyrical Ballads, and Other Poems, 1797-1800*, ed. James Butler and Karen Green (1992).
P2V	*Poems, in Two Volumes, and Other Poems, 1800-1807*, ed. Jared Curtis (1983).

Peter Bell	*Peter Bell*, ed. John E. Jordan (1985).
Prelude 1798-1799	*The Prelude, 1798-1799*, ed. Stephen Parrish (1977).
Prelude 1805	*The Thirteen-Book Prelude*, ed. Mark L. Reed, 2 vols. (1991).
Prelude 1850	*The Fourteen-Book Prelude*, ed. W.J.B. Owen (1985).
RC & P	*The Ruined Cottage and The Pedlar*, ed. James Butler (1979).
Shorter Poems	*Shorter Poems, 1807-1820*, ed. Carl H. Ketcham (1989).
Sonnet Series	*Sonnet Series and Itinerary Poems, 1820-1845*, ed. Geoffrey Jackson (2004).
SPP	*The Salisbury Plain Poems of William Wordsworth*, ed. Stephen Gill (1975).

(III) OTHER WORKS

CSP	John Milton, *Complete Shorter Poems*, ed. John Carey (1971; London and New York: Longman, 1997).
Graves, *Life*	Robert Perceval Graves, *Life of Sir William Rowan Hamilton including Selections from his Poems, Correspondence, and Miscellaneous Writings*, 3 vols. (Dublin, 1882-89).
Phil Trans	*Philosophical Transactions of the Royal Society of London*
PL	John Milton, *Paradise Lost*, ed. Alastair Fowler (1971; London and New York: Longman, 1992).
Reed, *1770-1799*	Mark L. Reed, *Wordsworth: The Chronology of the Early Years 1770-1799* (Cambridge, Mass.: Harvard University Press, 1967).
Reed, *1800-1815*	Mark L. Reed, *Wordsworth: The Chronology of the Middle Years 1800-1815* (Cambridge, Mass.: Harvard University Press, 1975).
Shaver, *Catalogue*	Chester L. Shaver and Alice C. Shaver, *Wordsworth's Library: A Catalogue* (New York and London: Garland Publishing, 1979).

Wu, *1770-1799*	Duncan Wu, *Wordsworth's Reading 1770-1799* (Cambridge: Cambridge University Press, 1993).
Wu, *1800-1815*	Duncan Wu, *Wordsworth's Reading 1800-1815* (Cambridge: Cambridge University Press, 1995).

A NOTE ON THE TEXTS AND CD-ROM

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Unless otherwise stated, all quotation from Wordsworth, Coleridge and Milton has been taken from the editions on the Abbreviations page. In the case of *The Prelude*, quotation is from the 'AB-Stage' reading text in *Prelude 1805* unless specified otherwise. Texts cited on the Abbreviations page are abbreviated throughout, including in the first instance of their usage, without reference to the author (except when the author forms part of the abbreviation). For all other works, a full citation is given in the first instance and a shorter, consistent form used thereafter. Full citations for all texts appear in the Bibliography. The publisher is not stated for sources published before 1900 unless there is special purpose in doing so. The dates given for use of electronic resources refer to *last* access and appear in the Bibliography rather than throughout the thesis. All *OED* and *ODNB* entries were electronically sourced. All italics in quotations are original unless explicitly acknowledged as mine in a footnote. Coleridge's spelling in particular is so variable that quotations have been left to stand without the notice of '[sic]' apart from in exceptional circumstances where confusion might arise otherwise.

Poetic quotation from frequently cited sources appears in brackets in the text. In cases where there is more than one extant reading text, the one in use is detailed in a footnote. Where a poem is cited once or twice only, line reference and page number of the edition used are given in a footnote. Poetic quotation takes one of three forms: a) line number (19); b) book number and line number (IX, 19) – in texts such as *The Prelude*; c) manuscript letter and line number (E, 19) – when many versions of a poem are quoted, for instance in *The Pedlar*. Quotation from plays takes the form of Act, Scene, and line number: (I. i. 11-19).

In the course of this thesis, small sections of Chapters Two and Six have been published as: 'Wordsworth, William Rowan Hamilton and Science in *The Prelude*', *The Wordsworth Circle*, 42: 2 (2011), 166-69; 'Astronomy at Stowey: The Wordsworths and Coleridge', *The Wordsworth Circle*, 43: 1 (2012), 25-29. However, this material has been almost completely revised. About a third of Chapter Five has appeared as '"The Telescope of the church": Coleridge, Astronomy, and Religion', *The Coleridge Bulletin*, N.S. 40 (2012), 37-47. These articles are referenced relevantly in footnotes and in the Bibliography.

The CD-ROM submitted with this thesis is for use in Chapter Two (see footnote 48). Operating the planetarium software *Stellarium*, v. 0.12.3, and plotting the geographical coordinates for Nether Stowey, I have recreated the exact night sky over the surrounding Somersetshire villages from 5 January – 3 March 1809 in a very short film which, when played, shows the movements of Jupiter and Venus *as they would have been seen in 1809 from Nether Stowey each night at 7pm*. Mapping the orbits of the planets shows that on the night of 26 January, 1809, they were in a near perfect conjunction, which was *exactly* what Parson William Holland and the inhabitants of Over Stowey unknowingly witnessed that evening, and which Holland recorded in his diary.

This thesis has been prepared and formatted with the *New Oxford Style Manual* (2003; Oxford: Oxford University Press, 2012).

Pooh began to feel a little more comfortable, because when you are a Bear of Very Little Brain, and you Think of Things, you find sometimes that a Thing which seemed very Thingish inside you is quite different when it gets out into the open and has other people looking at it.[4]

The familiar physiognomy of a word, the feeling that it has taken up its meaning into itself, that it is an actual likeness of its meaning – there could be human beings to whom all this was alien...It is possible – and this is important – to say a *great deal* about a fine aesthetic difference. – The first thing you say may, of course, be just: "*This* word fits, *that* doesn't" – or something of the kind. But then you can discuss all the extensive ramifications of the tie-up effected by each of the words. That first judgment is *not* the end of the matter, for it is the field of force of a word that is decisive.[5]

[4] A.A. Milne, *The House at Pooh Corner, with decorations by Ernest H. Shepard* (London: Methuen & Co., 1928), p. 101.
[5] Ludwig Wittgenstein, *Philosophical Investigations*, trans. G.E.M. Anscombe (Oxford: Basil Blackwell, 1953), pt. II, pp. 218[e]-19[e].

INTRODUCTION

*

> Nothing can be more absurd than this belief of the necessary opposition of poetry to science. In all great poets the reverse is manifest. You see it in Homer, in Dante, and, above all, in Milton. Perhaps I ought rather to say, that you *feel* its influence, in shaping the conceptions of the poet, and preserving those fine proportions whose combination makes the harmony of a structure.[1]

Climbing into the cupola of the Pauline Chapel of the Basilica of Santa Maria Maggiore in Rome in September 1610, Lodovico Cigoli (1559-1613) set about his commissioned fresco. He had been directed by the Oratorian Fathers, Tommaso and Francesco Bozio, to represent "the Vision of the Apocalypse, chapter 12, that is, a Woman clothed with the Sun, and the Moon under her feet". It would take him two years to complete. Whilst historians have debated whether Cigoli depicted *The Virgin of the Immaculate Conception*, *The Annunciation*, or *The Woman of the Apocalypse*, the maculate Moon on which the female figure stands is a unique iconographic symbol. It is the first and only extant example of a cratered, pock-fretted orb in early modern European art. However, though the image is exceptional, the extent to which it was recognised as signalling a serious biblical departure from Christian-Aristotelian cosmologies has been contested. Significantly, Cigoli did not incur papal wrath for exhibiting an imperfect rather than immaculate Moon at the centre of Marian worship in the Western Church during the Counter-Reformation.[2]

Accepting that Cigoli's mural was interpreted as theologically sound should *not* diminish the fact that it was scientifically radical; the lunar geography fitted the profile

[1] STC, 'Logic or geometry necessary for a poet' (1833), in R.E.A. Wilmott, *Conversations at Cambridge* (London, 1836), p. 13. Cf. 'Appendix S: Robert Aris Wilmott's Report of Table Talk, 1833', in *TT*, II, p. 455.

[2] Sara Elizabeth Booth and Albert van Helden, 'The Virgin and the Telescope: The Moons of Cigoli and Galileo', *Science in Context*, 13: 3-4 (2000), 464, 481-83.

of Galileo Galilei's recently discovered astronomical Moon, even if it obeyed the thematic conventions requisite for illustrating *The Woman of the Apocalypse*. Galileo's *Sidereus Nuncius* (1610) contained over seventy selenographic drawings, some of which revealed that the Moon was a rough sphere pitted with mountains and valleys and not a smooth, pristine circle. Visiting Rome in the spring of 1611, Galileo could have displayed the original sepia-wash sketches and engravings to his old friend Cigoli at exactly the time he was occupied in the Basilica. By early 1612, Cigoli had purchased his own telescope and reported to Galileo that he saw the Moon "very well".[3] This close relationship afforded Cigoli a rare opportunity: to create a painting commensurate with the dictates of old religion and fresh knowledge, satisfying the spiritual requirements of the Catholic Church whilst possibly encoding, in the pigment and the plaster, silent support for Galileo, and thus for Copernicus' heliocentric universe. Part of the dome's delight consists in the mixture of accuracies and tinted truths which the fresco entertains and never resolves. If Cigoli rightly believed that he renewed the divine traditions of one sphere in the celestial inventions of another then his final piece was a secret exploration of the ways in which art and architecture could respond to an aesthetic challenge laid down by science. Cigoli had the chance to celebrate the innovations of astronomy, in brilliant colour, by shaping them into a sacred hollow. Did he feel, as he crafted the Moon, all the exhilaration of someone participating in an elaborate and collective experiment with infinity?

This thesis began in wonderment with the broader questions raised by this vignette: what kind of contribution can artists make to the world uncovered by scientists, and *vice versa*? How can poets and philosophers register the discoveries of science in their productions and, much more importantly, what might impel them to do

[3] Steven F. Ostrow, 'Cigoli's *Immacolata* and Galileo's Moon: Astronomy and the Virgin in Early Seicento Rome', *The Art Bulletin*, 78: 2 (1996), 229-30.

so? Can we begin to trace the *evidence* of a mind, and catch a glimpse of the creative cogs turning, by considering the transformations which occur at the junctures where scientific concepts are reformulated in literary texts, philosophical theories, and religious doctrines?

Following my reading of Richard Holmes' *The Age of Wonder: How the Romantic Generation discovered the Beauty and Terror of Science* (2008), I was intrigued to probe what William Wordsworth and Samuel Taylor Coleridge knew about nineteenth-century astronomy, and in particular the labours of William Herschel (1738-1822), the Romantic sage of the skies. On occasion, Holmes draws tantalising parallels between the domestic situation of William Herschel and his sister Caroline, living at Observatory House in Slough from 1786, with that of William and Dorothy Wordsworth at Dove Cottage in the Lake District from 1799.[4] Initially, this spurred me to construct the social side of this analogical universe.

Although the families never met, there were some near misses. Whilst William and Dorothy Wordsworth were in Calais for the month of August 1802, intent on the reparation of the poet's connection with Annette Vallon by setting up long-term provision for her nine-year-old daughter, Caroline, the Peace of Amiens prompted a much more illustrious trip to Paris for William Herschel, his wife, and their ten-year-old son John (whom Wordsworth and Coleridge would come to know well).[5] On 8 August, Herschel recorded in his diary that he was invited to the Château de Malmaison, the Palace of the First Consul, with two other leading scientists, Pierre-Simon Laplace and Benjamin Thompson, Count Rumford: "Between the conversation Ices were handed

[4] Richard Holmes, *The Age of Wonder: How the Romantic Generation discovered the Beauty and Terror of Science* (London: Harper Press, 2008), pp. 186-87, 203. Both Caroline and Dorothy found their brothers' wedding ceremonies, to Mary Baldwin and Mary Hutchinson respectively, traumatic. They became very attached to their nephews, John Herschel and John Wordsworth. Holmes gives two chapters to Herschel. Cf. pp. 60-124, 163-210.
[5] Reed, *1800-1815*, pp. 188-89.

about, which were of an excellent flavour, and the weather being extremely hot were very refreshing. Bonaparte said that the thermometer had been 28° in the shade".[6] The lure of ice cream would not have made this visit palatable to Wordsworth, who was in France patching up revolutionary business, and with it the final relinquishment of libertarian hopes which Napoleon had crushed.[7]

More auspicious beginnings for friendship could have been fostered, perhaps, on Herschel family holidays to the Lakes. Writing to his brother Johann Dietrich in August 1809, William Herschel told him that they "rode upon Ponies" to the top of Skiddaw and found the descent "extremely troublesome" on foot. By the summer of 1811, when the Herschels stopped in Keswick on their way to Scotland, William Herschel had learnt his lesson about these "little molehill[s]"; only "the young folks" ascended Helvellyn on that trip.[8] Juxtaposing the lives of the Wordsworths and Herschels in this sociological fashion, together with speculating on whether or not, for instance, Coleridge would have seen Herschel's magnificent forty-foot telescope in his garden at Slough on the London road to Bristol in the mid-1790s, when he was lecturing in the West Country, was the prelude to generating the empirical and ideological mainstay of the thesis. Whilst I do not in fact believe that this kind of parallelism provides the critic with much to conjure with, nor does it advance real scholarship at all, it was the energising and sustaining prelude to serious reflection.

Fundamentally, the thesis is an attempt to apprehend the ways in which astronomical ideas and forces saturate and structure the literary imagination. This is by

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[6] Constance A. Lubbock (ed.), *The Herschel Chronicle: The Life-Story of William Herschel and his Sister Caroline Herschel* (Cambridge: Cambridge University Press, 1933), p. 311. Cf. Michael Hoskin, *The Herschel Partnership as viewed by Caroline* (Cambridge: Cambridge University Press, 2003), p. 96.

[7] Mary Moorman, *William Wordsworth: A Biography. The Early Years: 1770-1803* (1957; Oxford: Oxford University Press, 1968), p. 564: 'In the first place, why Calais, and not Paris, or Blois? Paris, as the seat of a government detested by Annette, would not have been acceptable to her and perhaps not even safe. Nor would Wordsworth have wished to be caught up in the crowd of English visitors, of whose tolerance of Bonaparte he could not approve.'

[8] Lubbock (ed.), *The Herschel Chronicle*, pp. 325-26, 333.

no means a relentlessly factual engagement proffering crude conclusions; in poetry especially, epistemological unearthing is only as interesting as the pathway it provides into the unrecognised ontological make-up of a poem. Although my research establishes for the first time that Wordsworth and Coleridge had a robust knowledge of nineteenth-century astronomy, the objective is to show that they frequently conceived intelligential processes in astronomical language, and that the imaginative and skilful implementation of the latest scientific discoveries in their poetry and philosophy is vital, not tangential, to the content. The investigation is not, therefore, principally biographical, although it restores many forgotten relationships which the poets had with scientists, their sources, and their thinking. It does not preoccupy itself primarily with the task of historicising early nineteenth-century astronomy despite covering many of its major developments. Rather, my aim is to demonstrate that there is a relevant astronomical context which is inherently important to Wordsworth's and Coleridge's creative productions, and that the discourse and images of astronomy have roots in their deepest poetic, philosophic and religious concerns.

The interdisciplinary pitfall which I have been anxious to avoid is nicely summarised by Kelvin Everest: 'Most historicist criticism up to the present time perpetuates the problem: illuminating contextual exposition continues to serve a selection of texts and authors whose presence in the analysis is not itself a function of the argument'.[9] Conversely, foisting a close analysis upon a text in order to validate a specious critical discourse is equally ineffectual. The poem is the crystallisation of manifold experiences, the jewel and not the mine, and critical distillation is a kind of rummaging not always synonymous with meritorious addition. I do not wish to supply false and evasive contexts, or to misread poems, any more than I merely want to

[9] Kelvin Everest, 'Coleridge's Secret Ministry: Historical Reading and Editorial Theory', in Nicholas Roe (ed.), *Samuel Taylor Coleridge and the Sciences of Life* (Oxford: Oxford University Press, 2001), p. 301.

highlight where there is evidence that the poets read and comprehended the latest science; *why* astronomical appearances, configurations, and discoveries excited Wordsworth and Coleridge, at the literary levels of poetic form and linguistic function, propels the doctorate.

In the Preface to *The First Part of a Dictionary of Chemistry* (1789), the industrial chemist James Keir noted that:

> The diffusion of a general knowledge, and of a taste for science, over all classes of men, in every nation of Europe…seems to be the characteristic feature of the present age…in no former age, was ever the light of knowledge so extended, and so generally diffused. Knowledge is not now confined to public schools, or to particular classes of men.[10]

The field of Romantic literature and Romantic science has responded to Keir's pronouncements on the myriad dispersion of intellectual information in the late eighteenth century and is now rich indeed, with valuable studies assessing the points of contact, and the impact, of progressions in chemistry, medicine, exploration, geology, and neuroscience.[11] Nevertheless, in order to be of genuine interest to literary critics, as well as social historians, it is imperative that poetry remains at the focal point of this dialogic encounter and is not subsumed within a morass of historical detail, however

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[10] J.K. [James Keir], *The First Part of a Dictionary of Chemistry &c* (Birmingham, 1789), p. iii.

[11] It is impossible and undesirable to document all of these studies since the inception of the field in American universities in the 1940s. Many monographs and collections are pertinently referenced throughout the thesis. Exemplary work, the majority of which is not mentioned directly and pertains to the last three decades, includes: Roy Porter and G.S. Rousseau (eds.), *The Ferment of Knowledge: Studies in the Historiography of Eighteenth-Century Science* (Cambridge: Cambridge University Press, 1980); Trevor H. Levere, *Poetry Realized in Nature: Samuel Taylor Coleridge and Early Nineteenth-Century Science* (Cambridge: Cambridge University Press, 1981); Gillian Beer, *Darwin's Plots: Evolutionary Narrative in Darwin, George Eliot and Nineteenth-Century Fiction*, foreword George Levine (1983; Cambridge: Cambridge University Press, 2000); John Wyatt, *Wordsworth and the Geologists* (Cambridge: Cambridge University Press, 1995); Alan Bewell, *Romanticism and Colonial Disease* (Baltimore and London: John Hopkins University Press, 1999); Alan Richardson, *British Romanticism and the Science of the Mind* (Cambridge: Cambridge University Press, 2001); Tim Fulford, Debbie Lee, and Peter J. Kitson, *Literature, Science and Exploration in the Romantic Era: Bodies of Knowledge* (Cambridge: Cambridge University Press, 2004); G.S. Rousseau, *Nervous Acts: Essays on Literature, Culture and Sensibility* (Basingstoke: Palgrave Macmillan, 2004); Noel B. Jackson, *Science and Sensation in Romantic Poetry* (Cambridge: Cambridge University Press, 2008); Mike Jay, *The Atmosphere of Heaven: The Unnatural Experiments of Dr Beddoes and his Sons of Genius* (New Haven and London: Yale University Press, 2009).

intriguing, which is at constant risk of erasing the poem upon which it should shed light.

Gillian Beer returned the text to a prominent position in interdisciplinary pursuits by powering a methodological response to the problem as pinpointed by G.S. Rousseau in the 1970s, that whilst it may be 'valid to assume…science shapes literature to the same degree that imaginative literature shapes science', it is 'practically impossible to prove'.[12] Beer made available a novel and flexible consistency of proof, a rhetorical one which was orientated by the semantics of science. She laid the foundation for analysing what happens when 'the transformed materials of science become involved in social and artistic questioning'[13] with a linguistic technique of 'lateral encounter' and 'insurgency of signification':

> Terms move across from one zone to another, for ideas cannot survive long lodged within a single domain. They need the traffic of the apparently *in*appropriate audience as well as the tight group of co-workers if they are to thrive and generate further thinking. An engrossing question is what happens when *unforeseen* readers appropriate terms and texts.[14]

Beer's scholarship provides a tropological model with which to contest the belief that poets and metaphysicians cannot positively transform scientific endeavour by putting discoveries to original use. Coleridge was not a professional astronomer, but it is insufficient to cast aspersions on his scientific aptitude by doubting if science 'really supplied Coleridge with more than metaphors', considering that metaphoricity was *the*

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[12] Rousseau, 'Literature and Science: The State of the Field', *Isis*, 69: 4 (1978), 587.
[13] Beer, 'Translation or Transformation? The Relations of Literature and Science', *Notes and Records of the Royal Society of London*, 44: 1 (1990), 97.
[14] Beer, *Open Fields: Science in Cultural Encounter* (Oxford: Oxford University Press, 1996), pp. 1, 5, 164. Beer's approach to scientific language as literary, and *vice versa*, has a theoretical counterpart in Roland Barthes, *The Rustle of Language*, trans. Richard Howard (1984; Oxford: Basil Blackwell, 1986), p. 8: 'To resort to scientific discourse as to an instrument of thought is to postulate that a neutral state of language exists, from which would break off, like so many gaps and ornaments, a certain number of special languages, such as the literary language or the poetic language'. A good example of the kind of monograph which Beer's scholarship prompted is: Michael H. Whitworth, *Einstein's Wake: Relativity, Metaphor, and Modernist Literature* (Oxford: Oxford University Press, 2001), p. 12: 'Not only can scientists understand new phenomena in terms of familiar material objects and social institutions, but non-scientists can defamiliarize the familiar, reconceiving it in metaphors provided by new scientific theories.'

instrumental means with which he expressed logical relation.[15] As the thesis documents, such a practice downplays both the vitality of empirical thinking, and the lure of metaphor, in the strata of Coleridge's incorporative mind.

Despite the widespread predilection for interdisciplinary enquiry, chiefly over the last thirty years, Wordsworth and Coleridge have been consistently denied knowledge of the hard mathematical and physical sciences. Indeed, it is assumed that they had neither the resources available to access this material nor the capacity to grasp it fully. This is not the case. When Coleridge announced optimistically to Joseph Cottle in April 1797 that he 'would be a tolerable Mathematician' and 'would thoroughly know Mechanics, Hydrostatics, Optics, and Astronomy, Botany, Metallurgy, Fossilism, Chemistry, Geology, Anatomy, Medicine — then the *mind of man* — then the *minds of men* — in all Travels, Voyages and Histories', no claim in this increasingly ambitious list has been taken less seriously than that of astronomy.[16] As a topic, it has been pre-emptively foreclosed before it has been properly explored, even amongst scholars who have done much to develop the interlocking claims of other branches of science on literature, and who have been very sympathetic to such work specifically in Wordsworth and Coleridge.

For Marjorie Hope Nicolson in 1959, the 'Romantic poets experienced neither the shock nor the enthrallment of the seventeenth-century poets at the birth of a new cosmos or that of the eighteenth-century poets when a new world rose from the ashes of the old'.[17] Thomas McFarland, writing a decade later, compounded their putative apathy with what he perceived to be amateurish ignorance:

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[15] David M. Knight, 'The Physical Sciences and the Romantic Movement', *History of Science*, 9 (1970), 66.
[16] STC to Joseph Cottle, early April 1797, in *CL*, I, pp. 320-21.
[17] Marjorie Hope Nicolson, *Mountain Gloom and Mountain Glory: The Development of the Aesthetics of the Infinite* (Ithaca: Cornell University Press, 1959), p. 377.

> Coleridge's scientific speculation – illegitimate in method and specious in conclusion – should be granted only a symbolical, not a substantive, role in any assessment of his thought…he renders opinions on subjects where he has no right to speak at all…To be truly co-ordinate with his opinions on literature, the scientific opinions would have to represent hours in a laboratory…[18]

This estimation that professionalism is the true hallmark of intellectual curiosity and the prerequisite for empathy was partially condoned by Trevor Levere in 1981, when he stipulated that 'Coleridge's interest in astronomy was, however, largely a philosophical one', as if that demeaned rather than elevated its significance in his thinking. He noted, in his otherwise excellent account of the proficiency with which Coleridge integrated chemistry and geology into his metaphysics, that his 'limitations in approaching the sciences are nowhere more evident than in astronomy':

> Coleridge's inquiry into astronomy was foredoomed, like that of the mechanical philosophers before Newton, to a series of program statements, disconnected insights, and emphasis in principle that lacked predictive power. It was not until he came to what in his day were truly sciences of quality – to chemistry, for example, and to physiology – that method, knowledge, and system united fruitfully.[19]

It is unclear why Levere did not consider astronomy to be a science of 'quality' by the turn of the nineteenth century, as it emphatically was so, particularly given that Coleridge *did* see fit to adapt Herschelian theories and findings into his religious and philosophical systems. That Coleridge should have been 'foredoomed' in his researches is inexplicable; in reality it reflects an extensive critical prejudice which has unfairly condemned him to fail before the research has been undertaken to establish what he did know.[20]

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[18] Thomas McFarland, *Coleridge and the Pantheist Tradition* (Oxford: Clarendon Press, 1969), p. 323.
[19] Levere, *Poetry Realized in Nature*, pp. 140, 145-6. Cf. Levere, 'S.T. Coleridge: A Poet's View of Science', *Annals of Science*, 35: 1 (1978), 33: 'Notebooks and other surviving manuscripts show that [Coleridge] was strikingly knowledgeable about the non-mathematical sciences of his day.'
[20] Cf. Marilyn Gaull, 'Romantic Numeracy: The "Tuneless Numbers" and "Shadows Numberless"', *The Wordsworth Circle*, 22: 2 (1991), 128: '…many scholars in the humanities…assume that artists and writers such as Wordsworth are somehow better, more comprehensive, more intelligent, if they understand scientific knowledge and incorporate it in their work'. If Wordsworth and Coleridge can be shown, as I believe they can, to have been affected by the latest science to the extent that Herschel's discoveries influenced the shape of their creations then the stakes are considerably higher than only

In reality, Coleridge and Wordsworth were only dismayed by a strictly mechanical interpretation of the universe in which the mind was rendered passive; they reacted against 'the inability of science to formulate laws of organic relationship between the imagination (healthy or diseased) and the animal spirits'.[21] In Herschelian astronomy, conversely, Coleridge found precisely the means to facilitate the symbiotic expression of the laws of the world and the laws of the mind. Conclusions on Wordsworth's and Coleridge's mathematical and astronomical knowledge have not been substantially enhanced beyond Alfred North Whitehead's verdict in the Lowell Lectures in 1925 that 'A generation of religious and of scientific advance lies between the *Excursion* and Tennyson's *In Memoriam*. The earlier poets had solved the perplexity by ignoring it'.[22]

I update this paradigm that limits Wordsworth's and Coleridge's familiarity with astronomy to the scientific education which they received at school and at Cambridge, (centred principally on Euclid and Newton), by revealing their attentiveness to the new world views promulgated by William Herschel, Pierre-Simon Laplace, and the mathematicians of Trinity College, Cambridge, amongst others. This is important in its own right. The consensus which credits Wordsworth and Coleridge with the digestion

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permitting a reconsideration of their intelligence: we would have original access to their imaginative processes, to the ways in which they ordered and articulated their ideas.

[21] Rousseau, 'Science and the Discovery of the Imagination in Enlightened England', *Eighteenth-Century Studies*, 3: 1 (1969), 128. Cf. Frederick Burwick, *The Damnation of Newton: Goethe's Color Theory and Romantic Perception* (Berlin and New York: Walter de Gruyter, 1986), p. 8: 'For Blake, and for most of the Romantics, the foe was materialism, not scientific inquiry.'

[22] Alfred North Whitehead, *Science and the Modern World: Lowell Lectures 1925* (1926; London: Free Association Books, 1985), p. 101. Two of the most illuminating studies on Romanticism and science appeared at this time and need a modern counterpart, for which see Alice D. Snyder, 'Coleridge's Cosmogony: A Note on the Poetic "World View"', *Studies in Philology*, 21: 4 (1924), 616-25; John Livingston Lowes, *The Road to Xanadu: A Study in the Ways of the Imagination* (London: Constable and Company Ltd, 1927). In popular debate, the relative cultural values of literature and science were initially questioned by T.H. Huxley and Matthew Arnold in the 1880s, before becoming the subject of increased hostility in the twentieth century when C.P. Snow referred to 'literary intellectuals' as 'natural Luddites' in 'The Rede Lecture' in 1959, presaging a vituperative critique by F.R. Leavis. Cf. Thomas Henry Huxley, 'Science and Culture: An Address delivered at the Opening of Sir Josiah Mason's Science College, at Birmingham, on the 1st October 1880', in *Science and Culture and Other Essays* (1881; London, 1882), pp. 1-23; Matthew Arnold, 'Literature and Science', *The Nineteenth Century. A Monthly Review*, 12: 66 (1882), 216-30; C.P. Snow, *The Two Cultures*, intro. Stefan Collini (1959; Cambridge: Cambridge University Press, 1998), p. 22.

only of the classical model of the universe has encouraged the false notion that their scientific ideas were derivative and out of date. Concomitantly, it has closed the dual possibilities that they had the desire and ability to carry on learning once they left university, which they *did* have, maintaining a marked interest in contemporary science for the rest of their lives.

In order to determine what Wordsworth and Coleridge actually knew about nineteenth-century science my research brings together a wide variety of resources, many of which have not been thoroughly excavated, and which were in fact at the poets' fingertips. Reconstructing the nexus of communication between Wordsworth, Coleridge, and astronomy has involved an intricate process of textual and biographical cross-reference. I have mapped the poets' compiled reading of periodicals, learned journals, encylopaedias, and books against the science which they contained, and have subsequently traced the appearance of the latest discoveries in their letters, notebooks, journals, marginalia, metaphysics, prose treatises, theories of poetry, and poems.

What this substantiates is how alert Wordsworth and Coleridge were, both to a newly popular public demand to assimilate science (which was nourished by lectures, shows, periodicals, encyclopaedias, and an incipient museum culture), and also to a more strictly intellectual tradition (supported predominantly by their intimacy with the *Philosophical Transactions of the Royal Society*, Erasmus Darwin's scientific poetry, William Nicholson's *Journal of Natural Philosophy, Chemistry and the Arts*, the cosmic schemes of the *Naturphilosophen*, the *Quarterly Journal of Science, Literature and the Arts*, and their key friendships with leading scientific luminaries). The breadth of this list demands further digging to exhibit how the poets put specifically Romantic media to good effect in their scientific reading; indeed, it highlights a wonderfully

flexible intellectual armature with which Wordsworth and Coleridge were able to sustain their active and plural engagements with cutting edge discoveries.[23]

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The empirical strand of this thesis is diffused across the chronological chapters and gathers in strength towards the close; it is covalent with the ideological positions of each, but serves rather than stifles them. The great exception to that rule is of Coleridge's own making; his intellectual models persistently threaten to usurp in importance the ideas which they contain. Form and function are subject to a Coleridgean struggle for precedence, a hybridity which is finely brought out by Herschelian science.

There is no single methodological premise which can effectively sound out the poets' receptivity to, and use of, the new science. I employ very different types of analysis in order to feel for various astronomical patternings in their work. This arrangement benefits, I hope, from the purchase of Coleridge's dearest and doughtiest intelligential principle: the content of every chapter can stand alone, as well as fit the tapestry of the united whole. The broad *topos* is enacted in each part, which is collectively concerned with how imaginative thinking is necessarily analogical, and the manner in which scientific shapes and metaphors are critically invested with the meaning of that which they relate.

[23] Coleridge's reading of scientific journals in particular deserves much more attention; it was a real and sustained interest. Cf. *CN*, III, 3587, *f*44: 'P.S. To urge M[r] De Quincey to execute my old plan of collecting from all the Transactions of Academies (Royal, Edingburgh, Berlin, Petersburgh, Paris, Madrid &c &c) Magazines, & Medical Books…&c &c all the facts relative to the Senses, and to psychology'. For a sense of Coleridge's use of learned journals which relies on new archival research to show the tight phalanx of friends and libraries which provided him with access, see Thomas Owens, 'Coleridge's Lost Marginalia to *Philosophical Transactions of the Royal Society* (November 1803-May 1809)', *The Book Collector*, 62: 2 (2013), 241-53. For instance, the Royal Society's *Philosophical Transactions Receipt Book, 1800-1811*, [MS/212], reveals that Joseph Priestley's copies of the *Phil Trans* were taken out for him between 1800 and 1802 by his publisher, Joseph Johnson. For Johnson's signature see: 1800, n. 315; 1801, n. 208; 1802, n. 229.

At the same time, the thesis seeks to be more than the sum of its individual units. The yield from a panoptic astronomical investigation is not itself scientific. My research aspires to several wider critiques, which include contributions on the mathematical language of the Romantic imagination, the workings of allusion and communal memory, the nature of the Italian and Miltonic influence on Wordsworth, Coleridge's reticulated and religious will to form, and the presentation of a composite picture of the intellectual aspirations and revisionary impetus of the later Wordsworth. The ultimate purpose is to show that astronomy provided Wordsworth and Coleridge with a scaffold for cognition, an intellectual orrery which ordered creative consciousness and which they never abandoned.

Shapes thread the discrete sections together and are a constant mnemonic. The first chapter ascertains that Wordsworth and Coleridge understood and described the world in their youth with a legible language of mathematics. Astronomical geometries support a dialectical engagement which ties the forms of their poetry and philosophy to their thought processes. Chapters Two through Five select both a mathematical and a natural shape which exemplifies this tendency in diverse aspects of Wordsworth's and Coleridge's critical thinking. In the second chapter, it is crescents and crescent moons; the third, spheres and dew drops; the fourth, circles and spider-webs; the fifth, triangles and triple stars. The sixth chapter does not conform so readily to this scheme and must not be forced to do so, although the geometry of light, and improvements in nineteenth-century mathematics, are still central concerns which affect the contours of poems.

Chapter One places Romantic science on a new trajectory by returning to pre-Newtonian astronomy in order to advance beyond it. I suggest that Wordsworth and Coleridge tried to capture the Galilean *soul* of mathematics rather than master any number of Newtonian rules. The poets' early celebration of living geometries fosters the

link between scientific and imaginative vision; it is a propaedeutic traced principally through Wordsworth's *Prelude* (Books I and II), *Pedlar*, and topographical *Guide*, together with Coleridge's early *Notebooks*. This model of thinking has roots in a mathematical language they never relinquished, and which superseded in importance its Platonic and theological origins. The thesis takes this archetypal interaction as the fundamental hermeneutic with which to unlock the physical outlines of their thoughts and the moulds in which their poems, religious discussions, and metaphysics are set.

Chapter Two scrutinises how the skies stimulated the connective mental faculties of the poets and their families at Alfoxden House and Dove Cottage, and culminates in an associative, neurological reading of Wordsworth's revisions to the Preface to *Lyrical Ballads* (1802). Mapping landscapes and stars was a way of building shared commemorative sites for poetic and human communion. The Moon became a natural place to store and relive sedimented memories of the social environment and group activity out of which poetry first sprung. I trace a celestial cartography, an interwoven, recurring series of natural and typographical crescent moons, through their reading of a pre-eminently important scientific journal and into their poems, notebooks, letters and lives. The 1790s marked the beginning of a life-long process of incorporating scientific findings into poetry for both Wordsworth and Coleridge. The 'horned moon' of Coleridge's 'Ancient Mariner' has Herschelian roots which infiltrated Dorothy's *Alfoxden and Grasmere Journals*, Wordsworth's *Peter Bell*, their combined reflections about John Wordsworth, and even the parentheses (or lunulae) of Coleridge's 'A Letter to –' and 'A Soliloquy of the Full Moon, She Being in a Mad Passion'. Crescents offered stirring and redemptive recompense for absence and loss.

Chapter Three provides a close examination of the shared architectonic principles underlying Milton's political sonnets of the late 1640s and mid-1650s and

Wordsworth's of 1802-1803. It traces the lineage of Wordsworth's 'orbicular' poetics back through Milton to the *cinquecento*, thus recovering the muted importance of the Tuscan poets' modifications to the Petrarchan sonnet structure on Wordsworth. The figurative moral force of Milton's achievement was the direct result of his intricate negotiation with the definite weight and attractive force – the ponderability, the relative heaviness, the tendency to downward motion – of the sonnet form. The *asprezza* techniques that Milton inherited from Pietro Bembo, Giovanni Della Casa, and Torquato Tasso ushered an Italian aesthetics of *gravità* into English poetry to which Wordsworth was acutely sensible, and which enabled him to conceive of a shift in the values of prosodic weight as a redistribution of a sonnet's centre of *gravity*.

Chapter Four is a sustained commentary on something I only fully appreciated retrospectively; whether or not, in imaginative terms, Coleridge was a hedgehog or a fox, in tow with Parmenides or Heraclitus. In *An Essay on Tolstoy's View of History*, Isaiah Berlin took his leave from a fragment of the Greek poet, Archilochus, to argue that 'there exists a great chasm' between hedgehogs, 'who relate everything to a single central vision, one system, less or more coherent or articulate', and foxes, who 'pursue many ends, often unrelated and even contradictory, connected, if at all, only in some *de facto* way, for some psychological or physiological cause'. Those characterised as foxes 'lead lives, perform acts and entertain ideas that are centrifugal rather than centripetal; their thought is scattered or diffused, moving on many levels, seizing upon the essence of a vast variety of experiences'; they do not feel the compulsion to plot their engagements with the world into a unifying inner vision. Berlin hypothesised what I believe holds true for Coleridge, too, that 'Tolstoy was by nature a fox, but believed in being a hedgehog; that his gifts and achievement are one thing, and his beliefs, and

consequently his interpretation of his own achievement, another'.[24] Coleridge articulated the governing dynamics of the literary imagination with persistent reference to the power of gravity and to the delicate interaction of centripetal and centrifugal forces (circa 1815-1827). Focusing on the recurring set of interlocking images and ideas with which Coleridge registered this in the 'Theory of Life', the *Biographia Literaria*, the *Opus Maximum*, *Table Talk*, the middle *Notebooks*, the *Letters*, and assorted *Marginalia*, I make the case that Coleridge was a hedgehoggy fox.[25]

Chapter Five takes up Coleridge's hedgehogginess in a religious capacity; the method is best summarised in an illuminating statement I read by David Knight after its completion:

> It should be worthwhile, in tracing Coleridge's evolution from a pantheistic Unitarianism to orthodox Christianity, and from radical to conservative political views, to bear in mind, as well as the influence of German metaphysicians and Anglican divines, the transition from the materialistic chemistry of Priestley and Lavoisier to the immaterialism of Ritter, Oersted and Davy, and from the materialistic physiology of d'Holbach to the vitalism of Hunter.[26]

In a lifelong effort to conceptualise and communicate his Trinitarianism, Coleridge had recourse to Herschelian astronomy. Following his volte-face from Unitarianism at the turn of the nineteenth century right up until the publication of *On the Constitution of the Church and State* (1830), Coleridge made Herschel's science into his most abiding spiritual metaphors in *The Friend*, *The Statesman's Manual*, and *Aids to Reflection*,

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[24] Isaiah Berlin, *The Hedgehog and the Fox: An Essay on Tolstoy's View of History* (1953; London: Orion Books Limited, 1992), pp. 3, 5. The Archilochus fragment, reproduced on p. 3, is: "The fox knows many things, but the hedgehog knows one big thing". Cf. Colin E. Gunton, *The One, the Three and the Many: God, Creation and the Culture of Modernity. The 1992 Bampton Lectures* (Cambridge: Cambridge University Press, 1993), pp. 17-18.

[25] Seamus Perry had this idea first and was kind enough to direct me to it in his book, which was a constant presence throughout Chapters Four and Five of this thesis. I hope my work contributes something to the experiential pluralities, and attempts at psychic unity, which Coleridge encountered and confronted in the world. Cf. Seamus Perry, *Coleridge and the Uses of Division* (Oxford: Clarendon Press, 1999), pp. 23-24. In the last days of this thesis I found Perry's essay 'The talker', in Lucy Newlyn (ed.), *The Cambridge Companion to Coleridge* (Cambridge: Cambridge University Press, 2002), pp. 103-25. I blush to think how I have stumblingly followed his ideas about. I was especially gratified by a Coleridgean description on p. 119: 'The gathering, centripetal activity of a system-builder, seeking for the unity beneath secondary divisions, dissipates into the endlessly multiple life of momentary, irresolved speech.'

[26] Knight, 'The Physical Sciences and the Romantic Movement', 66.

amongst other publications. Coleridge applied the natural, trichotomous logic he found in Herschel's discovery of triple stars and infra-red to his own Three-in-One convictions and finally wrought the scaffold of his great dialectical device, the Pythagorean Tetractys, in Herschelian terminology. Coleridge-the-hedgehog looked for a Trinitarian structure in nature, actual and visible, which Herschel satisfied. I only realised the fullest implications of this work at the very end of the doctorate: Coleridge fought his way out of Priestley's unholy epistemological trinity of materialism, Socinianism, and philosophical necessity in terms of a rejection of Priestleian *light* theory. The theological foundations of philosophical determinism rested on the complete materiality, or interpenetration, of body and mind; Priestley could not sanction an *invisible* realm, which was exactly what Herschel proved to exist in infra-red radiation and which Coleridge used to validate Trinitarian Christianity. It was by updating the language of light that Coleridge escaped Priestley's soulless Unitarianism.[27]

Chapter Six reveals that from the 1820s onward Wordsworth struck up firm friendships with the most significant astronomers and mathematicians of the day, many of whom were responsible for overhauling and modernising the Cambridge Mathematical Tripos and inaugurating the British Association for the Advancement of Science. I offer the first assessment of the literary value of Wordsworth's relationships with figures who are, for the most part, rarely mentioned in major biographies of the poet: James Wood, Daniel Mitford Peacock, John Herschel, George Peacock, William

[27] J.G. McEvoy and J.E. McGuire, 'God and Nature: Priestley's Way of Rational Dissent', *Historical Studies in the Physical Sciences*, 6 (1975), 325-404, 399: Priestley's 'conception of a scientific theory can…only be completely understood if seen as a consequence of his rationality, and his underlying ontological commitments.' Cf. Richard Cronin, *Colour and Experience in Nineteenth-Century Poetry* (Basingstoke: Macmillan, 1988), pp. 26-27: 'Coleridge needed an optics that sanctioned the opposition between the one and the many. White light must remain a convincing metaphor for the One so that the multitude of colours might figure the multiplicities of the finite world…Light and colour, it seems, were metaphors too precious to be left prisoner in the camp of the deists.' Chapter Five provides a full discussion of Cronin's recognition that, for Coleridge, light was *philosophically* valuable.

Whewell, George Biddell Airy, Charles Pritchard, John Pringle Nichol, and William Rowan Hamilton. The revisions to *The Prelude* in the 1830s integrated astronomical and geometrical innovations. Wordsworth's scientific connections effected a change in his poetics; he revised in response to a new-found belief that language could become *outmoded* like a mathematical formula or technical instrument.

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A final word on nomenclature is necessary. Throughout the thesis, 'science' is used in its 'modern', post-1833 sense to refer to a discrete kind of theoretic or empirical study concerning demonstrable truths and the natural world (i.e. astronomy), and *not* to refer to any organised body of knowledge underpinned by an identifiable methodological basis.[28] Writing about the 'Man of science' in the revised Preface to *Lyrical Ballads* (1802), Wordsworth specifically singled out 'the Chemist and Mathematician…the Botanist, or Mineralogist'.[29] In doing so, he was not simply characterising someone engaged or skilled in broadly conceived categories of learning, someone expert (*sciens*) in the *trivium* (Grammar, Logic, Rhetoric) or the *quadrivium* (Arithmetic, Music, Geometry, Astronomy) to which the locution 'science' had long been understood to apply (from late antiquity to the early modern period): he was rather homing in on a particular pedagogic segment of that previously unified body of knowledge, thus activating a new linguistic division.[30] Indeed, the distinction between 'an astronomer, or a natural philosopher' was one *Wordsworth*

[28] The coinage of 'science' by William Whewell at Cambridge in 1833 is one of two episodes with which the thesis closes.
[29] Preface to *Lyrical Ballads* (1802), in *Prose*, I, pp. 140-41.
[30] Cf. Sydney Ross, '*Scientist*: The story of a word', *Annals of Science*, 18: 2 (1962), 65-85; Knight, *The Nature of Science: The History of Science in Western Culture since 1600* (London: Andre Deutsch, 1976), pp. 12, 58-59; Jan Golinski, 'The literature of the new sciences', in James Chandler (ed.), *The Cambridge History of English Romantic Literature* (Cambridge: Cambridge University Press, 2009), pp. 527-52.

made in the Preface.[31] This is an argument for function which rejects semantic boundaries and the traditional, accompanying charges of anachronism.

In *The Order of Things*, Michel Foucault proposed a stratified, archaeological model of thought which disordered and abjured the linear limitations of current historical classificatory measures: 'in every culture, between the use of what one might call the ordering codes and reflections upon order itself, there is the pure experience of order and its modes of being'. In the case of 'science', this hidden network of 'pure experience' has remained concealed behind the new epistemological configuration of the word in 1833 – 'waiting in silence for the moment of its expression' – which in turn has prevented *us* from gauging the intellectual quality of Wordsworth's and Coleridge's verifiably scientific endeavours and accomplishments before this date.[32] The notion that 'science', as we conceive it, only became available on the cusp of the Victorian era might stand as a linguistic reason why Wordsworth and Coleridge have not been accorded the mathematical and astronomical credibility which they deserve.[33] This thesis demonstrates that the building pressure on the nomenclature of Romantic science was in fact the product of a long epistemic shift in the taxonomy of types of knowledge which was active throughout the poets' lifetimes. It was one which Wordsworth and Coleridge did not simply ignore or observe, but in which they were imaginatively and *scientifically* bound up.

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[31] Preface to *Lyrical Ballads* (1802), in *Prose*, I, p. 139.
[32] Michel Foucault, *The Order of Things: An archaeology of the human sciences* (1966; London: Routledge Classics, 2002), pp. xxiii, xxi.
[33] Critical attention to Victorian science has been abundant. Cf. Geoffrey Cantor and Sally Shuttleworth (gen. eds.), *Science in the Nineteenth-Century Periodical: An Electronic Index*, v. 3.0, <http://www.sciper.org/index.html>. This is a rich resource for searching the scientific content of sixteen nineteenth-century periodicals. However, it would be very useful to extend the list to include, provisionally: the *Monthly Review*, the *British Critic*, the *Analytical Review*, the *European Magazine*, and the *Gentleman's Magazine*.

CHAPTER ONE

*

'THE LANGUAGE OF THE HEAVENS'

A great comet streaked across the skyline in the autumn of 1618 sparking a poem by King James I and a polemic in Italy. King James endeavoured to allay the fears of the 'men of Britaine', who thought that his attempt to seek a Spanish marriage for his son and heir Prince Charles 'hath causd this star' as an omen of divine disapprobation. Meanwhile, Galileo Galilei and Orazio Grassi, the latter a Jesuit mathematician, traded blows on whether or not comets were atmospheric or celestial phenomena.[1] In *Il Saggiatore* (1623), Galileo belittled Grassi for his poor understanding of physical astronomy and presented the methodological assumptions that underpinned all of his own work:

> Philosophy is written in this grand book – I mean the universe – which stands continually open to our gaze, but it cannot be understood unless one first learns to comprehend the language and interpret the characters in which it is written. It is written in the language of mathematics, and its characters are triangles, circles, and other geometrical figures, without which it is humanly impossible to understand a single word of it; without these, one is wandering about in a dark labyrinth.[2]

For Galileo, the language of mathematics was proportional geometry and it could be used to attain a unique vision of the sensible world. His science was practical, not abstract. In the Wordsworthian words of Stillman Drake, Galileo realised that 'allusions to experience are far more effective, and much easier to manage, in the

[1] "King James on the blazeing starr: Octo: 28: 1618", Bodleian MS Rawl. Poet. 84, fol. 72r, (ll. 1, 16), in Alastair Bellany and Andrew McRae (eds.), 'Early Stuart Libels: an edition of poetry from manuscript sources', in *Early Modern Literary Studies Text Series I* [2005], <http://www.earlystuartlibels.net/htdocs/spanish_match_section/Ni1.html>. Cf. Gwalter Owain, 'King James I. and the Comet of 1618', *Notes and Queries*, 3: 69 (1863), 323-24; James Doelman, 'The Comet of 1618 and the British Royal Family', *Notes and Queries*, 54: 1 (2007), 30-35.

[2] Galileo Galilei, *Il Saggiatore*; or, *The Assayer* (Rome, 1623), in *The Controversy on the Comets of 1618*, trans. Stillman Drake and C.D. O'Malley (Philadelphia: University of Pennsylvania Press, 1960), pp. 183-84.

language of everyday life than in a specialized scholarly language'.[3] Galileo fitted shapes to his natural surroundings rather than developing a hypothetical model of systematic numerical analysis. This made his approach inclusive; it could even be taken up and practised at home. Newton's *Philosophiæ Naturalis Principia Mathematica* (1687) turned the Galilean paradigm upside down sixty-five years later. Newton replaced relational geometry and local place with hard science and absolute space; the investigation of nature involved a select few armed with sets of equations and the infinitesimal calculus. Newtonian science, as I. Bernard Cohen put it, took 'purely mathematical counterparts of simplified and idealized physical situations' and applied them to 'the conditions of reality as revealed by experiment and observation'.[4] Newton changed the language of mathematics forever.

This chapter returns to pre-Newtonian science in order to advance beyond it. Discussions of Wordsworth's interest in mathematics and astronomy have drawn almost exclusively for evidence on the Euclid and Newton that he read at Hawkshead and Cambridge and have proceeded no further.[5] Wordsworth's and Coleridge's distrust of Newtonian atomism has been mistaken for hostility to astronomy and post-Newtonian

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[3] Stillman Drake, 'Galileo's Language: Mathematics and Poetry in a New Science', in Stillman Drake, *Essays on Galileo and the History and Philosophy of Science*, vol. 1, intro. N.M. Swerdlow and T.H. Levere (Toronto: University of Toronto Press, 1999), p. 55.

[4] I. Bernard Cohen, *The Newtonian Revolution* (Cambridge: Cambridge University Press, 1980), p. 37. Cf. Olaf Pedersen and Mogens Pihl, *Early Physics and Astronomy: A Historical Introduction* (London: Macdonald and James, 1974); Colin A. Russell, *Science and Social Change 1700-1900* (Hong Kong: The Macmillan Press, 1983), pp. 14-15; Alfonso Ingegno, 'Natural Philosophy: The new Philosophy of nature', in Charles B. Schmitt, Quentin Skinner, Eckhard Kessler and Jill Kraye (eds.), *The Cambridge History of Renaissance Philosophy* (Cambridge: Cambridge University Press, 1988), pp. 236-63; Peter Machamer, 'Galileo's machines, his mathematics, and his experiments', in Peter Machamer (ed.), *The Cambridge Companion to Galileo* (Cambridge: Cambridge University Press, 1998), p. 67.

[5] These studies include: Jane Worthington Smyser, 'Wordsworth's Dream of Poetry and Science: *The Prelude*, V', *Publications of the Modern Language Association*, 71: 1 (1956), 269-75; Newton P. Stallknecht, 'On Poetry and Geometric Truth', *Kenyon Review*, 18: 1 (1956), 1-20; Ben Ross Schneider, Jr., *Wordsworth's Cambridge Education* (Cambridge: Cambridge University Press, 1957); Lloyd N. Jeffrey, 'Wordsworth and Science', *The South Central Bulletin*, 27: 4 (1967), 16-22; Flemming Olson, 'Geometry and "Forms" in Wordsworth's "Prelude"', *Orbis Litterarum*, 26: 1 (1971), 20-41; Lee M. Johnson, *Wordsworth's Metaphysical Verse: Geometry, Nature, and Form* (Toronto: University of Toronto Press, 1982); Joan Baum, 'On the Importance of Mathematics to Wordsworth', *Modern Language Quarterly*, 46: 4 (1985), 390-406; W.K. Thomas and Warren U. Ober, *A Mind For Ever Voyaging: Wordsworth at Work Portraying Newton and Science* (Edmonton: University of Alberta Press, 1989).

science in general. Episodes such as Ann Tyson's purchase of 'a Euclid at 4*s*. 6*d*' for Wordsworth as early as 1785, together with his schoolboy absorption in Newton's *Opticks* (1712) in headmaster Thomas Bowman's study,[6] have fuelled critical focus on the lines to Newton in the 'AB-Stage' *Prelude* (III, 58-59), and their subsequent revision. Although these lines are of the greatest importance, it is only by returning to Galileo that Romantic science is put on a new trajectory, which suggests Wordsworth and Coleridge aspired to capture the *soul* of mathematics rather than master any number of Newtonian rules.

Wordsworth's ability to deal boldly with substantial things, like the architecture of the earth, was fostered by his technique of mapping shapes in his poems. This had a parallel, imaginative dovetailing in his mind. Both he and Coleridge sought a Galilean language to listen, interact, and respond to the changing morphology of the world. The exchange was maieutic. The fluent repose of the landscape worked through their poems; natural geometries functioned as part of their making and their memory. Beginning with Galileo, not Newton, is a way of assembling a pervasive intellectual *gestalt* that emerged early in Wordsworth and Coleridge and evolved in the mature shapes of their artistic constructions. Their model of thinking and the strength of their productions have scientific roots in a mathematical language that they never relinquished, and which superseded in importance its Platonic and theological origins. This thesis takes that archetypal dialectic as the key to unlocking the contours of their thoughts and the moulds in which their poems, religious discussions, and metaphysics were set. These mathematical figures are the fabric of their conscious and creative processes; tracing them provides silhouettes of their emotional and imaginative growth. Shape gives form to the feelings a poem or idea has taken up into itself.

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[6] T.W. Thompson, *Wordsworth's Hawkshead*, ed. Robert Woof (London: Oxford University Press, 1970), pp. 90, 344.

Wordsworth's attentiveness to pre-Newtonian science recovers this innovative linguistic fluency. In a passage of *Prelude* MS. Y revision dating from early October 1804, Wordsworth wrote but never published a 240 line meditation known as 'Admiration and Love', ostensibly for Book VIII, but probably intended for the subject of Book XII: 'Imagination, how impaired and restored'.[7] At the heart of this rumination is an analogy closely linking cerebral ability with the development of Galilean science which deserves to be quoted at length:

> As his powers advance
> He is not like a Man who sees in the heav'n
> A blue vault merely & a glittering croud
> One old familiar likeness over all
> A superficial pageant known too well
> To be regarded, he looks nearer, calls
> The stars out of their shy retreats and [?parts]
> The milky stream into its separate forms
> Loses & finds again when bafled most
> Not least delighted finally he takes
> The optic tube of thoght that patient men
> Have furnish'd with the toil of years & thus
> Without the glass of Galileo sees
> What Galileo saw: and as it were
> Resolving into one great faculty
> Of being bodily eye & spiritual mind
> The converse which he holds is limitless
> Nor only with the firmament deals thus
> But nearer home he looks with the same eye
> Through the entire abys of things. And now
> The first & earliest motion of his life
> I mean of his rememberable time
> Redound upon him with a stronger flood
> In speculation he is like a Child…
> He feels that be his mind however gre[ ]
> In aspiration the universe in which
> He lives is equal to his mind…[8]

In these lines, Wordsworth diagnosed the difference between an impaired and imaginative mind in terms of the relative capacities of medieval and Galilean astronomy. Diminished mental faculties lack the perceptive force that comes from

[7] Reed's introduction to *The Prelude* manuscripts in *Prelude 1805*, I, pp. 42, 47.
[8] Ibid., II, MS. Y (DC MS. 48) revision on 22^{r}, 22^{v}, 23^{r}, pp. 384-85, ll. 141-64, 173-75. For clarificatory purposes, interlinear revision has not been incorporated.

constant participation with the living world. Indeed, the mind rendered senseless through neglect reduces the universe to 'One old familiar likeness'. Wordsworth juxtaposed such psychic nebulosity with the astrologer's equally limited notion that the cosmos consisted of 'A blue vault merely' and a 'superficial pageant'. Conversely, the active adult mind taught carefully to observe its surroundings finds itself capable of recuperating memories from 'The first & earliest motion of…life', childhood. Wordsworth suggested that acts of imaginative reclamation were similar to the astronomer's work of celestial retrieval: 'he looks nearer, calls | The stars out of their shy retreats and [?parts] | The milky stream into its separate forms'.

The 'optic tube of thoght' incisively qualifies this distinction; memories are the instruments which restore the imagination, and Wordsworth crafted the mathematical language of practical astronomy to condition the wholeness of the mind. Salutary mental cognition is analogously recast as a powerful Galilean pattern that weaves distinct thoughts and sensations into one interpretable tapestry. Comprehending 'What Galileo saw' is achieved by applying the philosophical maxim of *Il Saggiatore* rather than the sort of refracting glass pioneered by Galileo in 1609 and used to part 'The milky stream'.[9]

Moreover, the lines perform their own literary remembrance to 'patient men' in an exemplary allusion that operates astronomically. Wordsworth could not have been insensible to the fact that the 'optic tube' appeared 'furnish'd with the toil of years' in

[9] Galileo published his observations on the mountainous surface of the Moon, the nebulae of stars comprising the *Via Lactea*, and his discovery of the Moons of Jupiter, in his *Sidereus Nuncius*, or *Sidereal Messenger* (Venice, 1610), to which Wordsworth here made oblique reference. It is worth noting that Coleridge's copy of Thomas Salusbury's two volume translation of Galileo, *Mathematical collections and translations in two tomes* (1661, 1665), was in Wordsworth's library, for which see Shaver, *Catalogue*, p. 330. Cf. Owens, 'Coleridge's Reading of Two Translations of Galileo's *Dialogue Concerning the Two Chief World Systems* (1632)', *Notes and Queries*, 258: 2 (2013), 229-32. For a full account of Salusbury's publication see J.P. Vander Motten, '"Sometimes Admiration Quickens Our Endeavours": Dryden, Galileo, and the "Essay of Dramatic Poesy"', *Studies in Philology*, 90: 4 (1993), 395-403.

Book III of *Paradise Lost*, when Milton depicted Satan's arrival on the Sun in another Galilean context:

> There lands the fiend, a spot like which perhaps
> Astronomer in the sun's lucent orb
> Through his glazed optic tube yet never saw. (III, 588-90)

In this epic simile, Satan appears as a 'spot' so vast that not even Galileo, the expert scrutiniser of sunspots, could have measured such a dark celestial presence. It is an excellent irony that Lucifer, Archangel of light, is at his blackest and most despicable on the Sun, which seemed 'beyond expression bright' (III, 591), at the pivotal moment of beguiling Uriel to tell him the way to Earth.[10] Galileo is refracted through the lenses of Milton and Wordsworth in lines that epitomise the sort of imaginative telescoping which preserves the mental faculties.

As the attentive 'powers advance', memories 'Redound…with a stronger flood' of reflected light. Starlight can take thousands of years to reach Earth, and 'Resolution' is the astronomical index of connectivity that binds stages of 'rememberable time' together, successfully 'Resolving into one great faculty | Of being bodily eye & spiritual mind'. In this complete state, the 'Man' feels the past so keenly that 'In speculation he is like a Child'. 'Speculation' is an act of sidereal perception that co-opts happenstance and intelligent viewing. It is especially apposite for astronomers and for children. Before grappling with the complex science in Newton's *Principia*, the infant schooled in nature is an explorer who vigorously 'looks…calls…separate[s]…Loses & finds' the stars. Wordsworth invoked Galileo's empirical science as methodologically applicable to 'bafled' astronomers and curious children alike. The nouns 'speculation' and 'speculum', the latter 'a metallic mirror forming part of a reflecting telescope', both

[10] Cf. Owens, '"Form One Consciousness": Coleridge, Wordsworth, Milton and the Origins of the "Optic Tube" in Poetry', *Notes and Queries*, 258: 2 (2013), 227-28.

come from the Latin verb *specĕre*, 'to look (at), observe'.[11] The 'optic tube of thoght' confirms that 'speculum' has a legitimate, echoic presence within 'speculate', which emphasises the small distance separating the child's rapture from that of the professional astronomer. The childish ways of seeing which star-gazing sponsors result in commemorative flashbacks of youth itself.[12]

The 'optic tube of thoght' analogically incorporated two rubrics until they became expressible in terms of each other. At this intersection, an equilibrium is reached; the universe 'is equal' to mental impulses and attainments. A legible, Galilean map of the physical world was an abiding archaeology of the mind. Wordsworth and Coleridge described and memorised the space about them with this language, which was an essential propaedeutic for the shape of their mature creations. Joining stars and landscapes together geometrically in their formative years wrought a hermeneutic to see 'Through the entire abys of things', to pinpoint specific memories with local places. If this passage was indeed meant for Book XII of *The Prelude*, Wordsworth proposed that it should make a significant statement about the ways in which the restitution of his imagination was aligned with attempts to envision and retain a holistic universal picture bound together by a natural, mathematical creed learnt in childhood.

Wordsworth built up this poetic geodesy in the first two books of *The Prelude* and in *The Pedlar*, which grew out of *The Ruined Cottage*. In 1798 manuscript revision to *The Ruined Cottage*, not printed until the close of Book Four of *The Excursion* (1814) in amended form, the Pedlar outlined his philosophy, which has been interpreted as a triumphant declaration of Wordsworth's early pantheism. The passage begins thus:

[11] "speculum, n.", *OED Online* (Oxford: Oxford University Press, 2013), etymology and sense: 2b. All quotation from the OED is from *Oxford English Dictionary* (*OED*) *Online*, gen. ed. John Simpson, Oxford University Press 2013 < http://www.oed.com/>.

[12] Cf. David Brewster, *Memoirs of the Life, Writings, and Discoveries of Sir Isaac Newton*, 2 vols. (Edinburgh, 1855), II, p. 407. Speaking of himself in old age, Newton is recorded to have said: "I do not know what I may appear to the world, but to myself I seem to have been only like a boy playing on the sea-shore, and diverting myself in now and then finding a smoother pebble or a prettier shell than ordinary, whilst the great ocean of truth lay all undiscovered before me."

> Not useless do I deem
> These quiet sympathies with things that hold
> An inarticulate language… (1-3)[13]

However, when Wordsworth first drafted this passage in the Alfoxden Notebook between late January and early March 1798, his account differed both from the above and from the printed text in 1814:

> And never for each other shall we feel
> As we may feel till we ~~have~~ sympathy
> With nature in her forms inanimate
> With objects such as have no power
> to hold
> Articulate language. In all forms of things
> There is a mind[14]

This last line, summative of the Pedlar's natural wisdom, never left the Alfoxden Notebook. It is only possible to distinguish how Wordsworth's imagination orientated 'Through the entire abys of things' by understanding his prior and profound commitment to the belief that 'In all forms of things | There is a mind'.

This kind of intelligible mind extends its 'quiet sympathies' towards vouchsafing 'Science' as 'a precious visitant' (43-44), provided its knowledge ministers 'to the excursive power | Of Intellect and thought' (56-57). In Wordsworth's humane poetics, sympathy militates against the inimical inclination to 'pore, and dwindle as we pore' (59) in 'disconnection, dead and spiritless' (62) by spreading wide 'The joy of that pure principle of love' (7).[15] 'Things', rather than being divided, are to be seen in

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[13] This passage is printed in full in the Appendix to Stephen Gill, *Wordsworth's Revisitings* (Oxford: Oxford University Press, 2011), pp. 213-15; line reference from this passage follows Gill's book, which also offers the clearest summation of the textual history of the poem to date, pp. 49-55. Cf. *RC* & *P*, pp. 261-75, 261 (D, 67^{v}). All future quotation from MSS. B, D, E and M is from *RC* & *P*.

[14] *RC & P*, Alfoxden Notebook (20^{v}-21^{r}), pp. 121-23.

[15] Cf. *Evening Walk*, pp. 138, 162-63. Wordsworth first mooted the qualities pertaining to this sympathetic mind in substantive 1794 revision to *An Evening Walk*. On manuscript page 2^{v} of DC MS. 10, Wordsworth expanded upon the character of those in the 1794 reading text who 'See common forms prolong the endless chain | Of Joy and grief, of pleasure and of pain' (205-6). He explicitly declared that an *astronomical* vision was required, and that 'While that, more near, demands minuter cares, | Yet this its proper tendance duly shares' (219-20): 'But chiefly those to whom the harmonious doors | Of Science have unbarred celestial stores | To whom a burning energy has given | That other eye which darts through earth and heaven |…Roams through all space and unconfined | Explores the illimitable tracts of mind | And piercing the profound of time can see | Whatever man has been & man may be'. The 'optic tube of

Coleridge's incorporative phrase as 'Parts and proportions of one wond'rous whole!'[16] Thus, they 'hold | An inarticulate language'; that is, the 'things' physically mediate it, where the verb translates to 'facilitate' in a transitive sense; they contain it, where 'hold' means 'hold within', storing the language as well as embodying it in themselves; and they keep it together, preventing 'disconnection' – as emphasised by the enjambment of the line – where 'hold' hints at a *gestalt* 'holding as one'. These 'things' structure the space in which this 'inarticulate language' works but are also integers of the dialect itself; the relief of the landscape is the physical conveyer of the world's sense.

The triple meaning of 'hold' is perfectly well-weighted and decisive. Mathematics needs no external go-between; it is a conduit of its own meaning. The Pedlar extends his sympathy to 'things' by geometrising them, thus reaching a universal and sympathetic equilibrium with the 'mind' of all forms. Indeed, the notion that language could not 'hold', that it could become unhinged or disjointed, gives words hinges and hard edges; it reifies the *shape* of sound and implicates linear mathematics with the child Wordsworth's 'unconscious intercourse | With the eternal Beauty' in Book I of *The Prelude*, where he drank in 'A pure organic pleasure from the lines' (I, 590-92). Similarly, the Pedlar 'drank | The spectacle' (E, 197-98) of the living world. His 'inarticulate language' was instinctively rich and solid, bound together by a series of interlocking natural lines that prevented fruitless meditation 'on things minute' (60). Inarticulacy was not a marker of mental incomprehension or ineffability, but rather a measure of mathematical silence designed to extend the feelers of sympathy. For the

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thoght' was the lasting geometrical gift of an early pantheism, of 'A heart that vibrates evermore, awake | To feeling for all forms that Life can take, | That wider still its sympathy extends, | And sees not any line where being ends' (125-28). The imaginative importance of astronomy as crucial for expressing psychic acts of return is not discussed in analysis of this passage in H.W. Piper, *The Active Universe: Pantheism and the Concept of Imagination in the English Romantic Poets* (London: The Athlone Press, 1962), pp. 73-74; Paul D. Sheats, *The Making of Wordsworth's Poetry, 1785-1798* (Cambridge, Mass.: Harvard University Press, 1973), pp. 101-4.

[16] 'Religious Musings' (1794), in *PW*, I:1, p. 180, l. 128.

Pedlar, this was done in the hope of reaching an emotional equanimity to alleviate pain or desolation.

In MS. B of *The Ruined Cottage*, the poet betrayed his untutored tendency for the disengaged vision Wordsworth warned against following the Pedlar's pronouncements upon death:

> As I stooped to drink,
> Few minutes gone, at that deserted well
> What feelings came to me! A spider's web
> Across its mouth hung to the water's edge,
> And on the wet and slimy foot-stone lay
> The useless fragment of a wooden bowl;
> It moved my very heart. (B, 140-46)

The chipped bowl is a symbol for the chaotic and fractured feelings of the poet, whilst the image of the spider-web is best interpreted with Coleridge's little-called upon concept of 'the Araneosis of corpuscular materialism…*the one* corrupting into *ten thousand*'. Instead of 'one view of the air, or blue sky', Coleridge explained that this way of seeing yielded 'a thousand webs, specks, &c danc[ing] before the eye'. Kathleen Coburn has defined 'Araneosis' as 'the state of seeing things in multiple divisions, like spider-webs'.[17] It was the Pedlar's ability to find in all shapes 'a secret and mysterious soul, | A fragrance and a spirit of strange meaning' (B, 84-5), which saved him from the disjunctive vision of those with 'Araneosis' who dwindled and pored. It was the same show of sympathy which also allowed him to mitigate Margaret's suffering at the end of another version of the poem.

In that version, MS. D, the Pedlar countenanced the poet to 'Be wise and chearful, and no longer read | The forms of things with an unworthy eye' (D, 510-11), having attached solacing memories to 'Those weeds, and the high spear-grass on that wall' (D, 514). This act of reading concerned the same natural 'forms' to which

[17] *CN*, II, 2402, *f*129^{v} and n. Chapter Four is preoccupied with Coleridge's fascination with spider-webs, investigating how they were images of dissonance and unity in his thought.

Wordsworth expressly gave a 'mind' in the Alfoxden Notebook and which 'hold | An inarticulate language'. The outlines of their shapes are stored in the imagination; their memorability is contingent upon being recalled and reinterpreted as a series of mathematical lines that induced pleasure and have the capacity to stimulate it again. To reject the ending of MS. D on the basis that Wordsworth's attempt to allay Margaret's suffering failed, or was misplaced entirely, is to discard the Pedlar's vision and the mathematical roots of his sympathetic mind.

Coleridge would *not* have approved using the calculus of Newton to promote these sympathies. Indeed, he railed persistently against Newton's strain of 'corpuscular materialism'. To Coleridge, '*Mind* in his system is always passive'; Newton was 'a lazy Looker-on' whose universe was 'revolting from its want of analogy to ~~what~~ all our other experiences of nature'.[18] Analogy linked the restored imaginative faculties with Galileo in MS. Y *Prelude* revision, much as it raised Galileo and Kepler above Newton in Coleridge's estimation. Kepler's idea that the world exhibited a geometrical harmony akin to the one depicted in *Il Saggiatore*, 'a music of moving forms' in Georges Poulet's words, delivered a fundamentally *relational* account of the deepest structures of the universe which Coleridge found impossible not to admire.[19] The Pedlar shared this mindset. The surfaces 'Which spake perpetual logic to his soul' (B, 101) were part of an incorporative, cosmic geometry which 'Did bind his feelings even as in a chain' (B, 103). This was the soul of mathematics, wherein geometries recorded feelings.

Wordsworth reunited his extended history of the Pedlar, composed in March 1798, with the original story of Margaret, for MS. E in late 1803-1804. The move gave a distinctly geometric resonance to the Pedlar's 'plainer language' (E, 306), first alluded

[18] STC to Thomas Poole, 23 March 1801, in *CL*, II, p. 709; *CN*, IV, 4633, *f*49^{v}.
[19] Georges Poulet, *The Metamorphoses of the Circle*, trans. Carley Dawson and Elliott Coleman (1961; Baltimore: The John Hopkins Press, 1966), p. 60. Cf. 8 October 1830, in *TT*, I, pp. 210-12 and n. 1-4. Cf. E.A. Burtt, *The Metaphysical Foundations of Modern Physical Science* (1932; London: Routledge and Kegan Paul, 1967), p. 76.

to in MS. B (B, 65).[20] This is of considerable contextual significance given that the early life of the Pedlar was married closely to Wordsworth's depiction of his own childhood in the opening books of *The Prelude*.[21] The foundations of both their minds were laid in nature. 'From his sixth year' (E, 115), the Pedlar 'all alone | Beheld the stars come out above his head' (E, 124-25), whilst Wordsworth equally treasured 'those soft starry nights' (II, 44) when he learnt to revere the heavens: 'a Boy I lov'd the sun…the moon to me was dear' (II, 184, 196). The Pedlar's mature sensitivity for 'quiet sympathies with things' was in fact first conceived as an intensely somatic experience as a child. 'In such communion, not from terror free' (E, 129), he recognised that 'deep feelings had impress'd | Great objects on his mind' (E, 132-33). Wordsworth, too, remembered that this type of intimate impression was precisely how his own 'sympathies enlarged' (II, 181). Such union made 'the common range of visible things' most 'dear' to him (II, 182-83).

These incidents were imprinted upon the Pedlar 'with portraiture | And colour so distinct that on his mind | They lay like substances' (E, 133-35). From this communion he 'attain'd | An active power to fasten images | Upon his brain' (E, 142-44). Wordsworth found it so in *The Prelude*, noting that 'The scenes which were a witness of that joy | Remained, in their substantial lineaments | Depicted on the brain' (I, 628-30), whilst Coleridge, describing the views from Etna in 1804, characterised the beauty as 'a true *Language* / crinkle crankle withered dried up lines'.[22] Transforming the landscape into an interlocking mathematical grid upon whose 'pictur'd lines' they 'Intensely brooded' (E, 144-45) was a descriptive measure that made memories last.

[20] For the Pedlar's extended history see *RC* & *P*, pp. 17, 150-79.
[21] *Fenwick*, p. 79. In his note to *The Excursion*, Wordsworth remarked that: 'the character I have represented in [the Pedlar] is chiefly an idea of what I fancied my own character might have become in his circumstances'.
[22] *CN*, II, 1889.

Preserving the active intelligence of fossilized shapes in this way was a 'precious gift' (E, 138) they all shared.[23]

In MS. E, Wordsworth enshrined exactly the kind of tactile encounter upon which he and the Pedlar were reared:

> In the after day
> Of boyhood, many a time in caves forlorn,
> And in the hollow depths of naked crags
> He sate; and even in their fix'd lineaments,
> He trac'd an ebbing and a flowing mind,
> Expression ever varying. (E, 151-56)

With his fingers in the rocks, the youthful Pedlar worked the arabesques silently to bring the cave to life, arriving at its 'flowing mind'. Unable to see in the darkness, he intuited a haptic language that spoke directly to his hands. The 'caves forlorn' and 'naked crags' seemed vulnerable to such intrusion; they made a confidant of the boy who, as an 'absent' adult in another poem, 'Tintern Abbey', declared that 'These forms of beauty have not been to me, | As is a landscape to a blind man's eye'.[24] The implication is not that the blind man cannot interact with the world, but rather that he sees its forms feelingly.[25] This is the poetry of apprehension. The 'fix'd lineaments' are part of a legible, Galilean script that is written all over the landscape and is 'ever varying' to the touch. They constitute the semiotic 'proof' which the Wanderer in *The Excursion* invoked to lend credence to the blind man's internal vision: 'But proof abounds | Upon the earth that faculties, which seem | Extinguished, do not, *therefore*, cease to be' (VII, 535-37).

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[23] Wordsworth's description of the Grotto of Antiparos or the Den of Yordas in Book VIII of *The Prelude* also owes much to the Pedlar's vision. At first the cavern seemed 'Exposed and lifeless as a written book' (VIII, 727) until 'its projections, wrinkles, cavities' (VIII, 732) embodied 'every where some pressure' (VIII, 735), some impressed mark or written character felt with the hands 'Through all its surface' (VIII, 733), which created 'A spectacle to which there is no end' (VIII, 741).

[24] 'Lines written a few miles above Tintern Abbey, on revisiting the banks of the Wye during a tour, July 13, 1798', in *Lyrical Ballads*, p. 117, ll. 24-25.

[25] For a traditional approach to this passage which interprets the simile of the blind man as suggesting that the landscape *is* absent to the poet, see Heather Glen, *Vision and Disenchantment: Blake's Songs & Wordsworth's Lyrical Ballads* (Cambridge: Cambridge University Press, 1983), p. 253.

The Pedlar's mind was eidetic; images of the natural world vividly revived life experienced within it. He had 'small need of books; for many a Tale | Traditionary round the mountains hung' (E, 157-58). The verb, deployed with suspended sonic force at the end of the line to stir 'whate'er there is of power in sound | To breathe an elevated mood' (II, 324-25), is an acute reminder that the Pedlar's tales were not told in the mountains, but *were* the mountains. His 'inarticulate' world was built on quiet, fiduciary acts of close climatological interpretation: 'The clouds were touch'd, | And in their silent faces did he read | Unutterable love' (E, 194-96). The poet is incited to appropriate this environmental analysis in order to 'no longer read | The forms of things with an unworthy eye' (E, 855-56). The finely tuned mind should make a qualitative distinction between 'Silent faces' and 'unutterable love'; silence is a condition that may be broken by speech but that which is unutterable cannot be expressed with words at all.

Wordsworth felt viscerally 'whate'er there is of power in sound' by a patient process of *hyphaeresis* – a taking away (of his subjectivity) from underneath. He allowed himself to be worked through by the elements, hopeful such sacrifice would induce a radical imaginative exchange. As a child he:

> would stand
> Beneath some rock, listening to sounds that are
> The ghostly language of the ancient earth,
> Or make their dim abode in distant winds. (II, 326-29)

Such confidence did not go unrewarded; these mutual dealings compounded his ontological belief in 'sounds that are',[26] and prompted John Beer's verdict that 'Wordsworth sometimes writes as if language could have been not only prehistoric but

[26] Christopher Ricks, 'Wordsworth: A Pure Organic Pleasure from the Lines', *Essays in Criticism*, 21: 1 (1971), 22: ' – no other poet performs such miracles with the verb to be.' This essay is reprinted as 'William Wordsworth 1: "A pure organic pleasure from the lines"', in *The Force of Poetry* (1984; Oxford: Clarendon Press, 2002), pp. 89-116, 110. Cf. Geoffrey H. Hartman, *The Unmediated Vision: An Interpretation of Wordsworth, Hopkins, Rilke, and Valéry* (New Haven: Yale University Press, 1954), p. 5: '*Wordsworth's understanding is characterized by the general absence of the will to attain relational knowledge*, that is, knowledge which may be obtained in direct answer to the Why, the What, the Wherefore, and the How.'

even prehuman'.[27] 'The ghostly language of the ancient earth' was chthonic, earthy rather than earthly, a spiritual companion to being. From the same commutative principle, the Pedlar derived a divine geometrical grammar – 'visitation from the living God' (E, 203) – to which he was neurologically committed: 'Sensation, soul, and form | All melted into him' (E, 198-99). Engaging with the world in these animated terms was the fulfilment of an imaginative responsibility Wordsworth took very seriously.

These elective affinities were sustained in 'the Volume which displays | The mystery' (E, 214-15). Coleridge referred to this in his *Lectures on Revealed Religion* (1795) as 'the Volume of the World', which 'The Omnipotent has unfolded to us…that there we may read the Transcript of himself'.[28] The Pedlar was a natural theologian of sorts. The fabric of reality constituted a 'written promise!' (E, 213), a supermundane architecture that manifested the Godhead in an infinite geometrical language of place. The Pedlar 'early learn'd | To reverence' (E, 213-14) the Bible itself, 'But in the mountains did he *feel* his faith: | There did he see the writing' (E, 216-17). 'There', followed by the colon, was a directional signal which pointed this feeling faith back to a specific place in the mountains. In the cave, the Pedlar was a blind conductor; his little acts of symphonic mensuration composed the form of the eternal Mind. God's handwriting was messy yet detectable for the Pedlar, who heeded the 'fix'd lineaments' on the mountainside, conscious that they 'Breath'd immortality' (E, 218).

On his Alpine tour with Robert Jones in 1790, Wordsworth grasped at the same sympathies. Perceiving the natural world 'was fitted to our unripe state' (VI, 470), Wordsworth tutored himself to recapture 'the pure breath of real life' (VI, 472) by

[27] John Beer, 'The Paradoxes of Nature in Wordsworth and Coleridge', *The Wordsworth Circle*, 40: 1 (2009), 7.
[28] 'Lecture One', c. 19 May 1795, in *Lects 1795*, p. 94.

relinquishing an importunate sense of intellectual and cognitive hierarchies. He and Jones:

> were not left untouch'd. With such a book
> Before our eyes we could not chuse but read
> A frequent lesson of sound tenderness,
> The universal reason of mankind,
> The truth of Young and Old. (VI, 473-77)

Gauging this 'lesson' meant salvaging a Galilean language that underwrote the world's landforms; it required deep meditation 'Upon the alliance of those simple, pure | Proportions and relations with the frame | And laws of Nature' (VI, 144-46). Wordsworth and Jones 'could not chuse but read' because the world lay permanently open to interpretation. The claim for mathematics in Book VI of the 'AB-Stage' *Prelude* is one of unique betweenness; it is founded on its liminal ability to educe congruencies between the terrestrial and the celestial. At their most intense, the relationships made available bestow divine status on 'geometric science' (VI, 137), which 'is | And hath the name of God' (VI, 156-57). The 'Lore of different kind' (E, 240) which was transmitted to the Pedlar as a child, 'books that explain | The purer elements of truth, involv'd | In lines and numbers' (E, 242-44), *is* God. Geometry is an intercessor between physical and spiritual realities; it identifies inner patterns of experience, surface depths. For the Pedlar, nature's mathematics was God's calligraphy, the world was His ink-well.

Applying his 'Lore' to the cosmos, the Pedlar 'looks nearer, calls | The stars out of their shy retreats', and 'Without the glass of Galileo sees | What Galileo saw' (Y, 146-47, 153-54):

> While yet he linger'd in the elements
> Of science, and among her simplest laws,
> His triangles, they were the stars of Heaven,
> The silent stars… (E, 258-61)

Although it has proved tempting to link the Pedlar's triangles with the burgeoning interest in trigonometrical surveying at the end of the eighteenth century, such a historical focus grounds them on this earth and removes the childhood lens through which the ethos of this scene is imparted.[29] As a boy, the Pedlar connected shiny dots up together to make mathematical shapes. This was a formative moment of star-gazing true to the child's conception of the night sky, the Pedlar's geometrical language, and the observational habits of nineteenth-century astronomers.

To the Pedlar who stared upward with a head full of 'the elements | Of science' – possibly Euclid's *Elements* – 'The Stars are out by twos and threes', grouped slowly and by shape as his eyes adjusted to the darkness.[30] He drew lines through them to keep them in their positions and to enable him to recall which ones he had already seen, a technique Dorothy Wordsworth employed when documenting the heavens: 'The stars were out by ones & twos but no cuckow'.[31] They were not alone in these procedures. From the bottom of his garden at Observatory House, in Slough, William Herschel dictated the observations he made through his forty-foot telescope to his sister Caroline on their nightly celestial rounds in the same terms:

> March 23, 1797. Three very small stars O P Q, are in the path of the planet; they form an obtuse triangle.
> March 25. 11^h 4'. A very bright star S, at almost the distance of the field of view, is a little south of the path of the planet. It has a small north preceding star T, which points to two more VW, towards the north. Between the triangle of March 23d and the four last mentioned stars, is a very small star X.[32]

[29] For studies of this kind see Ron Broglio, 'Mapping British Earth and Sky', *The Wordsworth Circle*, 33: 2 (2002), 70-77; Rachel Hewitt, *Map of a Nation: A Biography of the Ordnance Survey* (London: Granta, 2010); Hewitt, 'Mapping and Romanticism', *The Wordsworth Circle*, 42: 2 (2011), 157-65. Telescopes and astronomy proper do not feature in Broglio's book: *Technologies of the Picturesque: British Art, Poetry, and Instruments, 1750-1830* (Lewisburg: Bucknell University Press, 2008).
[30] This line is from Wordsworth's poem 'The Sun has long been set' (1804), in *P2V*, p. 204, l. 2.
[31] 13 June 1802, *Grasmere Journal*, in *DWJ*, p. 108.
[32] William Herschel, 'On the Discovery of Four Additional Satellites of the Georgium Sidus. The Retrograde Motion of Its Old Satellites Announced; And the Cause of Their Disappearance at Certain Distances from the Planet Explained', *Phil Trans*, 88 (1798), 58.

The language of discovery associated with physical astronomy was learnt by children: 'In speculation he is like a Child' (Y, 164). Or, to use Paul Sheats' words: 'What the schoolboy lacks is not the ideas of the mature man, but a sense of the significance of those ideas'.[33] Herschel's celestial alphabet stretched to letters, much like Coleridge's own:

> O if I had been blest & had lived with you in the country, the continual food of conversation by watching & explaining – the Heavens / your name in those bright Stars, or an M or W recalling those Stars – Aurora borealis – at Keswick by the corner parlour window…[34]

The stars held memories intact for the Wordsworths and for Coleridge as they 'read | The forms of things', yet the Pedlar's universal patterns were not scripted with the letters of loved ones. Nevertheless, at one stage of manuscript revision, the Pedlar 'scann'd the laws of light' (M, 312), and scansion is the perfect word that puts prosody into the stars, that makes poems out of comets. Wordsworth deemed it a 'Hard task to analyse a soul' (II, 232), but discerning the rhythms and cadences of the night sky built a soulful geometry which was an approach to the Pedlar's revelation that 'In all forms of things | There is a mind'.

Shaping 'The silent stars' completed the Pedlar's philosophical jigsaw; his 'inarticulate language' held over sky, land and sea. He was a celestial sapper, searching out starry shapes and tracking back across land lines. Like the Galilean poet of MS. Y *Prelude* revision, the Pedlar not 'only with the firmament deals thus | But nearer home he looks with the same eye' (Y, 158-59). He created a complete semiotic system to guide him through Galileo's 'dark labyrinth'; geometry ministered to his mind. The Pedlar's library was peculiar; many of his favourite books spoke of nothing, 'Inscrib'd, as with the silence of the thought' (E, 265), and the 'obscure records' (E, 268) which they imparted were written on the outside covers, 'Upon [ ] bleak and visionary sides'

[33] Sheats, *The Making of Wordsworth's Poetry*, p. 42.
[34] *CN*, III, 3708, *f*12^{v}.

(E, 266). Indeed, they required in the first instance to be read blindly, with the hands. No oral language could interpret these books, yet the writing used the 'simplest laws' imaginable and was most accessible to curious children. Each and every one was ultimately written by the same Author.[35]

Astronomy provides clues and access to this library. It 'holds | an inarticulate language' which is first taken up in childhood by formulating laws of organic relationship. Geometry is the glue which 'held acquaintance with the stars, | And wedded man to man by purest bond' (V, 104-5). The 'optic tube of thoght' (Y, 151) was a shuttling communicative channel which interwove applied geometry and physical astronomy with lived experience. It was a dynamic heuristic that reflected compelling contiguities between the empirical and spiritual realms and it facilitated the Pedlar's piercing imaginative vision. This was the source of 'the language of the heavens' (XII, 270), which succeeded in 'Resolving into one great faculty | Of being bodily eye & spiritual mind' (Y, 155-56). Sympathy was at its root, and it had an economical structure; contours of the world formed the mind's reaches, conferring divinity upon natural and intellective acreages alike. Seeking cognitive resolutions with cosmic shapes and stars was central to mapping Coleridge's metaphysics and to the cut of Wordsworth's mature verse. It even, in an unlikely way, brought the poets close to Byron's eponymous hero, Manfred:

> I linger yet with Nature, for the night
> Hath been to me a more familiar face
> Than that of man; and in her starry shade
> Of dim and solitary loveliness
> I learn'd the language of another world.[36]

[35] Only Borges's 'The Library of Babel' can match the Pedlar's for its extraordinariness. For this short story see Jorge Luis Borges, 'The Library of Babel', in *The Garden of Forking Paths* (1944), repr. in *Fictions*, trans. Andrew Hurley (London: Penguin Books, 2000), pp. 65-74.
[36] George Gordon, Lord Byron, *Manfred*, in *Lord Byron: The Major Works*, ed. Jerome J. McGann (1986; Oxford: Oxford University Press, 2000), III. iv. 3-7.

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Writing to Thomas Poole in October 1797, Coleridge recalled a treasured childhood act of celestial cartography with his father in Devon:

> I remember, that at eight years old I walked with him one winter evening from a farmer's house, a mile from Ottery – & he told me the names of the stars – and how Jupiter was a thousand times larger than our world – and that the other twinkling stars were Suns that had worlds rolling round them – & when I came home, he shewed me how they rolled round – / . I heard him with a profound delight & admiration; but without the least mixture of wonder or incredulity…I regulated all my creeds by my conceptions not by my *sight* – even at that age…Those who have been led to the same truths step by step thro' the constant testimony of their senses, seem to me to want a sense which I possess – They contemplate nothing but *parts* – and all *parts* are necessarily little – and the Universe to them is but a mass of *little things*.[37]

What Coleridge inherited from this potent memory has been debated. Whilst Richard Holmes has supposed that the Reverend John Coleridge, 'a great follower of the monthly magazines', might have taken the opportunity to tell his son about Herschel's discovery of the new planet, Georgium Sidus (Uranus), J.C.C. Mays has most recently suggested that he 'transmitted the Platonic element in Newton's thinking that derived from Henry More, Ralph Cudworth and others'.[38] Cambridge Neoplatonism emanated from the corpus of Marsilio Ficino, whose Latin translations of Plato's texts made him the figurehead of Renaissance Platonism in Florence in the Quattrocento. The vitalistic natural philosophy of Ficino's *Theologia Platonica de imortalitate animae* (1482) emphasised the interrelatedness of the immortal soul and stipulated, in Charles Lohr's words, that the 'various degrees and parts [of the universe] are bound together by active affinities'.[39] If Mays is correct, Coleridge would have received the concept of an *anima mundi* similar to that which suffused the Pedlar's world. This was discoverable 'from a

[37] STC to Thomas Poole, 16 October 1797, in *CL*, I, p. 354.
[38] Holmes, *The Age of Wonder*, p. 111; J.C.C. Mays, *Coleridge's Father: Absent Man, Guardian Spirit* (Somerset: The Friends of Coleridge, forthcoming), p. 14.
[39] Charles H. Lohr, 'Metaphysics', in Schmitt et al. (eds.), *Cambridge History of Renaissance Philosophy*, p. 572.

stone, a tree, a withered leaf, | To the broad ocean and the azure heavens | Spangled with kindred multitudes of stars' (B, 97-99), to him who 'had an eye which evermore | Looked deep into the shades of difference | As they lie hid in all exterior forms' (B, 94-96).

It should be stressed that although this syncretic impulse has traditionally been linked with Wordsworth's and Coleridge's early pantheism, the principles which made these associations possible were in fact mathematical and enduring beyond the 1790s.[40] Again in October 1797, Coleridge wrote to John Thelwall that he 'ached to behold & know something *great* – something *one* & *indivisible* – and it is only in the faith of this that rocks or waterfalls, mountains or caverns give me the sense of sublimity or majesty!'[41] In looking at nature, Coleridge later described that he 'seem[ed] rather to be seeking, as it were *asking*, a symbolical language for something within me that already and forever exists, than observing any thing new'.[42] His absorption in the natural world was part of a larger challenge to subsume his surroundings into a philosophical system of consistent patterns in which the laws of nature could be fitted to the laws of the mind.[43] Coleridge's conception of the whole paradigm was more important than the sight of any individual piece; 'the shades of difference' had to manifest in the acknowledged symmetries that linked living forms with active ideas.

From the age of ten at Christ's Hospital, Coleridge was taught celestial navigation with astrolabes, sextants and telescopes by William Wales (1734-1798), one

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[40] For classic studies of the poets' pantheism, see: Emile Legouis, *The Early Life of William Wordsworth 1770-1798*, trans. J.W. Mathews, intro. Nicholas Roe (1896; London: Libris, 1988); Basil Willey, *The Eighteenth Century Background: Studies on the Idea of Nature in the Thought of the Period* (London: Chatto & Windus, 1946); Piper, *The Active Universe* (1962); Melvin Rader, *Wordsworth: A Philosophical Approach* (Oxford: Clarendon Press, 1967); McFarland, *Coleridge and the Pantheist Tradition* (1969); Sheats, *The Making of Wordsworth's Poetry* (1973); Alan Grob, *The Philosophic Mind: A Study of Wordsworth's Poetry and Thought 1797-1805* (Columbus: Ohio State University Press, 1973).

[41] STC to John Thelwall, 14 October 1797, in *CL*, I, p. 349.

[42] *CN*, II, 2546, *f* 69.

[43] Chapter Five explores this idea in Coleridge's religion and metaphysics.

of the finest astronomers of the age who circumnavigated the globe with James Cook, 1772-1775. Wales was appointed Master of Navigation Mathematics at the school in 1775 and Charles Lamb recalled that his only aim was to give pupils 'early sailor habits'.[44] In a letter to Sara Hutchinson of 1802, in which Coleridge copied out his poem 'A Letter to –' for her, he recorded 'sky-gazing in "ecstatic fit"' at his 'city School', doubtless remembering classes with Wales and early attempts to triangulate his position using the stars.[45] Building up a triangular picture of the world encouraged Coleridge to fashion natural geometries from a young age, and he hoped the same would hold true for his son, Hartley, for whom he wished to 'see and hear | The lovely shapes and sounds intelligible | Of that eternal language, which thy God | Utters'.[46]

Coleridge's poetic conviction that 'properties are God' was based on his belief that 'all that meets the bodily sense I deem | Symbolical, one mighty alphabet | For infant minds'.[47] It was first formulated in his own infancy, much as it was for the Pedlar, whose intellect 'Could find no surface where its power might sleep' (B, 100). The idea that this 'mighty alphabet' constituted God's 'eternal language' found fullest expression in the *Lectures on Revealed Religion* delivered in 1795. Coleridge persistently affirmed that 'to the pious man all Nature is thus beautiful because its every Feature is the Symbol and all its Parts the written Language of infinite Goodness and all powerful Intelligence'; indeed, Christians saw 'God everywhere – the Universe in the most literal Sense is his written Language'.[48] Coleridge knew that Plato 'asserted that

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[44] R. Brimley Johnson, *Christ's Hospital: Recollections of Lamb, Coleridge, and Leigh Hunt* (London, 1896), p. 29. Cf. Ian Wylie, *Young Coleridge and the Philosophers of Nature* (Oxford: Clarendon Press, 1989), p. 32; Rita Griffin-Short, 'The Ancient Mariner and the transit of Venus', *Endeavour*, 27: 4 (2003), 174.
[45] STC to Sara Hutchinson, 4 April 1802, in *CL*, II, p. 791.
[46] 'Frost at Midnight' (1798), in *PW*, I:1, p. 456, ll. 58-61.
[47] Ibid., 'The Destiny of Nations: A Vision' (1794), p. 282, ll. 36, 18-20. Cf. 'Religious Musings', ll. 9-10: 'For the GREAT | INVISIBLE (by symbols only seen)…'; ll. 130-31: 'But 'tis God | Diffus'd thro' all, that doth make all one whole', pp. 174, 180.
[48] 'Lecture Three', c. 26-29 May 1795, in *Lects 1795*, p. 158; Appendix A1, p. 339.

whatever exists in the visible World, must be in God in an infinite degree',[49] and there are also clear parallels with the divine visual language of Berkeley's *Alciphron* (1732).[50] However, this 'written Language' had experiential underpinnings in natural mathematical structures discovered in childhood.

There are important differences between the idealism of Plato and Berkeley and the 'inarticulate language' seeded in Wordsworth and Coleridge as children. Plato disparaged visible reality as 'ephemeral and illusory', but the Galilean model of mathematical shapes was an interpretive metaphor for understanding the *sensible* world with which the poets minutely interacted.[51] Berkeley, too, was severely limiting in that he took the Lockean theory rejecting Descartes' innate ideas to an extreme position. Locke had no conception that physical reality conformed to mathematical principles, whilst Berkeley further suggested that everything which does exist *will* be perceptible.

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[49] Ibid., 'Lecture Five', c. 5 June 1795, p. 208.

[50] This thesis does not document Wordsworth's and Coleridge's complete reading in Plato, Cudworth and Berkeley because that is tangential to the primary, mathematical focus of the chapter, and because substantial work in this area has already been done. Suffice it to say here that Coleridge borrowed Cudworth's *True Intellectual System of the Universe*, ed. Thomas Birch (2 vols. 1743; 1st ed. 1678) from the Bristol Library on 15 May 1795 and 9 Nov 1796 and transmitted the ideas to Wordsworth according to Rader, *A Philosophical Approach*, p. 75. Coleridge borrowed vol. 2 of Berkeley's *Works* (1784) from the Bristol Library 10-28 March 1796 and was already familiar with vol. 1. Wordsworth may have read the *Works* in 1797-98; Coleridge certainly told him about them, for which see Wu, *1770-1799*, p. 14. Wordsworth's library contained a copy of Berkeley's *Alciphron* (Shaver, *Catalogue*, p. 24). Coleridge was reading Plato in the mid-1790s and may have owned Thomas Taylor's translation of *The Cratylus, Phædo, Parmenides and Timæus of Plato* (1793) as early as 1797-98. This book ended up in Wordsworth's library at Allan Bank. Coleridge certainly read the *Parmenides* and *Timæus* in the winter of 1801 from this edition, for which see James Vigus, *Platonic Coleridge* (London: Legenda, 2009), p. 26. Plato's ideas were also mediated to the poets in the 1790s through their reading of Cudworth and Priestley, for which see Wu, *1800-1815*, p. 167. Wordsworth may have been in touch with Taylor's network of dissenting Platonism in London in 1795, for which see Leslie F. Chard, *Dissenting Republican: Wordsworth's Early Life and Thought in their Political Context* (The Hague: Mouton, 1972), pp. 151-53. For further reading see: Lane Cooper, 'Wordsworth's Knowledge of Plato', *Modern Language Notes*, 33: 8 (1918), 497-99; J.A. Appleyard, *Coleridge's Philosophy of Literature: The Development of a Concept of Poetry, 1791-1819* (Cambridge, Mass.: Harvard University Press, 1965), pp. 46-51; Rader, *A Philosophical Approach*, pp. 72-75; Robert Langbaum, 'The Evolution of Soul in Wordsworth's Poetry', *Publications of the Modern Language Association*, 82: 2 (1967), 265-72; Robert Schofield, 'Joseph Priestley, eighteenth-century British Neoplatonism, and S. T. Coleridge', in Everett Mendelssohn (ed.), *Transformation and Tradition in the Sciences: Essays in Honor of I. Bernard Cohen* (Cambridge: Cambridge University Press, 1984), pp. 237-54; Jonathan Wordsworth, 'The Infinite I AM: Coleridge and the Ascent of Being', in Richard Gravil, Lucy Newlyn, Nicholas Roe (eds.), *Coleridge's Imagination: Essays in Memory of Pete Laver* (Cambridge: Cambridge University Press, 1985), pp. 22-52; Ronald C. Wendling, 'Coleridge's Critical Sympathy with Plato', *The Coleridge Bulletin*, N.S. 16 (2000), 115-22; Douglas Hedley, *Coleridge, Philosophy and Religion* (Cambridge: Cambridge University Press, 2000).

[51] Drake, 'Galileo's Language', in *Essays on Galileo*, pp. 53-54.

In effect, he banished the existence of atoms, stars and planets which lay beyond the telescope.[52]

This was problematic for Coleridge, who called on astronomical metaphors – upon the 'not yet seen' – to enunciate the fundamental tenets of religion, and in particular to conceptualise his conversion to Trinitarian Christianity. In the allegory with which he began his inaugural *Lecture* (1795), Coleridge related how Religion led 'our Company':

> to an Eminence in the midst of the Valley [of Life], on the Top of which we could command the whole Plain, and observe the Relation of its different Parts, each one to the other. She then gave us an optic Glass which assisted without contradicting our natural vision and enabled us to see far beyond the Valley…[53]

The 'optic Glass' of Religion provided the revelation of faith – a concept absent from Berkeley's perception-based philosophy– which 'assisted' rather than hindered 'natural vision' or reason. As early as 1795, Coleridge invoked astronomy as the 'precious visitant' that Wordsworth hoped science would become in *The Ruined Cottage* manuscript fragment (1798) published in *The Excursion* (IV, 1202-71). In the lecture, Religion's telescope acted in contradistinction to the 'old dim eyed Man' who 'was continually applying his microscope, and seemed greatly delighted in counting the Irregularities' in nature. [54] Coleridge set up the old man as a myopic materialist who did not regulate his creeds by his conceptions, thus trapping himself in the atomistic, corpuscular web that Coleridge boasted he had avoided from the age of eight with his father.

The invocation to Coleridge in Book II of *The Prelude* as someone who was 'no slave | Of that false secondary power, by which, | In weakness, we create distinctions'

[52] Gerd Buchdahl, *Metaphysics and the Philosophy of Science: Descartes to Kant* (Oxford: Basil Blackwell, 1969), pp. 159, 184, 253-78, 291. I am not, of course, claiming that Berkeley was an atheist. Indeed, he thought that his idealism gave him ontological proof for the existence of the divine, since, in Berkeley's scheme, only God could cause our sensory ideas. Cf. James McKusick, *Coleridge's Philosophy of Language* (New Haven: Yale University Press, 1986), pp. 21, 32.
[53] 'Lecture One', in *Lects 1795*, p. 91 and n. 1.
[54] Ibid., p. 92.

(II, 220-22), separated him from the 'Araneosis' of the 'dim eyed Man' of his lecture. Rather, instances of positive congruity, such as those between religion and astronomy, assured Wordsworth that to Coleridge:

> Science appears but, what in truth she is,
> Not as our glory and our absolute boast,
> But as a succedaneum, and a prop
> To our infirmity. (II, 217-20)

The 'absolute boast' was God; the 'optic Glass' or 'optic tube of thoght' was the 'prop' which helped to visualise the Godhead, both in Himself and in His capacity to resolve all things into one.

In November 1799, Coleridge recast the divine principle of resolution as an imaginative quest. He divulged in a notebook that he would 'make a pilgrimage to the burning sands of Arabia…to find the Man who could explain to me there can be *oneness*, there being infinite Perceptions'.[55] This idea held unrelenting power for him; it was one with which he implicated Wordsworth. Having read the poem 'There was a Boy' in December 1798, which was published in *Lyrical Ballads* (1800), Coleridge wrote to Wordsworth telling him that 'had I met these lines running wild in the deserts of Arabia, I should have instantly screamed out "Wordsworth!"'[56] Coleridge believed a 'great Poet' also had to be 'a profound Metaphysician', as he told William Sotheby in July 1802. Given his response to 'There was a Boy', Coleridge almost certainly associated the qualities required with features of Wordsworth's incorporative mind: 'for all sounds, & forms of human nature he must have the *ear* of a wild Arab listening in the silent Desart, the eye of a North American Indian tracing the footsteps of an Enemy

[55] *CN*, I, 556. The same idea is recast four years later in note 1561: 'I would make a pilgrimage to the Deserts of Arabia to find the man who could make understand [sic] how the *one can be many!* Eternal universal mystery!'
[56] STC to WW, 10 December 1798, in *CL*, I, p. 453.

upon the Leaves that strew the Forest–; the *Touch* of a Blind Man feeling the face of a darling Child – /'.[57]

For Coleridge, the Arabian sands and the touch of a blind man were provisional sources of clarity for the ancient philosophical dispute between the 'one' and the 'many'. The topology of sand is uniquely capable of rendering and dissolving an infinite variety of shapes within one fundamental form; dissonance is nowhere 'in the silent Desart'. This is not so dissimilar from the way in which a blind man engages with the world about him: incongruous things are felt out and brought into an inner harmony that stokes a complete and powerful mental vision akin to the Pedlar's. Astronomy and mathematics helped to choreograph the kind of '*oneness*' that Coleridge searched for by providing a physical language which was flexible enough to integrate plural forms without creating 'distinctions' and 'puny boundaries' (II, 222-23). 'Puny' was especially apposite since it conveyed the distaste for the '*little things*' which Wordsworth and Coleridge saw as inimical to real science and yoked that 'smallness' to the Anglo-Norman form of the word 'pusné' and Middle French 'puisné', meaning 'born after' or 'younger'. 'Puny' was thus indicative of an atomising and manmade 'false secondary power' that countered a natural language learnt by star-gazing.

Coleridge later noted in the *Biographia Literaria* (1817) that 'geometric discipline' fitted the description of an ancient language which liberated its students from precisely this 'despotism of the eye'.[58] Although its roots were Platonic, Coleridge announced that his dynamic philosophy was 'no other than the system of Pythagoras and of Plato revived and purified from impure mixtures'.[59] The language was Plato's but its application was Coleridge's. It could not have been otherwise. Coleridge deemed that 'An IDEA, in the *highest* sense of that word, cannot be conveyed but by a *symbol*;

[57] STC to William Sotheby, 13 July 1802, in *CL*, II, p. 810.
[58] *BL*, I, p. 107.
[59] Ibid., p. 263.

and, except in geometry, all symbols of necessity involve an apparent contradiction'. An 'IDEA', for Coleridge, had a constitutive reality of its own – a premise Locke and Berkeley never acceded to in their rejection of Adamitic language and their shared belief that all reality was conferred on external objects by the mind.

Moreover, in its '*highest* sense', an 'IDEA' emanated from the Christian God, who embodied 'the Universal in the Individual'. [60] The imagination, for Coleridge, was the faculty responsible for performing the Pedlar's union of 'form' and 'mind'. Most significantly, he specifically singled out geometry as mediating this reconciliation without 'contradiction'. This was because geometry exhibited the 'Difference of Form as proceeding and Shape as super-induced – the latter either the Death or the imprisonment of the Thing; the former, its self-witnessing, and self-effected sphere of agency'.[61] An imaginative investment in the mathematical 'forms of things' made fully visible the structural connections between the way a space presented itself and the distinctive consciousness of God.

Not long after Coleridge first began to teach that 'the Universe in the most literal Sense is [God's] written Language', he built up 'a world about him' with William and Dorothy which was just like the Pedlar's: 'He made it – for it only lived to him | And to the God who looked into his mind' (B, 87-89). Coleridge instilled nature's rhythms deep within himself. The pink stone of the Quantocks was a mass of 'jagged circles & strange parallelograms',[62] whilst on the German tour of 1799, he noticed how the woods at Ratzeburg 'run up into semicircles & Triangles'; a valley was positioned 'on the right semicircle stretching to an immense length – to the side of the Left Semicircle the arc, woody Hills'. Behind the Harz mountains were 'woods on hillocks of an hundred shapes, which to describe were a Chaos, but ~~to~~ in nature all in

[60] Ibid., p. 156 and n. 1.; *CN*, III, 4397, *f*53.
[61] *CN*, III, 4397, *f*53^{v}.
[62] *CN*, I, 227. Dorothy's *Journals* are the subject of the following chapter.

harmony'.[63] The Galilean language of mathematics held the composition together inimitably in the mind; the forms were both discrete and yet part of a collective which was more than the sum of its parts, whose harmony was godlike.

Writing to Coleridge in Göttingen from Nordhausen in Goslar, Dorothy Wordsworth participated in this shared language by putting Euclid into the pine trees:

> We observed that when they seemed to be past maturity, and perhaps sooner in a close situation their boughs which had before ascended, making an acute angle with the trunk, descend till they shoot out horizontally or make an obtuse angle with the upper part of the tree. This is effected by the twigs, which from the weight of their foliage drag down the boughs, and hang like long threads of ivy in festoons of different lengths, the upper part of the branch being always bare.[64]

In her insistence on the visual, Dorothy activated most effectively the shapes of her descriptions, important both to her memory of the scene and to her transmission of it to Coleridge. What she in fact communicated was both unutterable and invisible: each bough was one side of a triangle; the spaces in between the adjoining boughs of the trees were silent triangles of different shapes and sizes, summoned into being by Dorothy's reference to acute and obtuse angles. These triangles do not hold still; they are worked by the twigs that 'hang like long threads of ivy', covering up nature's secret ministry, and which made maths move. Acute angles became obtuse over time as the tree aged and the branches sagged. Each year, this process happens in miniature: when leaves and ripe fruit grip the tree its angles expand; when it is bare they close up. The twigs or fingers of the tree prize it apart, irrevocably (forever and in silence), at the end. The impulses or breathings of each year – little movements this way or that – govern the tree's life cycle and prepare it for death.

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[63] Ibid., 360, *f*44^{v}; 417; 418, *f*29^{v}.

[64] DW and WW to STC, 27 February 1799, in *WL*, I, pp. 250-51. By way of comparison see Hopkins, *Journals and Papers* (1959), pp. 138 (3 June 1866), 144 (11 July 1866): 'The map of the sky was a rhomboid of grey round-moulded cloud in one great cloth…Oaks: the organisation of this tree is difficult. Speaking generally no doubt the determining planes are concentric, a system of brief contiguous and continuous tangents, whereas those of the cedar would roughly be called horizontals and those of the beech radiating but modified by droop and by a screw-set towards jutting points.'

Plato envisaged something similar in the *Timæus* when he determined that the structure of every living creature 'relaxes the root of its triangles, in consequence of becoming wearied and tamed, through many contests with many particulars in a long course of time'. According to Plato, each individual had a fixed span, and 'the triangles, which from the very beginning possessed the power of each animal, are sufficiently able to cohere together for a certain time: but life beyond this period cannot be extended to any one'. Time coheres mathematically and is purposefully, minutely angled to give life; as the frame changes and the angles widen, we mature and die, much like Dorothy's pine trees, which stored their secrets in their triangles. Plato worked out a geometrical consolation in accord with the natural world which was part of the Pedlar's sympathetic inheritance: when 'the jointly harmonized bonds of the triangles about the marrow no longer possess a detaining power, but becom[e] separated through the weariness of labour…the soul, however, in this case being concealed in a state according to nature, flies away with pleasure and delight'.[65]

Nature's processes reconfigured mathematical shapes; the tree's geometries were active and alive. In October 1810, Coleridge avowed that 'Our own Self is but the Diagram, *the* triangle which represents all triangles'.[66] This Platonic declaration was the culmination of more than a decade of recorded appreciation for enlivened forms. Returning to the Lakes at the end of 1799, Coleridge packed his notebooks full with inhabited geometries gleaned from daily walks with Wordsworth. Together they roamed almost all the countryside. Crags reflected in Derwentwater showed 'a circle of melted Silver & a path of silver running from it like a flat Cape in the Lake'; the view over to Buttermere from Crummock was 'enclosed by a huge Concave Semicircle'; at Scale Force, Coleridge 'never saw Trees on rock Zigzag in their Lines more

[65] Plato, *Timæus* (c. 360 B.C.), in *The Cratylus, Phædo, Parmenides and Timæus of Plato*, trans. Thomas Taylor (London, 1793), pp. 537, 549.
[66] *CN*, III, 3994.

beautifully'; from one spot, looking on Ullswater was like 'comprehending a long majestic Parallelogram', but from another 'the whole appears a semicircle enfolding in its two arms the convex semicircle of the bare knobby crag'; there, too, the waterfall was a broken 'Wheel-part' which 'spreads into a muslin apron, & the whole water fall looks like a long-waisted Lady-Giantess slipping down on her Back'.[67]

Coleridge never relinquished this habit. In June 1800, the rocks at Dungeon Gill Force were 'bellying' by the sheepfold 'whose parall[el]ogram is faced with fern…& the fold inclosed a curve of the path of a mountain [beck]'; in August, Saddleback Tarn was 'a round bason of vast depth, the west arc an almost perpendic precipice of naked shelving crags…in one place a semiround stone, with 16 of these Moss Jelly-Bag-shaped'; in October, White Water Dash seemed a 'semicircular Bason of craggy rocks…vast ruggedness & angular points & upright Cones of the black rock'; later still, in the summer of 1802, Bowness formed 'a delightful ↄ angle of sheltered Land', whilst a vale near Donnerdale Fell was 'completely land-locked by segments of circles folding in behind each other' where a hill made 'an elliptical line to my back'.[68]

In the words of Gerard Manley Hopkins, this was 'Lándscape plotted and pieced'.[69] Coleridge arrived keenly at the Pedlar's apprehension of reality by recognising that vales were mathematically 'land-locked'. His geometries were responsive to individual places as they changed over time: conic sections and angular points mapped slippery plateaus and perpendicular, fast, free-flowing waters; sheepfolds and tarns opened out generously with concave curves and encompassing 'armed' semicircles. Spheres and circles indicated warmth and safety; bows were hallmarks of sheltered land. Schleiermacher went even further; for him, ellipses, the

[67] *CN*, I, 536; 537, *f*39; 540, *f*37; 549, *f*24^{v}, *f*24, *f*25.
[68] Ibid., 753, *f*3, *f*4^{v}; 784, *f*12^{v}, *f*13; 825, *f*59v, *f*61, *f*61^{v}; 1209; 1225, *f*28^{v}.
[69] Hopkins, 'Pied Beauty' (1877), in *The Poetical Works of Gerard Manley Hopkins*, ed. Norman H. Mackenzie (Oxford: Clarendon Press, 1990), p. 144, l. 5.

fundamental shapes of astronomy, 'are symbols of increasing life'.[70] Coleridge's jottings teem with natural ellipses – some full, others broken – which coincide with his return from Germany. Many of his notebook entries are accompanied by a small host of sharp and soft lines, or asterisks, little commemorative topographies that helped turn neutral space into memorable place. Coleridge brought these areas to life through his repeated graftings. The places were peopled with communities of shapes: with the 'long-waisted Lady-Giantess' and the welcoming 'arms' of Ullswater; with the parturient Moon that on one occasion thrust through 'a thin slip of white Cloud…like the narrow part of the Egg', and, on another evening, 'sent up a *throb* of Light…& so for several Seconds it throbbed & heaved, a soft Boiling up or restlessness of a Fluid in carrying'.[71]

Coleridge worked feverishly in his notebooks to capture the indescribable, and he was committed to the particular. He wanted the '*throb*' of light, the waist of the 'Lady-Giantess', and that part of the Moon which was 'a Fluid in carrying'. In October 1803, he admitted that 'Without Drawing I feel myself but half invested with Language'.[72] He felt duty-bound to render figures in the landscapes – to bring the shapes to life. He wanted to repay the natural world for its limitless capacity to surprise him: '& now suddenly burst upon me a blunt-angled triangle Hill'. Coleridge's sense of accomplishment was never complete. In another notebook entry, he remarked 'Sadly' that he needed his imagination 'enriched with appropriate Images for Shapes - / Read Architecture, & Icthyology'.[73] He actively searched for a language of carefully crafted shapes and bones to do justice to the living world about him. He believed there was

[70] Schleiermacher is quoted in Marshall Brown, *The Shape of German Romanticism* (Ithaca: Cornell University Press, 1979), p. 173.
[71] *CN*, I, 455, 1614.
[72] Ibid., 1554.
[73] Ibid., 1225, *f*27; 1616, *f*73.

inspiration in the fabric of buildings and the structure of fish skeletons that would enable him to serve nature's urgent commission more fully.

One way to make sense of Coleridge's pressing desire to repay nature's commission at the end of 1799 is to borrow Gaston Bachelard's notion that 'the beloved curve has nest-like powers; it incites us to possession, it is a "curved corner"'.[74] Coleridge felt that bringing the Lake District intensely, geometrically alive by rushing off around the fells and valleys to make frenzied mathematical drawings and scattered elliptical shape systems was what nature demanded of him, but it was equally an incredibly poignant yet precise measure of how joyful he was at that very moment to be home. Following the death of his son, Berkeley, whilst he was abroad on a far from comprehensively successful trip, the prospect of recreating the *annus mirabilis* of 1797-98 with his best friend must have seemed heavenly. Coleridge was nest-building. The curves bear witness to his visible delight in return.

Ellipses that yielded new life and testified to the happiness of homecoming were not the only geometries that Coleridge used to energise the Lakes, or which manifested 'the co presence of Feeling & Life…with Form' in order to show 'how the *one can be many!*' [75] Coleridge wanted to figure, mathematically, 'the whole Anatomy of the Place', and sometimes the expansive anatomical form he chose was human. This was graphic and even obscene: the water at Saddleback Tarn ran 'gushing out from under, like a furious Gush of blood from a plethoric Artery fighting with the mossy *middle* buttress of this Sub-bridge'; a road by Mr Clarkson's 'appeared a sort of ~~opening~~ suture, in many places exactly as the weiblich τετραγραμματον is paintd in anatomical Books!'[76]

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[74] Gaston Bachelard, *The Poetics of Space*, trans. Maria Jolas (1957; Boston: Beacon Press, 1994), p. 146.
[75] *CN*, I, 1561.
[76] Ibid., 1520, *f*13^{v}, *f*13; 555, *f*20, *f*19v and n. The 'weiblich tetragrammaton' literally means 'feminine four-letter word', barely concealing the pun.

Over time, scenes depicting death were balanced by others of strong fecundity. In the sutures and split arteries of the land, nature threshed out a working equilibrium. Coleridge knew that this had to be. In April 1801, he quoted a Latin passage in his notebooks from Giordano Bruno that Coburn has translated thus: 'What would happen if everything in nature did not return by a sort of circuit to its own source again…It would be as though all the blood were to run to one place and stay there'.[77] More often than strictly cooperative and neat circularity, though, what Coleridge captured was nature and maths in motion; or, in the language of Dorothy, *the natural mathematics of motion*.

At Ullswater, Coleridge saw 'Vortices of flies' and 'tongues of Light'. In groups of just three words he had insects gyrating on cosmic axes like spinning particles of matter and light slithering into life. This sort of 'atomic sportiveness' had startling, punctual immediacy and needed no verbs; the nouns were all action. Starlings on 27 November, 1799, 'drove along like smoke, mist, or any thing misty', but the vagueness of this initial list did not satisfy him and so he honed the birds' motion:

> now a circular area inclined [in an] arc - now a globe - [now from a complete orb into an] elipse & oblong - [now] a balloon with the [car suspend]ed, now a concaved [sem]icircle & [still] it expands & condenses, some [moments] glimmering & shivering, dim & shadowy, now thickening, deepening, blackening![78]

The starlings refused to be written; not even present participles or the language of chemical reactions – of expansion, condensation, and thickening – or the giddy flights of the French balloonists, could do justice to the tiny shape-shifters. Only the living, planetary geometries of arcs, globes, orbs, ellipses and oblongs could plot this hurried motion.

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[77] Ibid., 927, *f*26 and n.
[78] Ibid., 549, *f*27, *f*25v; 582.

Coleridge experienced the same difficulty with brown linnets in 1804. Their 'easy natural Swiftness' and ability to move in all four directions 'at once in one beautiful Whole' was quite impossible to recreate.[79] He once described looking at a candle in similar fashion: 'the eye refuses to decide whether it be surface or convexity – for the exquisite oneness of the flame makes even its angles so different from the angles of tangible substances'.[80] The birds seem most like a giant fire ball; they fit best the unique patterning of flame. Bird flight is infinitely, interchangeably mathematical; all 'Motion and Wrinkle and Light' like 'the murmur of the moonlight Greta' when the Moon 'hangs midway over Cowdale Halse – in a line, ~~on~~ & resting on each of the diverg~~ing~~ent Legs of its Triangle'.[81]

If Coleridge ever felt that his geometrical portraits of earth and sky were not calibrated with the exact motions he wished for, that there lacked a certain confluence between feeling and form, shape and place, what he *had* achieved was a sustained mathematical expression of unity in multeity. This was exactly the kind of complex 'Oneness' that he sought in his metaphysics and which he trusted to emanate from God. He did not need to go as far as the deserts of Arabia to weave this narrative; a pilgrimage to the Lake District was quite sufficient. It was originally the mazy meanderings of Saddleback Tarn, and not the figures in the works of the German *Naturphilosophen*, which stimulated Coleridge, in August 1800, to recognise what would become a linchpin of his mature ideology: that 'multiplicity by multitude acquires unity'. His early confidence that 'Language & all *symbols* give *outness* to Thoughts', promoted '*outness*' as shape instinct with geometrical life.[82] The forms of his dialectical devices, the Pythagorean Tetractys and Noetic Pentad, were cognisant

[79] *CN*, II, 1851.
[80] Ibid., 2348.
[81] *CN*, I, 1616, *f*73.
[82] Ibid., 784, *f*12; 1387.

with the landscapes and intimate hydraulics of the Lake District. For the laws of nature to become the laws of the mind, Coleridge drew philosophical inspiration from spiralling birds, legs of moonshine, and the flashing ellipses of valleys in and around Grasmere.[83]

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Coleridge first heard *The Ruined Cottage* (MS. B) at Racedown when it was fresh on the page in June 1797. Nearly seven years later, in March 1804, Dorothy copied out the latest version, now titled *The Pedlar* (MS. M), for him to take on his imminent travels to the Mediterranean. In between, the poem was revised considerably and Coleridge kept abreast of the changes. Indeed, his loyalty to the Pedlar was unswerving. Writing to William Godwin in March 1801, Coleridge reported that he had arrived 'at the Root of Pure Mathematics' in lines which form the ultimate prose analogue to the new shape of Wordsworth's poem:

> You would not know me –! all sounds of similitude keep at such a distance from each other in my mind, that I have *forgotten* how to make a rhyme – I look at the Mountains (that visible God Almighty that looks in at all my windows) I look at the Mountains only for the Curves of their outlines; the Stars, as I behold them, form themselves into Triangles…[84]

Geometrical rhythms superseded rhyme. Audible sound patterns have been replaced by an 'inarticulate language' which twisted mountain ranges – 'that visible God' – into a series of curves constituting the Logos. The stars bore the Pedlar's insignia; they were silent, Herschelian triangles. In September 1801, Coleridge described the Northern Lights as 'remarkably fine – chiefly a purple blue / in shooting pyramids'.[85] Coleridge's 'shooting pyramids' made the Pedlar's world explosively three-dimensional. Indeed, for Hartley, the stars seemed close enough to touch.

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[83] The natural and terrestrial shapes of Coleridge's organic metaphysics are the subject of Chapter Four. The celestial forms of his dialectical devices and the importance of astronomical shapes for his Trinitarianism are the subject of Chapter Five.
[84] STC to William Godwin, 25 March 1801, in *CL*, II, p. 714.
[85] *CN*, I, 982.

Coleridge chronicled the brave pronouncement of his son one Christmas: 'When I'm a man, I'll get a Ladder, & get up to the Sky, & pick out the Stars, & give them to Anny Sealy – I'll pick 'em out with a knife'.[86] Coleridge's wishes in 'Frost at Midnight' were coming true; Hartley quickly learnt 'The lovely shapes and sounds intelligible | Of that eternal language, which thy God | Utters' (59-60). He had all 'The advantages of one who has been from Childhood accustomed to make *Images* the symbol of Things, instead of resting on mere Words'.[87] What the young boy would not have known was that his haptic vision of shapes was mediated through Wordsworth's growing conception of the Pedlar.

At Malta, Coleridge kept the 'optic tube of thoght' to his mind's eye at all times. The letters he sent home were sealed shut with wax triangles. In December 1804, he was mystified that anyone could fail to see triangular shapes in the heavens: 'Does not every one do this in looking at any three conspicuous stars together; does not every one *see*, by the inner vision & <by> its action upon our bodily eyes, a triangle'? At the end of 1799, the Lakes were geometries of endless movement; now, the whole world was an expression of 'the soul of curves': 'here *is* motion, motion in its most significant form…which has been chosen to express motion in general, hieroglyphical from preeminence'. [88] In the same month, Coleridge noted that 'One travels along with the Lines of a mountain –/ I wanted, years ago, to make Wordsworth sensible of this'. [89] He need not have worried.

Two years previously, in August 1802, Coleridge began a letter to Sara Hutchinson characterising the physical demands of such mathematical mountain climbing:

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[86] Ibid., 617.
[87] *CN*, III, 4181, *f*24^{v}.
[88] *CN*, II, 2343.
[89] Ibid., 2347.

> There is one sort of Gambling, to which I am much addicted; and that not of the least criminal kind for a man who has children & a Concern. – It is this. When I find it convenient to descend from a mountain, I am too confident & too indolent to look round about & wind about 'till I find a track or other symptom of safety; but I wander on, & where it is first *possible* to descend, there I go – relying upon fortune for how far down this possibility will continue.[90]

Walking proudly down the 'fix'd lineaments' (E, 154) of the mountains rather than looking for paths, Coleridge had forgotten it was the Pedlar who first taught him how to gamble. There was no need to tell Wordsworth after all. What is most striking here is that the Pedlar's way of life had become the subject of daily discussion; his vision had been subconsciously adopted by the whole group. Its origins were blurred and reformulated amongst them, but they 'read | The forms of things' with remarkable fluency.

For Joseph Wilkinson's *Select Views in Cumberland, Westmorland, and Lancashire* (1810), Wordsworth anonymously contributed the 'Introduction' to accompany the portfolio of drawings, which he first published as a revised, separate work in 1820, under his own name, and with the new title: *Topographical Description of the Country of the Lakes in the North of England*. Wordsworth's *Guide*, as it became known, went through five editions by 1835 and became increasingly popular, with 1,500 copies printed for the fifth edition. Nevertheless, textually 'the *Guide* remains essentially a work of 1810'.[91] What a generation of nineteenth-century tourists could not have realised, however, was that much of the *Guide* had its origins in a poem Wordsworth first began writing in 1797, and which did not appear in print until four years *after* the publication of Wilkinson's *Select Views*, in *The Excursion* (1814). The clue to this is contained in a letter that Dorothy wrote to Catherine Clarkson in November 1809, where she told her great friend that Sara Coleridge:

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[90] STC to Sara Hutchinson, 6 August 1802, in *CL*, II, p. 841.
[91] Editorial comment in *Prose*, II, p. 134.

> has been transcribing the introduction to a collection of prints to be published by Mr. Wilkinson of Thetford…I hope you will be interested with William's part of the work...It is the only regular and I may say *scientific* account of the present and past state and appearance of the country that has yet appeared.[92]

Wordsworth gave the public the Pedlar's '*scientific* account' of the Lake District, which of course was his own too, and in so doing greatly increased the imaginative valency of these ideas. He made sensitive geometrical and astronomical readers of them all.

Upon opening a bound folio copy of Wilkinson's *Select Views* (1810), the reader was immediately presented with a difficult task. Anyone lacking the prior training to see 'What Galileo saw' without his telescope, or without the 'optic Glass' which Coleridge used allegorically to look on the Valley of Life, would struggle. Wordsworth asked the tourist 'to place himself in imagination' on 'the top of either of the mountains of Great Gavel or Scawfell':

> he will then see stretched at his feet a number of Vallies, not fewer than nine, diverging from the point, on which he is supposed to stand, like spokes from the nave of a wheel…almost due west look down upon and into the deep Valley of Wastdale with its little chapel and half a dozen neat scattered dwellings, a plain of meadow and corn ground intersected with stone walls apparently innumerable, like a large piece of lawless patchwork, or an array of mathematical figures, such as in the ancient schools of geometry might have been sportively and fantastically traced out upon sand.[93]

The whole landscape was 'an array of mathematical figures' divided by stone walls and seen through the lens of the Pedlar, or, perhaps, John Newton, who was depicted in Book VI of *The Prelude* 'draw[ing] his diagrams | With a long stick upon the sand' to 'beguile his sorrow' (VI, 171-3). The valleys which diverged 'like spokes from the nave of a wheel' formed the same invisible triangles that Dorothy spotted in the German pine trees; indeed, valleys are upside down triangles. The 'neat scattered dwellings' were not oxymoronic; Coleridge understood that 'Perfect Symmetry, diminishes the sense of

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[92] DW to Catherine Clarkson, 18 November 1809, in *WL*, II, p. 372.
[93] Wordsworth's 'Introduction' to Joseph Wilkinson, *Select Views in Cumberland, Westmorland, and Lancashire* (London, 1810), pp. i-ii. All quotation from Wordsworth's 'Introduction' is from this edition unless otherwise stated.

magnitude'. [94] A 'lawless patchwork' of interlocking mathematical shapes was much more impressive for imitating nature's subtle arrangement of forms.

This 'patchwork' was designed 'to give the strongest sense of number with unity'. The hills, woods, and colours of Easedale combined 'intricacy' with 'the complacency and repose of perfect unity'; the tarns formed 'a spot or conspicuous point to which objects, otherwise disconnected or subordinated, may be referred'; the hills of Dunmallet, at the foot of Ullswater, exhibited an 'endless melting and playing into each other of forms and colours'; and the houses were the same shade as the soil in order to 'harmonize with the surrounding landscape'. For this reason, white houses were to be avoided because they 'dot the surface and divide it into triangles or other mathematical figures which haunt the eye and disturb that repose which might otherwise be perfect'. It was not that triangles were bad in themselves; they were essential to the fundamental shape of the area when incorporated properly into the whole. However, white houses made the wrong sort of triangles; they were a bad fit, syncopating the natural rhythms of the valleys and drawing the eye to one particular feature rather than letting it move mellifluously and mathematically over the surface. Similarly, larch trees were not to be planted in the Lake District because 'its green is so peculiar and vivid, that, finding nothing to harmonize with it, it makes a speck and deformity in the landscape'. In short, 'sublimity will never be wanting, where the sense of innumerable multitude is lost in, and alternates with, that of intense unity'.[95]

Coleridge would have been pleased, having recommended Wordsworth to Wilkinson in the first place, to find his own search for mathematical unity in the Lakes so thoroughly mapped out and vindicated a decade later.[96] Moreover, Wordsworth

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[94] *CN*, I, 1350.
[95] Wordsworth's 'Introduction' to Wilkinson, *Select Views*, pp. vi, x, xxiii, xxv, xxvii, xxxi.
[96] Cf. *Prose*, II, p. 124. Wilkinson had apparently approached Coleridge to write the 'Introduction' first, but being pressed with work for *The Friend*, he suggested Wordsworth.

likewise thought it important to figure the motion and capture 'the whole Anatomy of the Place', perhaps remembering those walks and discussion with Coleridge in November 1799. The mountains were to be seen 'lifting themselves in ridges like the waves of a tumultuous sea…their outlines are endlessly diversified, sweeping easily or boldly in simple majesty, abrupt and precipitous, soft and elegant…their perpendicular sides are seamed by ravines'; the soil met 'in angular points…and scar[s] over the surface with numerous figures like the letters W and Y'; and the brooks and torrents 'circulate through [the tarns] like veins, they are truly living lakes'.[97]

Wordsworth's seams, scars and veins denoted the same suffused fertility as Coleridge's arteries and sutures. The language was born from the conviction that the landscape was actively alive. The wounds were sites of injury, healing and reparation that made visible what happened subcutaneously. Adam Sedgwick, the Cambridge geologist whom Wordsworth requested to write short essays for the expanded *Guide* in 1842, responded by furnishing what he called 'the muscular integuments, ribs and bones of your mountains'.[98] The tourists, though, must have found some of this embodied geometrical landscape mystifying. This passionate account could only have been written by someone who had lived amidst these changing scenes their whole life and cultivated this immanent way of seeing as a child, when 'Nature by extrinsic passion first | Peopled my mind' (I, 573-74). Wordsworth transmitted his unique vision which had its roots in feeling for the consciousness of landscape. It was straight from *The Pedlar*, then unpublished, and inflected by the walks documented in Coleridge's notebooks: 'But in the mountains did he *feel* his faith: | There did he see the writing' (E, 216-17).

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[97] Wordsworth's 'Introduction' to Wilkinson, *Select Views*, pp. iv-v, ix.
[98] Adam Sedgwick to WW, late March 1842, in *WL*, VII, p. 309, n. 2.

In Wordsworth's account, all things revolved around some point or centre which could be established geometrically. His Lakeland cottages, in lines cribbed from *Home at Grasmere*, "clustered like stars"; they figured their own natural orbit. Their chimneys were mathematical, composed of 'a quadrangular shape…surmounted by a tall cylinder', and made 'a pleasing harmony' with 'the living column of smoke' they sent into the sky.[99] The Lake District was a miniature universe, acutely attuned to the balanced workings of the cosmos. The cottages imitated, in their little constellations, the structure of the Milky Way that Herschel was unpicking; they even sent up 'living columns' of smoke. This was no ordinary place; its patterns 'Breath'd immortality' (E, 218) to a public that was getting much more than it bargained for. It is a reflection on Wordsworth's inveterate habits of revision that, in his lifetime, most people would have remembered the various and prevalent editions of his *Guide* as the place where he thoroughly reshaped and reanimated topography. Far fewer had the forty-five shillings required to get to the end of Book Four in a bound quarto copy of *The Excursion.*[100] Indeed, only a handful knew that the character of the Pedlar was originally written down in 1797, and even came into being another two decades before that when, as a boy, Wordsworth incipiently recognised 'those first-born affinities that fit | Our new existence to existing things (I, 583-84).

These affinities were expressed in the language of mathematics. To 'fit' something is to turn and shape it until it becomes harmonious and locks or slides into place. This fitting began in Wordsworth's childhood 'when the beauteous forms | Of Nature were collaterally attach'd | To every scheme of holiday delight' (II, 51-53). Collateral attachment deals in parallel lines; memories are built up geometrically until

[99] Wordsworth's 'Introduction' to Wilkinson, *Select Views*, pp. xviii-xix.
[100] William St Clair, *The Reading Nation in the Romantic Period* (Cambridge: Cambridge University Press, 2004), p. 202. Unbound, a copy of *The Excursion* cost forty-two shillings, for which sum a farmer in Salisbury could have bought over one hundred fat pigs.

forms and feelings are expressible in terms of each other. It was this symbiosis between form and feeling that united the Pedlar's vision with Wordsworth's ideological claims to wide readership in the Preface to *Lyrical Ballads* (1800).

Travelling to the landscape of Wordsworth's *Guide* made the Pedlar wise indeed:

> He from his native hills
> Had wandered far: much had he seen of men,
> Their manners, their enjoyments and pursuits,
> Their passions and their feelings, chiefly those
> Essential and eternal in the heart,
> Which 'mid the simpler forms of rural life
> Exist more simple in their elements
> And speak a plainer language. (B, 58-65)

The Pedlar's 'plainer language', much like Coleridge's own, was learnt underfoot as well as at the fingertips. Direct physical contact with the palimpsestic surfaces of the natural world was the essential prerequisite for composing a living dialectic out of geometrical planes and mathematical shapes. The passions which 'Exist more simple in their elements' required a similarly precise, rudimentary type of interpretative language. For this reason, the Pedlar used Euclid's *Elements* as a way of expressing what was prelinguistic yet 'Essential and eternal in the heart'. Locating human feelings 'mid the simpler forms of rural life' powerfully bound Man to the earth. These forms are manifest, but they can only be deciphered by those who have patiently and submissively studied the silent language. The blind man in Book VII of *The Excursion* was amongst them; he could not name a single shape 'whose figure did not live | Upon his touch. The bowels of the earth | Enriched with knowledge his industrious mind' (VII, 518-20). The awareness which followed made a god of the blind man: 'by science led, | His genius mounted to the plains of Heaven' (VII, 522-23). In Wilkinson's *Select Views*, Wordsworth asked his readership 'to temper their impatience, to look carefully about

them, to observe and to watch',[101] hopeful that such signalling would bring the world into radical new alignment.

In the Preface (1800), Wordsworth announced that he selected the Pedlar's language for his poems:

> Low and rustic life was generally chosen because in that situation the essential passions of the heart find a better soil in which they can attain their maturity, are less under restraint, and speak a plainer and more emphatic language…in that situation the passions of men are incorporated with the beautiful and permanent forms of nature…such men hourly communicate with the best objects from which the best part of language is originally derived…[102]

This is the poetry of earth; passions are buried deep in rich, fertile soil. Permanence was the criterion which preserved feeling and, since rocks and mountains eroded more slowly than words, they were entrusted with the heart's emotions. Those who 'hourly communicate with the best objects' handle them; thus, the forms preserve feeling, keeping fresh a hermeneutic response activated by touch. Derivation is the linguistic process by which a word is traced from its *root*; it is also the mathematical expression of how one quantity changes in response to another – in this instance, it would measure what might happen to language if a soiled root became a word.

Writing to C.A. Tulk in June 1820 about his 'philosophical faith', Coleridge elaborated upon Wordsworth's hybrid ideas of derivation:

> …the sensible World is but the evolution of the Truth, Love, and Life, or their opposites, in Man – and that in Nature Man beholds only (to use an Algebraic but close analogy) the integration of Products, the Differentials of which are in, and constitute, his own mind and soul – and consequently that all true science is contained in the Lore of Symbols & Correspondences.[103]

The 'integration of Products' in nature is conditional upon the thinking mind endowing 'inarticulate' forms with imaginative life. This was the mathematical mediation of Coleridge's key philosophical equation between 'the sensible World' and the 'mind and

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[101] Wordsworth's 'Introduction' to Wilkinson, *Select Views*, pp. xxii-xxiii.
[102] Preface to *Lyrical Ballads* (1800), in *Prose*, I, p. 124.
[103] STC to C.A. Tulk, 20 June 1820, in *CL*, V, p. 19.

soul' which was 'contained in the Lore of Symbols & Correspondences'. It was a consonance which worked, like that of Wordsworth's Preface and the Pedlar's, in complete silence:

> The old man ceased
> The words he uttered shall not pass away
> They had sunk into me, but not as
> sounds
> To be expressed by visible characters…[104]

In his marginalia of December 1803 to Thomas Taylor's translation of *The philosophical and mathematical commentaries of Proclus* (1792), Coleridge wrote that 'the mere mathematician degrades his intellectual faculties into a machine'. He believed mathematics should be implemented to elevate the imaginative mind, 'whic[h] attained will flow back upon & illumine the knowledge acquire[d] anteriorly, impregna[te] it with a new and more glorious Life'.[105] For Coleridge, geometry was a directive to God; the shapes of things were fashioned in His image and could be read or touched to attain knowledge of the divine. Coleridge was convinced of this synonymity, which he elsewhere heralded as 'the beautiful approximation of Religious to Mathematical Evidence'.[106] Landscapes were expressive of a deific plan which revealed how every individual and living element of the natural world was incorporate with the thinking form or memory of another. 'The optic tube of thoght' was used by philosophers to grasp at the kind of divine Oneness – a 'Resolving into one faculty | Of being bodily eye & spiritual mind' (Y, 155-56) – that preoccupied Coleridge for the rest of his life. In a notebook entry of January 1804, Coleridge characterised 'a great metaphysician' as someone who wielded the same 'optic tube':

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[104] Unused lines (ll.1-4) from MS. D manuscript revision in *RC* & *P*, p. 275.
[105] STC marginalia to *The philosophical and mathematical commentaries of Proclus, on the first book of Euclid's Elements, and a history of Platonic philosophy by the latter Platonists, and a translation from the Greek of Proclus's Theological Elements*, trans. Thomas Taylor, 2 vols. (London 1792), in Appendix B to *CN*, I, *Notes*, p. 458.
[106] *CN*, III, 3581.

> ...he looked at (into?) his own Soul with a Telescope / what seemed all irregular, he saw & shewed to be beautiful Constellations & he added to the Consciousness hidden worlds within worlds.[107]

In the seventeenth century, however, uncovering a new world was a dangerous thing to do. In the *Areopagitica* (1644), John Milton recorded visiting Galileo at the Villa Martinelli near Florence in 1638. Galileo was seventy-four, completely blind, and 'a prisner to the Inquisition, for thinking in Astronomy'.[108] He had been under house arrest for five years for lending support to the Copernican theory of the universe. Galileo was the only contemporary named in *Paradise Lost*, written when Milton, too, was completely blind.[109] In that poem, Milton proposed to 'justify the ways of God to men' (I, 26), an epic task for which he invoked Urania, the goddess of astronomy. In the Preface (1814) to what should have been his own epic, *The Recluse*, Wordsworth enlisted the help of the same muse, but to less avail. What he inserted into Book Four of part of the incomplete version of *The Recluse* (now *The Excursion*) was verse about the Pedlar, who originally coupled his study of geometry with 'that mighty Orb of Song, | The divine Milton' (E, 239-40).

Reading Milton 'Among the hills' (E, 238) was the Pedlar's original skill which situated verse *in* the divinely scripted contours of the fells. Natural and poetic form told the same story, and 'early converse with the works of God' (VII, 719) enabled Wordsworth in Book VII of the 'AB-Stage' *Prelude* to interpret 'the forms | Perennial of the ancient hills' by reading 'The changeful language of their countenances' (VII, 726-28). This language was 'changeful' yet ubiquitous; it was in Milton and mountains alike, giving 'movement to the thoughts, and multitude, | With order and relation' (VII,

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[107] *CN*, I, 1798.

[108] John Milton, *Areopagitica; A speech of Mr. John Milton For the Liberty of Unlicensed Printing To the Parliament of England*, in *Complete Prose Works of John Milton*, vol. II, *1643-1648*, ed. Ernest Sirluck (New Haven and London: Yale University Press, 1959), p. 538 and n. 180. Cf. Gordon Campbell and Thomas N. Corns, *John Milton: Life, Work, and Thought* (Oxford: Oxford University Press, 2008), p. 112.

[109] References to Galileo in *PL*: I, 287-91; III, 588-90; V, 261-63. Cf. Marjorie Hope Nicolson, 'Milton and the Telescope', *English Literary History*, 2: 1 (1935), 11.

729-30). Likewise, the Pedlar saw 'the parts | As parts, but with a feeling of the whole' (VII, 712-13). He understood that mathematics and Milton cohered, that both contained 'The purer elements of truth, involv'd | In lines and numbers' (E, 243-44). He did not draw false distinctions between them, since he comprehended that Milton's theme of justification permitted the dual expression of religion and mathematics in terms of each other. Milton had to justify God using words; God justified Himself more elegantly, using Galilean mathematics, since *justification* also has to do with physical structure, squarings, and right alignment.

Consequently, Milton appeared through the lens of a telescope normally reserved for planets, stars, and suns. His work was a 'mighty Orb of Song' because astronomy and geometry promised to hold silent conversation with God on His own 'inarticulate' terms. Wordsworth was not simply paying lip-service to Milton by calling him 'divine'. Rather, the epithet marked his recognition that Milton revived for English poetry the ancient truth that the search for world harmony or *consonantia* (which Coleridge would later characterise as polarity) led straight to God.

Synaesthetic experience, according to Leo Spitzer, 'always bears witness to the idea of world harmony', and tracking it is a priority of the thesis, which is concerned ultimately with how thinking works. The intellectual processes by which the relations of a metaphor or analogy are selected and find equal expression in terms of each other are frequently recorded in the language or discoveries of astronomy, which provides a rich scaffold for cognition and consciousness. Thus, poets who read by touch, draw triangles amidst the stars, and record the shapes of swallow flight, are 'in harmony with the world, tempered and temperate'.[110] They have music within themselves, just like the

[110] Leo Spitzer, *Classical and Christian Ideas of World Harmony: Prolegomena to an Interpretation of the Word "Stimmung"*, ed. Anna Granville Hatcher (Baltimore: The John Hopkins Press, 1963), pp. 24, 99.

Pedlar, who *listened* to Milton's 'Orb of Song' to attain visions of God with an ordered, cosmic clarity. For the Pedlar, who was attuned to reading and hearing mathematics in the 'divine Milton' and in the mountains alike, the universe was justified and congruent in all possible ways. Those that came to share this truth as children possessed an intact and secret treasure, for:

> Theirs is the language of the heavens, the power,
> The thought, the image, and the silent joy;
> Words are but under-agents in their souls (XII, 270-72).

CHAPTER TWO

*

'MAY WE NONE OF US LOSE THIS PRECIOUS REMEMBRANCE!!': ASTRONOMY AT ALFOXDEN HOUSE AND DOVE COTTAGE

'It was indeed a thunderstroke to us!'[1] So Wordsworth characterised the sudden, sharp blow felt by his family after the tragic death of their brother John out at sea in February 1805. The loss took a deep hold. In the successive stages of grief, they called upon each other and summoned collective memories for succour. 'We see nothing here that does not remind us of our dear brother', Wordsworth wrote in anguish in the immediate aftermath.[2] Indeed, John was integral to creative as well as familial existence. 'For myself I feel that there is something cut out of my life which cannot be restored', Wordsworth avowed, 'I never wrote a line without a thought of its giving him pleasure'.[3] Dorothy, wise even in such distress, urged a healing counsel upon them all: 'I bless God that our beloved lost one lived a virtuous Life and in his death was worthy of his life. May we none of us lose this precious remembrance!! and let us who are left cling closer to each other'.[4]

This chapter maps the imaginative ways in which the Wordsworths and Coleridge envisaged, ordered and interpreted the night sky at Nether Stowey and Grasmere in order to 'cling closer to each other' when it really mattered. It traces a celestial cartography, an interwoven, recurring series of natural and typographical crescent moons, through their reading of a pre-eminently important scientific journal and into their poems, notebooks, letters and lives. Lunar observation was never a singular act. The image of the crescent proved a profoundly stabilising shape which

[1] WW to James Losh, 16 March 1805, in *WL*, I, p. 563.
[2] Ibid., WW to Robert Southey, 12 February 1805, p. 542.
[3] Ibid., WW to Losh, 16 March 1805, p. 565.
[4] Ibid., DW to CW, 27 February 1805, p. 550.

hosted a community of memories, some joyful, others harrowing. It possessed an emotional magnetism. Astronomy was an associative and interactive language for the poets and their families that they cherished, a 'precious remembrance' which leant a restorative permanence to the mind's meditations, to the intractable experiences of pleasure and pain.

In her wonderful new study, Lucy Newlyn has described the synergy of the Wordsworths' collaborations in words that are a model for this chapter:

> …we need to observe the mnemonic function that Dorothy's journal performed in the Wordsworth household, and the crucial role that memory – especially *communal* memory – played in the family's creative activities. What is of most interest in the Wordsworths' literary partnership is their shared associative practices, their joint attachment to places, and their interdependent processes. Creativity in their household was a form of symbiosis, fostered by mutual affection and responsiveness to environment.[5]

Crescent moons offered stirring and redemptive recompense for absence and loss. From 1797, the practice of habitual star-gazing was a crucial way in which the Wordsworths and Coleridge actively preserved their relationships. Following these moons uncovers a symbolic, subconscious record of their intimate thoughts and feelings as they gravitated between individuals and places.

Discussing poetry specifically in an earlier study, Newlyn noted that 'the Alfoxden period offers no actual collaborations. It was a time of sharing, but of a kind that nourished (and was itself nourished by) creative difference'.[6] Whilst this judgement is a fair reflection on the stylistic disparities between Wordsworth's and Coleridge's early poetry, it does not represent the whole picture. There was in fact another powerful idiom of allusion functioning at this time which revealed strong structural and imagistic similitudes between poems, journals and experience. It was born out of minute

[5] Lucy Newlyn, *William and Dorothy Wordsworth: All in Each Other* (Oxford: Oxford University Press, 2013), p. 159.
[6] Newlyn, *Coleridge, Wordsworth and the Language of Allusion* (Oxford: Clarendon Press, 1986), p. 33. For the mutual enhancements and poetic differences Wordsworth and Coleridge intuited at Alfoxden see pp. 17-56.

'responsiveness to environment' and it bled through their work. A crescent 'language of the heavens' *was* the working language of allusion. Its foundations were laid at Alfoxden, where moons bound creative enterprises indissociably together; at Grasmere, they consolidated separations. It was a committed imaginative vision that relied upon the same connective tissue which formed the aesthetic keystone in the Preface to *Lyrical Ballads* (1800), 'to illustrate the manner in which our feelings and ideas are associated in a state of excitement'.[7] In their loving refusal to accept that John was completely gone, the Wordsworths found soothing reparation in an astronomical way of seeing they learnt in the Quantocks with Coleridge. It sustained their brother in the world all about them.

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Connecting poems and memories with the sky began in earnest in Somerset. However, it was at Racedown with the first composition of *The Borderers* between autumn 1796 and spring 1797 that Wordsworth represented the heavens as having a significant impact on human affairs. In the middle of the play, a star stops a murder with a centring and radical effect on the protagonists' endeavour. Mortimer presents his account to Rivers of his failed attempt to kill the Baron Herbert in terms of a shift in his cosmological thinking:

> 'Twas dark, dark as hell – yet I saw him – I tell thee I saw him, his face towards me – the very looks of Matilda sent there by some fiend to baffle me. – It put me to my prayers – I cast my eyes upwards, and through a crevice in the roof I beheld a star twinkling over my head, and by the living God, I could not do it – (II. iii. 287-91).[8]

Mortimer's reward for turning to prayer, which is explicitly characterised as a physical act of looking up to heaven, is to be reminded of the 'living God' at large in

[7] Preface to *Lyrical Ballads* (1800), in *Prose*, I, p. 126.
[8] All quotation from *The Borderers* is from 'The Early Version (1797-99)' in *Borderers*. Coleridge heard the tragedy in the first week of June 1797 and may have found instances of natural description that he subsequently echoed in 'The Rime of the Ancyent Marinere' (1798).

the universe. The ‘twinkling’ star makes him instantly aware of the sanctity of human life; his moral world is completely reorientated by the notion of being watched. Mortimer is paralysed by the comprehension of a fundamental associative and psychological truth: murdering Herbert would involve the impossible task of trying to reconcile himself to ‘the very looks of Matilda’. At the instant of seeing the star, Mortimer is afforded a rare moment of clarity that enables him temporarily to throw off the perverse influence of Rivers and replace it with the cosmic force of an active, loving God.

Nevertheless, dwelling on the episode with Rivers in the following scene, Mortimer discards the positive sway the star had over him and the divine connotations it carried:

> Last night when I would play the murderer’s part
> I did believe all things were shadows, yea,
> Living and dead all things were bodiless;
> Till that same star summoned me back again.
> Now could I laugh till my ribs ached. Oh! fool!
> To let a creed built in the heart of things
> Dissolve before a twinkling atom. (III. ii. 72-78)

Mortimer’s persistent inability to apprehend the falsity of Rivers’ new tale detailing Herbert’s supposed corruption of Matilda allows his enemy to get the better of his naivety once again. He is too easily persuaded. Mortimer transforms the ‘same star’ which prompted him to think of Herbert’s corporeality into nothing more than ‘a twinkling atom’. By doing so he abandons his prayer and erases the essential memory of what the star originally pressed upon him. Mortimer’s tragedy is that his aching ribs, which resonate with Man’s post-lapsarian condition, ultimately serve only to remind him how far he is from paradise by the end of the play. He should have heeded the star that *was* ‘the heart of things’.

The Wordsworths and Coleridge learnt this lesson well. In a very different

context, at Alfoxden, they built a loving creed amidst the stars. One of the key associative lessons was taught early to little Hartley Coleridge in 'The Nightingale': 'that with the night | He may associate Joy!'[9] Joy was an impulse that the heavens brought out in the whole group at Nether Stowey. According to Coleridge, Hartley 'knows well | The evening-star' (97-98), and this is hardly surprising. Venus was just one of the visible celestial bodies the poets and their families became accustomed to observing in 1797-1798. Astronomy was a thrill for them all. It permeated their poems, letters and journals; it was a constant mnemonic, a celestial architecture that they invested with meaning and which triggered and sustained collective memories of when they were all together.

In the *Alfoxden Journal*, Dorothy marked the appearance of 'The crescent moon, Jupiter, and Venus' on late-night winter walks, often accompanied by her brother, Coleridge, Tom Poole and little Basil Montagu.[10] A storm on 31 January 1798 cleared to reveal 'Venus first showing herself between the struggling clouds; afterwards Jupiter appeared'; the 18 February was a 'sharp and very cold evening' upon which Dorothy 'first observed the crescent moon, a silvery line and thready bow, attended by Jupiter and Venus in their palest hues'; and on the evening of 6 March she 'saw the shapes of the Central Stars'.[11] Her delight in celestial observation was mirrored in William's and Coleridge's poems. The narrator of 'The Thorn' carried his telescope with him up the mountain, whilst the Mariner made astronomical sightings that Coleridge had recently read about in the *Philosophical Transactions of the Royal Society of London*. Reading the latest astronomical discoveries in learned journals and periodicals, together with keeping a close watch on the heavens, ensured that some of the shared experience

[9] 'The Nightingale: A Conversation Poem', in *PW*, I.1, p. 520, ll. 108-9.
[10] 23 January 1798, *Alfoxden Journal*, in *DWJ*, p. 141.
[11] Ibid., 31 January; 18 February; 6 March 1798, pp. 143, 146, 148.

celebrated in *Lyrical Ballads* and the *Alfoxden Journal* had its roots in collaborative star-gazing.[12]

On 23 March 1798, Dorothy recorded that:

> Coleridge dined with us. He brought his ballad finished. We walked with him to the miner's house. A beautiful evening, very starry, the horned moon.

Two evenings previously, she had logged that 'We drank tea at Coleridge's…The horned moon was set. Startled two night birds from the great elm tree'. [13] In both instances, Dorothy's language is strikingly imitative of 'The Rime of the Ancyent Marinere' at precisely the time that she heard the poem and at the point which it owed most to professional astronomy. In one stanza, Coleridge depicted a singular lunar phenomenon which was being debated in the 1790s:

> While clombe above the Eastern bar
> The horned Moon, the one bright Star
> Almost atween the tips. (209-11)[14]

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[12] Erasmus Darwin provided Wordsworth and Coleridge with a formative model for linking poetry with the *Phil Trans* in *The Botanic Garden: A Poem, in Two Parts* (London, 1791). All quotation is from Part I ('The Economy of Vegetation') of this edition. For citation purposes, canto and line number are given. Declaring that his method was 'to inlist Imagination under the banner of Science' (p. v), Darwin's poem documented new discoveries and appended detailed 'Philosophical Notes' to explain them. Darwin variously versified the results of 'Herschel's piercing sight' (IV, 359; cf. I, 105-8 and 105n; II, 13-16; 82n; IV, 369n; Note XV, p. 119) with direct reference to issues of the *Phil Trans* for 1784 and 1785, in which two of Herschel's most important papers appeared: 'Catalogue of Double Stars' and 'On the Construction of the Heavens', 75 (1785), 40-126; 213-66. Wordsworth and Coleridge read Darwin very attentively and found this Herschelian subject-matter of special interest. Coleridge borrowed vol. 75 from the Bristol Library between 23 April and 22 May 1798 and it was returned, in all likelihood, by Wordsworth or Cottle, for which see Wu, *1770-1779*, pp. 182-83. The analogical importance of double stars for Coleridge's conception of Trinitarianism is the topic of Chapter Five. Although Wordsworth may have read Herschel's 'An ACCOUNT of THREE VOLCANOS in the MOON' in the *European Magazine*, 12 (1787), 67-68, at Cambridge (Wu, *1770-1799*, p. 55), his first serious contact with Herschelian astronomy would have been in Part I of Darwin's poem, which he read between June and December 1792 and again in December 1798 (Wu, *1770-1799*, pp. 44-45). In 1791, Coleridge wrote an Ode on plane trigonometry that adhered to the intellectual model upon which *The Botanic Garden* was written. Cf. STC to George Coleridge, 31 March 1791, in *CL*, I, pp. 7-9, 7: 'To assist *Reason* by the stimulus of *Imagination* is the *Design* of the following Production.' Wordsworth added a climatic observation about the effect of the Andes on 'rivers in Peru' in DC MS. 2 to stanza 51 of the 1793-1794 reading text of *SPP* which almost certainly owed its information to one of Darwin's notes (I, 174n). See *SPP*, p. 36 and n. Darwin had also written an article about Peruvian rivers in the *Phil Trans*, 78 (1788), 43-52.

[13] 23 and 21 March 1798, *Alfoxden Journal*, in *DWJ*, p. 150. This and the following section of the chapter constitute an expanded and revised version of Owens, 'Astronomy at Stowey: The Wordsworths and Coleridge', *The Wordsworth Circle*, 43: 1 (2012), 25-29.

[14] All further quotation from 'The Rime of the Ancyent Marinere' is from the 1798 reading text in *PW*, I.1; hereafter: 'The Ancient Mariner'. In 1800 revision to this stanza 'atween' became 'between', and in an undated manuscript draft, written sometime after the publication of *Lyrical Ballads* (1805) and before *Sibylline Leaves* (1817), the whole of the last line changed to 'Within the nether tip'. Cf. *PW*, II.1, p. 518,

Dorothy's entry for the 21 March is especially pleasing because it complicates the creative production process for Coleridge's poem. 'The horned moon was set' stands as a statement on the shape of the Moon that evening and also, perhaps, as an acknowledgement that Coleridge had decided upon or 'set' the 'horned moon' in verse over dinner, possibly influenced by the Wordsworths and their walks, before bringing the 'ballad finished' two nights later. Dorothy's account emphasises that writing poetry was not a solitary activity. Group participation was vital and the Wordsworths may have heard the poem many times before it reached a stage of completion. Indeed, they were wrapped up in its growth. It is certainly not impossible that the real origins of the stanza stemmed from Dorothy's scrutiny of the sky.

John Livingston Lowes has suggested a scientific genesis for the lines. Coleridge himself retrospectively set the precedent for the validity of such an enquiry, reminding himself in a notebook entry of 1809 'To read most carefully *for the purposes of Poetry* Sir W.H.'s Account of the Earthquakes &c in the New Annual Register, 1783 – or Phil. Trans. 73rd Vol'.[15] Lowes conjectured that Coleridge first got the idea of a star 'atween' or 'within' the tip of the Moon from volume five (in the series) of Henry Jones' two volume abridgement of the *Philosophical Transactions of the Royal Society* (1700-1720), first published in 1721. The sentence in question is in an article to Mr Waller of the Royal Society, dated 1712: 'He says, there is a Tradition among them, that in *November* 1668, a Star appeared below the Body of the Moon within the Horns of it'.[16] The Bristol Library Society, of which Coleridge was a member between 1795

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ll. 209-11.

[15] *CN*, III, 3643. Italics mine.

[16] For the article see '*An* Extract of letters *from* Dr. C. Mather, *from* New-England' (1712), in Henry Jones (ed.), *The Philosophical Transactions, Abridg'd and Dispos'd under General Heads*, vols. 4-5, *1700-1720* (1721; London, 1731), 5, pt. ii, p. 161. In *The Road to Xanadu: A Study in the Ways of the Imagination* (London: Constable and Company Ltd, 1927), Lowes stipulated that this sentence was 'at the very top of the page, where it leaps to catch the attention of the most careless reader' (p. 41). This is not the case for the second edition (1731). Assuming that Coleridge read the *second* edition of Jones' edited volumes which were in the Bristol Library, it is three-quarters of the way down the page and

and 1798, possessed the second edition of Jones' abridged volumes which Coleridge could have consulted in the reading rooms.[17]

Another likely source is the *Philosophical Transactions* for 1787 which Coleridge borrowed from the Bristol Library in 1795.[18] This contained William Herschel's account of viewing three volcanoes in the Moon, one of which 'shews an actual eruption of fire, or luminous matter', which would have stuck in Coleridge's mind. Indeed, Herschel related in the same piece that the lunar volcanoes he viewed in 1783 *were* star-like in appearance: 'The former seen in the telescope resembled a star of the fourth magnitude as it appears to the natural eye'.[19] On the evening of 23 March the Moon was beautifully 'horned', waxing crescent with 31% of its visible disk illuminated.[20] It was 'very starry' and, given Dorothy's entry for that evening (and 21 March), everyone would have been looking for a star 'Almost atween the tips' of the Moon to attest to the Mariner's description, or at least for 'a star or two beside' (266) it.

This hunt might have gone on with the sea murmuring in the background, which would have been appropriate given the nature of the poem in question. Dorothy had previously written on 23 January that 'The sound of the sea [was] distinctly heard on

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Coleridge must have been reading carefully to have seen it (which is not to say that he did not do so). Rather, it proves how attentively he read the latest science. Cf. *CN*, I, 48n: Coburn notes that in the *British Critic* for June 1795 'the *Philosophical Transactions* for 1794, containing Article XXVI in which appeared the "star within the nether tip" of the moon, was reviewed, and the star passaged quoted.' Coleridge may have seen this as he was reading the May issue in 1795-96. In this article, William Wilkins wrote to Nevil Maskelyne, the English Astronomer Royal, detailing 'An Account of an Appearance of Light, like a Star, Seen in the Dark Part of the Moon, on Friday the 7th of March, 1794', *Phil Trans*, 84 (1794), 429-34. This volume was at the Bristol Library Society, for which see Bristol Library Society, *A catalogue of the books belonging to the Bristol Library Society; to which are prefixed the rules of the institution, and a list of the subscribers* (Bristol, 1798), p. 76. Moreover, two of Coleridge's good friends, Thomas Beddoes and James Webbe Tobin, borrowed the 1794 volume of the *Phil Trans* from the Bristol Library Society in late March 1795 and from 16 August to 6 September 1795 respectively. They could have easily let Coleridge use the volume. For Beddoes' library record see *Bristol Library Society Register 1794-1795* [B7463], f. 68; for Tobin's see *Bristol Library Society Register 1795-1796* [B7464], f. 103.

[17] Bristol Library Society, *A catalogue* (Bristol 1790), p. 65.

[18] Wu, *1770-1799*, pp. 182-83.

[19] William Herschel, 'An Account of Three Volcanos in the Moon', *Phil Trans*, 77 (1787), 230-31.

[20] This data is courtesy of the *Astronomical Applications Department* of the U.S. Naval Observatory, <http://aa.usno.navy.mil/>.

the tops of the hills' at all seasons excluding summer.[21] Even if Coleridge did not divulge any specific scientific nutrients behind the passage, which is unlikely considering they had a perfectly 'horned moon' in front of them, sharing their poems on walks over the Quantocks placed poetry in dialogue with Herschelian astronomy. Herschel may have modified or corroborated their sightings, but the acuity with which they saw the natural world indicated that that they were all gazing at the same sky. Nightscapes weaved the Mariner's, Dorothy's, and Herschel's vision together.

What is particularly intriguing is whether or not the appearance of the 'horned moon' in the context of Coleridge's poem triggered an association in Dorothy's memory with an entry made seven weeks previously, when she and William witnessed another rare lunar display:

> William called me into the garden to observe a singular appearance about the moon. A perfect rainbow, within the bow one star, only of colours more vivid. The semi-circle soon became a complete circle, and in the course of three or four minutes the whole faded away.[22]

It is somewhat ambiguous what Dorothy is actually describing here. There are at least three different atmospheric conditions to choose from, but ascertaining which occurred is necessarily contingent on the interpretation of 'about'. As a preposition, the *OED* dictates that 'about' is specifically used 'with reference to orbiting objects' and means 'in a strictly rotational movement around'.[23] If Dorothy was observing something in close proximity or even around the Moon then this rules out Pamela Woof's editorial suggestion that she saw a 'moon-rainbow' or lunar bow, since lunar bows always appear on the opposite side of the sky to the Moon. [24]

Instead, she could have been viewing a 22 degree halo or a lunar corona, both of which form 'a complete circle' around the Moon. Although the halo is a product of

[21] 23 January 1798, *Alfoxden Journal*, in *DWJ*, p. 141.
[22] Ibid., 30 January 1798, p. 143.
[23] "about, prep.1", *OED Online*, sense: B.6b.
[24] Editorial note to 27 January 1798, *Alfoxden Journal*, in *DWJ*, p. 279.

refraction and the corona of diffraction, both require thin cirrus clouds containing ice crystals to produce the appearance of concentric rings, and a near full Moon to illuminate them. The Moon was waxing gibbous with 96% of its disk illuminated on this night, and it was full, as Dorothy noted, on 1 February.[25] The heavy storm on 29 January would have provided perfect climatic conditions. Whilst the corona in particular is often associated with vivid colour, lunar bows, on the other hand, almost always appear as bright white, misty, or translucent, much as they did for Coleridge on 22 October 1801, when he was lucky enough to spot 'two perfect Moon Rainbows' that were 'grey-moonlight-mist-color'.[26] A halo or corona would also account for how Dorothy's rainbow changed quickly from a 'semi-circle' into a whole, which again is not characteristic of a lunar bow.[27] Steve Bell, Head of Her Majesty's Nautical Almanac Office, believes Dorothy *was* describing a halo, and on this evening the Moon was close to Pollux in Gemini. Consequently, 'the first magnitude star Procyon in Canis Minor could have been the star seen in the body of the halo as it was approximately 22 degrees away from the moon'.[28]

However, if 'about' is being used as an adverb, the *OED* gives, in a nautical sense, 'On or to the opposite tack. Freq. in **to bring about, to go about (ship), to make about**'.[29] This latter sense would consolidate Woof's interpretation in a context that was doubly appropriate to Dorothy, who often described the Moon in nautical terms: on

[25] *Astronomical Applications Department*, U.S. Naval Observatory. Cf.1 February 1798, *Alfoxden Journal*, in *DWJ*, p. 144.
[26] *CN*, I, 999. Cf. The fond reminiscences of Lady Richardson for November 1844 in Christopher Wordsworth, Jr., *Memoirs of William Wordsworth*, 2 vols. (London, 1851), II, pp. 453-54: 'Wednesday, 20th Nov. [1844] – A most remarkable halo was seen round the moon soon after five o'clock today; the colours of the rainbow were most brilliant, and the circle was entire for about five minutes. Thursday, Mr. Wordsworth dined here with the Balls, Davys, and Mr. Jeffries. Mr. W spoke with much delight of the moon the day before, and said his servant, whom he called 'dear James', called his attention to it.
[27] For all information regarding lunar bows, 22 degree halos, coronas, and other atmospheric phenomena, see the 'Light and Vision' section of the *International HyperPhysics Exploration Environment*, Department of Physics and Astronomy at Georgia State University, ed. Carl R. Nave <http://hyperphysics.phy-astr.gsu.edu/hbase/hph.html>.
[28] Email correspondence with Steve A. Bell, Head of HM Nautical Almanac Office, part of the UK Hydrographic Office, 13.7.2011.
[29] "about, adv.", *OED Online*, sense: A.4b. Cf. "† about, v.1".

25 January, ‘She sailed along, followed by multitudes of stars, small, and bright, and sharp’;[30] in the entry under scrutiny, the ‘rainbow’ holds a star ‘within the bow’, which is the same bend or bent-line as that of a ship’s fore-end; and on 18 February, the ‘crescent moon’ was a ‘silvery line and thready bow’,[31] a description that juxtaposes the faintness of its glow with the fibrous, rope-like nature of a ship’s front, complete with dimly-perceived swinging lantern.

This naval terminology is especially pertinent to a journal entry which is part of a series related to Coleridge’s poem. Observing the night sky and charting it in nautical terms, Dorothy surely made the linguistic and imagistic connections between Coleridge’s ‘horned Moon, the one bright Star’ that struck her on 23 March (and possibly 21 March too), and the same-shaped ‘singular’ effect that she and William noted in their garden at the end of January. The star in the ‘bow’ that is the curved line of either a lunar bow, a 22 degree halo, or a corona, is also a part of Coleridge’s sky, of Herschel’s science, and even of the Mariner’s ‘Spectre-ship’. The ‘horned Moon’ stimulates the associative patterns which thread nineteenth-century astronomy through Dorothy’s *Journal*, the creation of Coleridge’s ‘Ancient Mariner’, their combined lived experiences in Nether Stowey, and beyond.

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In his note to ‘The Thorn’ in *Lyrical Ballads* (1800), Wordsworth introduced his own seaman, the narrator of that poem, as a retired ‘Captain of a small trading vessel’, whose primary purpose in climbing the mountain was ‘To view the ocean wide and bright’ (182) with his telescope. [32] According to Wordsworth, Coleridge ‘delighted to call’ his own Mariner ‘the Old Navigator’, and there is a psychological parallel between

[30] 25 January 1798, *Alfoxden Journal*, in *DWJ*, p. 142.
[31] Ibid., 18 February 1798, p. 146.
[32] Note to ‘The Thorn’ (1800), in *Lyrical Ballads*, p. 350.

the two troubled figures.[33] The narrator's objective is overlooked in discussions of the poem where the telescope, if mentioned, is almost always seen as a symbolic device to highlight his mental shortcomings.[34] Despite being frustrated in his hopes by a storm, the narrator nevertheless advocated that ''Twas worth your while, though in the dark, | The church-yard path to seek (168-69), and acknowledged that he had heard 'Some plainly living voices' (172) coming from the mountain, in the middle of the night during winter, when 'The wind blew from the mountain-peak' (167). Although Wordsworth stressed in the 'Advertisement' to *Lyrical Ballads* (1798) that 'The Thorn' was 'not supposed to be spoken in the author's own person',[35] the poets' activities were markedly similar to the narrator's – they all knew that after a good storm the planets put on a fine display, particularly for those willing to climb 'the mountain high' (248).

It has long been recognised that stimulus for 'The Thorn' came from issues of the *Monthly Magazine* of February to December 1796 that were amongst the first consignment of books Wordsworth received at Alfoxden from James Losh,[36] and which included important source material for the poem in the form of William Taylor's translations of poems by Bürger.[37] What has not been pointed out is that these papers also contained an enormous double-page illustration of Herschel's forty-foot telescope, complete with a lengthy description of its operative and magnifying capacity;[38] a piece

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[33] *Fenwick*, p. 2.
[34] Mary Jacobus, *Tradition and Experiment in Wordsworth's Lyrical Ballads 1798* (Oxford: Clarendon Press, 1976), pp. 240-250, 246. Jacobus has rightly argued that the interplay between Martha Ray's suffering and the narrator's psyche is the crux of the tale, but dismissed the narrator as 'a telescope-bearing retailer of local gossip'. Cf. Stephen M. Parrish, '"The Thorn": Wordsworth's Dramatic Monologue', *English Literary History*, 24: 2 (1957), 153-63; J.F. Danby, *The Simple Wordsworth: Studies in the Poems, 1797-1807* (London: Routledge and Kegan Paul, 1960), 57-72; Thomas L. Ashton, '"The Thorn": Wordsworth's Insensitive Plant', *Huntington Library Quarterly*, 35: 2 (1972), 171-87.
[35] 'Advertisement' to *Lyrical Ballads* (1798), in 'Appendix III', in *Lyrical Ballads*, p. 739.
[36] Wu, *1770-1799*, p. 101.
[37] For the influence of Bürger's poems, especially 'The Lass of Fair Wone' and 'Leonora', on the dramatic form of 'The Thorn', translations of which appeared in the *Monthly Magazine* for March, April, and May 1796, see Stephen M. Parrish, 'Dramatic Technique in the Lyrical Ballads', *Publications of the Modern Language Association*, 74: 1 (1959), 85-97.
[38] Anon., 'Natural Philosophy and Mathematics', *Monthly Magazine*, 1: 1 (1796), 43-45; plate between 49-50 in 'Literary Notices'.

by Jerome Lalande,[39] Astronomer to the French Republic, on the history of recent astronomical developments until 1794; and an article which would have been of great practical use to the narrator, detailing how to use a telescope with Hadley's octant if navigating in foggy or stormy weather when the horizon cannot be seen.[40] In 'The Thorn', Wordsworth pictured an amateur astronomer at work, a poetic counterpart to himself and his friends, and one who fits into the growing community of voices who made the most of the conditions 'When all the stars shone clear and bright' (250).

Two, more expert members of this community, deserve attention. At Fyne Court, Broomfield, about six miles south of Nether Stowey, lived Andrew Crosse, the Electrician who only rose to prominence when he was invited to present two papers on 'Some Improvements on the Voltaic Battery' and 'Observations on Atmospheric Electricity' at the Bristol meeting of the British Association for the Advancement of Science in 1836. Before that, 'Amongst the few who had long recognised Mr Crosse's talents was Mr. Thomas Poole, of Stowey, the friend of Sir Humphry Davy, and the Lake poets'.[41]

Much as it would have pleased the narrator of 'The Thorn', it was Crosse's particular delight to make special walks on the Quantocks: 'Over these wild and beautiful hills, at all hours of day and night, in all seasons, have I wandered, and never in vain'.[42] From the tops of these hills, Crosse described celestial views at local archaeological meetings that the Wordsworths and Coleridge had seen, recorded for themselves, and pitched for poetry:

> The startling meteor, the magnificent aurora borealis, the lunar rainbow spanning the horizon, with pale and mystical light, and, far above all, the

[39] Jerome Lalande, 'History of Astronomy for 1794, by Jerome Lalande, Astronomer to the French Republic', *Monthly Magazine*, 2: 7 (1796), 551-56.
[40] JW, 'Nautical Improvement', *Monthly Magazine*, 1: 3 (1796), 202-3.
[41] Cornelia A.H. Crosse, *Memorials, Scientific and Literary, of Andrew Crosse, the Electrician* (London, 1857), p. 142. Cf. Mrs Henry Sandford, *Thomas Poole and his Friends*, 2 vols. (London, 1888), II, p. 291
[42] Crosse, *Memorials*, p. 84.

> refulgent planets…the ocean of starry worlds, whose size and numbers mock the telescopic calculations of erring philosophers.[43]

Crosse's lectures elaborated upon material in 'The Ancient Mariner' and Dorothy's *Alfoxden Journal*. Lunar rainbows, Venus, and Jupiter constituted his 'ocean of starry worlds', a phrase which even resonates with the Mariner's sea. The 'pale and mystical light' of Crosse's heavens catches the reflection in the ripples made by the water snakes in Coleridge's poem:

> They mov'd in tracks of shining white;
> And when they rear'd, the elfish light
> Fell off in hoary flakes. (276-78)

So too, more legitimately, does Dorothy's *Grasmere Journal* entry for 31 October 1800, when moonshine appeared 'like herrings in the water'.[44] Dorothy strikingly honed Coleridge's 'tracks of shining white', incorporating the poem's lines into her consciousness before making them entirely her own in a piece of natural description that left only a smudge of the Mariner's original poetic residue. It is a wonderful moment which testifies to the kaleidoscopic nature of creativity in this period; Dorothy's image develops Coleridge's to the point where it takes on its own artistic life.

Notably, all of these references draw on scientific research. Coleridge's original description is thought to have been piqued by his interest in Father Bourzes's article in Jones' abridged *Philosophical Transactions* concerning fish that generated 'a kind of Artificial Fire in the Water', and which was most striking when 'the Water is fattest and fullest of Foam'.[45] 'The Ancient Mariner' is lucratively palimpsestic; the lines signal their place in an evolving creative continuum, offering occasional flashes of the

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[43] Ibid., p. 90.
[44] 31 October 1800, *Grasmere Journal*, in *DWJ*, p. 30.
[45] Jones (ed.), 'Of Luminous Appearances in the Wakes of Ships in the Sea, by Father Bourzes. Taken from the Letters of the Missionary Jesuits', *Phil Trans (From the Year 1700 to the Year 1720.)*, 5, pt. ii, p. 214. Cf. Lowes, *Road to Xanadu*, p. 82. Coleridge also read about this phosphorescent whiteness in the sea in Priestley's *Opticks* (1772), for which see *CN*, I, 262n; Bristol Library Society, *A catalogue* (1790), p. 67; Cronin, *Colour and Experience*, p. 41.

scientific strata that have helped to shape them and which have encouraged future inventions from other members of the community.

Writing after the Wordsworths and Coleridge left Somerset, William Holland, the vicar at Over Stowey and Aisholt from 1779-1819, kept alive local interests in astronomy. Through his friendship with John Poole, Holland became a member of Tom Poole's Stowey Book Society from 1800 and occasionally bought books and gave sermons there, despite mistrusting his host's and Coleridge's political sentiments.[46] He was also a good friend of Andrew Crosse. On the winter evening of 26 January 1809 he recorded a rare celestial event in his diary:

> In the evening I was called out to see two very bright stars very near each other. I viewed the stars through my telescope, they seemed very near each other and something similar in their faces tho one was brighter than the other. There seemd clearly and distinctly a black line round the surface of each with a luminous appearance beyond this ridge like a border and the middle had several black dots like writing in two or three lines across. They both had apparently some kind of dots or lines but one was far more luminous than the other. My wife and I and all our people were out and I do not remember seeing such a thing before. I suppose our papers will be full of it by and by.[47]

This group consisting of Holland and his congregation huddled round the telescope was a little, fledgling society in its own right. A BBC Radio 4 series, *Making History*, ran a broadcast on 13 December 2005 which discussed this exact quotation from Parson Holland's diary to speculate about what he and the residents of Stowey might have seen. Jacqueline Mitton of *Total Astronomy* in Cambridge established:

> that this was a conjunction of Venus and Jupiter of a quite spectacular kind. The closest conjunction was at 7 pm on 26 January, looking to the south west. It would have been striking with or without a telescope.

William and Dorothy would have been sad to have missed this having followed these planets so loyally in the early months of 1798. Although the conjunction is not

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[46] In 1786 Holland was inducted into the living of Monkton Farley, near Bath, and held both positions until his death in 1819. He lived at Monkton Farley from 1792-98, when he moved back to Over Stowey. Cf. William Holland, *Paupers and Pig Killers: The Diary of William Holland, a Somerset Parson, 1799-1818*, ed. Jack Ayres (1984; Harmondsworth: Penguin, 1986), pp. 34-35, 84.
[47] Ibid., p. 174.

uncommon, it usually occurs when 'the planets are so close to the Sun that they are not visible in the night sky, so a conjunction in which Venus is an Evening Star would be a rare treat'.[48]

There was great interest in Venus, Jupiter, and the heavens in the Stowey neighbourhood around the turn of the nineteenth century and it is appropriate that the small, well-known landmarks of the area bring these different observers together. Calling at Crosse's on the morning of 26 September 1809, Holland found him 'busy about his Astronomical Matters' and jokingly 'proposed that he should go and live on the top of Dowesbury and have a little hut and Observatory for himself'.[49] 'Dowesbury' is a reference to Danesborough or Dowsborough Hill, the second highest in the Quantocks. When Dorothy wrote on 26 February 1798 that she and Coleridge 'Walked to the top of a high hill to see a fortification' she was remarking upon the Iron Age camp that covers ten acres on the top of the same hill. She detailed that it was 'a magnificent scene, curiously spread out for even minute inspection', and thus an excellent choice for Crosse's snug observatory. On Dorothy's and Coleridge's return home they had, appropriately, 'Jupiter and Venus before us'.[50]

Astronomy is at the heart of these collective narratives; it is profoundly transformative, speaking across scientific and literary texts, orbiting its message in new interpretive environments. If William Holland and Andrew Crosse read 'The Thorn', and this holds for Tom Poole, Coleridge, and others at Stowey as well, they would have recognised some of those 'plainly living voices' (172) coming from the mountain-peak

[48] *BBC Radio 4*, Series 12, Programme 9, *Making History*, broadcast 13.12.2005. The programme is available online <www.bbc.co.uk/radio4/history/making_history/making_history_20051213.shtml> I have recreated this conjunction using the planetary software *Stellarium* which enabled me to see the sky above Stowey at exactly this time. This corroborated Mitton's findings and put new technology to good use in making the literary past more readily available. This is an original scientific method which literary scholars could use to bring texts to life. **Please insert the accompanying CD to this thesis to view the conjunction.**

[49] Holland, *Diary*, p. 174.

[50] 26 February 1798, *Alfoxden Journal*, in *DWJ*, pp. 147-48 and editorial note p. 288.

as their own and taken a joint scientific delight in this poem about the 'science of feelings'.[51] Star-gazing fostered community and intellectual connectivity; the skies kept ideas and conversations alive that were broadcast to the group and which manifested differently in forms of scientific and poetic expression.

In mid-September 1798, when Coleridge and the Wordsworths departed for Germany, Coleridge wrote to his wife, Sara, on the crossing to Hamburg, and used the Moon to unite them:

> Over what place does the Moon hang to your eye, my dearest Sara? To me it hangs over the left bank of the Elbe; and a long trembling road of moonlight reaches from thence up to the stern of our Vessel, & there it ends…The Ocean is a noble Thing by night; a beautiful white cloud of foam at momently intervals roars & rushes by the side of the Vessel, and Stars of Flame dance & sparkle & go out in it – & every now and then light Detachments of Foam dart away from the Vessel's side with their galaxies of stars, & scour out of sight, like a Tartar Troop over a Wilderness! – What these Stars are, I cannot say – the sailors say, that they are the Fish Spawn which is phosphorescent.[52]

This description could stand for the psychic processes operating in Coleridge's mind during the act of perception: the 'left bank of the Elbe' and the 'stern of our Vessel' are as much part of the workings of the eye as the new landscape. Rivers, ships, stars, and eyes roll into one seamless unit of visual expression, imitating a narrative form that Dorothy constructed in the *Alfoxden Journal* when she observed stars and planets. It is one that had its roots in the Mariner's way of life. The 'light Detachments of Foam' and the 'long trembling road of moonlight' echo passages in Coleridge's poem where 'the white foam flew' (103) and 'the bay was white with silent light' (480). The phosphorescence of the fish spawn would have acted as empirical confirmation to Coleridge of Bourzes' article in the *Philosophical Transactions*. The transmission of Coleridge's experiences was partly refracted through the lens of the Mariner's vision. Coleridge's letter to Sara performs its own linguistic unification; it draws on the

[51] Note to 'The Thorn' (1800), in *Lyrical Ballads*, p. 351.
[52] STC to Mrs S.T. Coleridge, 18 September 1798, in *CL*, I, pp. 415-16.

solacing remembrance of poetic composition at Alfoxden when they were together to combat loneliness and homesickness. The rhetoric of the letter reaches back across the geographical divide.

It is therefore fitting that Coleridge's 'I cannot say', his lack of surety regarding the 'galaxies of stars' that it is impossible to see with the naked eye, was framed as a perfect conjunction, linguistic not planetary, which reverberated with the repeated uncertainty expressed by the narrator in 'The Thorn', who spoke mainly of what 'Some say', 'they say', and of what he 'cannot tell'.[53] In that poem, which Coleridge heard at Nether Stowey, Wordsworth suggested that habits of perception needed to be drastically retrained, declaring that the thorn was "an impressive object" like any other, which all too easily 'dart[s] away from the Vessel's side'. [54]

Focusing on the Quantockian *nights* gives special resonance to Wordsworth's definition of the imagination in his note to 'The Thorn' in *Lyrical Ballads* (1800) as 'the faculty that produces impressive effects out of simple elements'. This description is well-suited to the workings of the telescope which figures in that poem and lends an astronomical timbre to the notion that 'Poetry is passion: it is the history or science of feelings'.[55] In a paragraph from the Preface to the *Poems* of 1815 that was cut following the 1836 edition, Wordsworth outlined his method, with direct reference to the 'Winander Boy', but which he meant to stand for the 'Poems placed under the head of Imagination' as a whole, 'to plant, for immortality, images…of sound and sight, in the celestial soil of the Imagination'.[56] Placing 'The Thorn' within this class brought the 'celestial soil' much closer to home, rooting it in and around Somerset.

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[53] In 'The Thorn': 'Some say' appears at ll. 216, 225; 'Some will say' at l. 214; 'they say' at ll. 129, 133, 175; 'I cannot tell' at ll. 89, 214, 243.
[54] *Fenwick*, p. 14.
[55] Note to 'The Thorn' (1800), in *Lyrical Ballads*, p. 351.
[56] 1815-1836 insertion into the 'Preface of 1815', in *Prose*, III, p. 35n.

Writing to her great childhood friend Jane Marshall in March 1805 about the family's recent bereavement, Dorothy singled out how attuned John was to the night sky, and the pleasure she took in being instructed by him on heavenly matters at Grasmere:

> …he had so fine an eye that no distinction was unnoticed by him, and so tender a feeling that he never noticed any thing in vain. Many a time has he called me out in an evening to look at the moon or stars, or a cloudy sky, or this vale in the quiet moonlight – but the stars and moon were his chief delight, – he made of them his companions when he was at Sea, and was never tired of those thoughts which the silence of the night fed in him…[57]

In this excerpt, Dorothy gratifyingly made the 'silence of the night' an active rather than a passive subject which, alert and responsive, fed John's meditative impulse. Her description vividly recalls the eight month period when John stayed with the family at Dove Cottage in 1800; it was the last time he was in Grasmere.[58]A month after John left, Dorothy recorded in October that 'Charles Lloyd came for his wife's glass'. Whilst this might have been a Claude Lorrain or Gray glass, it is not inappropriate to speculate that it was a pocket telescope, on loan in the absence of their brother's, and a potent reminder of the living universe that he taught them all to enjoy, which was to be his legacy.[59]

From aboard the Abergavenny in April 1801, John wrote to Dorothy informing

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[57] DW to Mrs. John Marshall, 15-17 March 1805, in *CL*, I, p. 559.
[58] Reed, *1800-1815*, p. 59. John stayed with his brother and sister in the Lakes from the end of January until 29 September 1800.
[59] DW, 28 [27] October 1800, *Grasmere Journal*, in *DWJ*, p. 29 and editorial note p. 192. Importantly, Wordsworth did not approve of the Claude glass and the falsifying views of the natural world which it offered tourists, which potentially increases the likelihood that it *was* a telescope they borrowed. Cf. Markus Poetzsch, 'Vying for "Brilliant Landscapes": Claude Mirrors, Wordsworth, and Poetic Vision', *The Wordsworth Circle*, 39: 3 (2008), 114-20. The Wordsworths could have bought their own telescope from Peter Crosthwaite (1735-1808), the famous proprietor of 'The Quadrant, Telescope, and Weathercock', the Keswick museum which opened in 1781. The third room was called 'Capt. Wordsworth's Room' due to the number of gifts that Wordsworth's cousin brought back for Crosthwaite from overseas, one of which was (quite remarkably) an albatross with a ten foot wingspan. Crosthwaite subsequently petitioned William's brother John to do the same before his untimely death. Cf. Peter Brears, 'Commercial Museums of Eighteenth-Century Cumbria: The Crosthwaite, Hutton and Todhunter collections', *Journal of the History of Collections*, 4: 1 (1992), 112-18. For a full exploration of whether or not the Wordsworths possessed a telescope at this time, and for confirmation that Coleridge did, see Owens, 'Did the Wordsworths Own a Telescope?', *Notes and Queries*, 258: 2 (2013), 232-35.

her that he 'always liked the preface to Peter Bell & would be obliged if you could send it to me'.[60] Accordingly, on 29 April, Dorothy sent him the Prologue to that poem, first written, Wordsworth later recalled to Isabella Fenwick, when 'The crescent Moon…assumed this character one evening while I was watching its beauty in front of Alfoxden House'.[61] Since composition was partly inspired by the Moon that evening in April 1798, the Prologue's depiction of 'a little boat | In shape just like the crescent moon' (6-7), complete with 'pointed horns' (17), was also very closely related to the 'horned Moon' of Coleridge's 'Ancient Mariner' which they all heard aloud on 23 March 1798.[62] Wordsworth's poem began life when Coleridge's ballad motivated fresh perception of the night sky one month later. Each poem contributed to an orrery of shared poetic and lived experience.

Indeed, Dorothy's recollection of the commencement of *Peter Bell* on 20 April brought another poem into the imaginative mix:

> Walked in the evening up the hill dividing the Coombes. Came home the Crookham way, by the thorn, and the little muddy pond. Nine o'clock at our return. William all the morning engaged in wearisome composition. The moon crescent; "Peter Bell" begun.[63]

What might look like a benign list of the day's events is in actuality a remarkable and tightly packed account of the group's recent activities. The 'little muddy pond' is in fact a direct quotation from Wordsworth's newly completed poem 'The Thorn', the actual specimen for which Dorothy walked by on her way home. Moreover, the juxtaposition of the final sentence is perfect: 'The moon crescent; "Peter Bell" begun'. Not only does the Prologue to *Peter Bell* begin with a crescent moon but the adjacency of the clauses suggests that it was the immediate source for the poem. The line also looks back to

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[60] JW to DW, 22 April 1801, *Letters of John Wordsworth*, ed. Carl H. Ketcham (Ithaca: Cornell University Press, 1969), p. 119.
[61] *Fenwick*, p. 18.
[62] All quotation is from the 1799 unpublished reading text in *Peter Bell*.
[63] 20 April 1798, *Alfoxden Journal*, in *DWJ*, p. 152 and editorial note p. 297.

another entry (and source), the 'horned moon' of the previous month which featured prominently in 'The Ancient Mariner'. Dorothy's record of daily life is translated through a web of poetic allusions. The *Alfoxden Journal* reveals that there was a necessary and dynamic type of creative circularity at work in the group. Dorothy registered experiences through her brother's and Coleridge's poems and they created poems out of snapshots of life which she recorded. This spirit of cooperation built an intellectual and loving kinship out of the convergence of mutual arisings.

It is apposite that John, a sea-captain by profession, should have been so affected by *Peter Bell*, a poem that owes much to another, fictional navigator. John found in it ways to remember people whom he loved who were often engaged in activities they all did as a family and which he taught them to enjoy fully. The poem was dear to Dorothy too. In May 1802, Dorothy talked about the Moon in the *Grasmere Journal* in language which distinctly resonated with the Prologue to *Peter Bell*. The Moon was 'a Boat without the Circle' on 5 May and 'a perfect Boat a silver Boat' the following evening.[64] By invoking her brother's poem she yoked together the community of observation established at Alfoxden in 1798 when those lines were written with her other brother out on the ocean who savoured them so dearly, and with whom they had delighted in observing the night sky at Grasmere in 1800. Dorothy had a knack for harnessing memories in this way and incorporating them together. The brilliance of the *Journals* rests in the truth that they do not merely record events but rather shape a communal past that Dorothy irrepressibly brought to life, and which grew through her perpetual acts of return and reinterpretation. Memory's reward shines prismatically in every entry.

An exceptionally touching instance of this kind occurred on 8 February 1802

[64] 5-6 May 1802, *Grasmere Journal*, in *DWJ*, pp. 96-97. Cf. Pamela Woof, 'Dorothy Wordsworth in 1802', *The Charles Lamb Bulletin*, N.S. 101 (1998), 5.

when Dorothy ended her chronicle of the day by amending the details of her walk with William: 'N.B. The moon came out suddenly when we were at Johns Grove & "a star or two beside"'. Quoting Coleridge's 'Ancient Mariner' in response to pacing in John's Grove united many of Dorothy's most intimate concerns. The poem stimulated Dorothy to reflect on the fortunes of John from within the space he treasured the most. For William and Dorothy, walking was an opportunity to return to memories stored in a particular place which could be triggered by the appearance of the Moon. Coleridge provided the lens through which Dorothy interpreted John's world – but the stimulus to think of Coleridge lay, in this instance, at least partly elsewhere.

The reason they set out at all that day was to collect their post from Rydal. Chancing to meet their 'patient, bow-bent Friend with his little wooden box at his Back' on their way, they procured two letters, one of which was from Coleridge. Having checked to establish that he was not ill, Dorothy at first 'put [the letter] in my pocket but at the top of the White Moss I took it to my bosom, a safer place for it'. 'The night was wild' although 'There was not much wind till we came to John's Grove, then it roared right out of the grove, all the trees were tossing about'.[65] The wind rushing through the trees was an ominous reminder to Dorothy of a sea-storm; later in the month, on returning to the Grove with William, she noted that 'There was a sweet sea-like sound in the trees above our heads, we walked backwards & forwards some time for dear John's sake'.[66] In better weather, the wind simulated the calm oceanic conditions which provided a pleasant melody conducive to positive reflection upon John. More suggestively still, Dorothy paced 'for dear John's sake'; she believed that by doing so she could instil the same peaceable conditions for her brother. At that moment, her walking was a kind of ritual to initiate a pact with the natural world. By

[65] 8 February 1802, *Grasmere Journal*, in *DWJ*, pp. 64-65.
[66] Ibid., 23 February 1802, p. 72.

contrast, the prospect of a dangerous storm made Dorothy press Coleridge to her bosom and John to her heart.

Dorothy's recitation of lines from 'The Ancient Mariner' at precisely the point in that poem when the Moon signals a turn from the Mariner's despair, offering up in its place the possibility of redemption, was a reaffirming act of faith in the power of poetry to tame the natural world, to keep her loved ones safe. Dorothy's writing is suffused with these tinctures of love and loyalty that show her thoughts and memories at work for the good of those around her. Pleased to be rid of Thomas Wilkinson on 12 April 1802, who questioned her 'like a catechizer', Dorothy 'had time to look at the Moon while I was thinking over my own thoughts – the Moon travelled through the clouds tinging them yellow as she passed along, with two stars near her, one larger than the other'.[67] It is not quite a direct quote from Coleridge this time, but once again we can be sure her thoughts were with her mariners.

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Travelling to Malta in April 1804, with *Peter Bell* included in his poetry package, Coleridge noted that he glimpsed 'one beautiful Dolphin-shaped Cloud… & what I have never seen in England…a Halo with bright stars just within, & a perfectly bright serene full moon in the center'.[68] He was keenly alert, at just this time, to the parallels between his own situation at sea and that of his Mariner, for in the following notebook entry he quoted a superstition the captain of the vessel related to him regarding which day sailors thought it best to leave port with good omens, and prefaced it with the note: 'Comments on Ancient Mariner'.[69] Witnessing 'bright stars just within' a lunar halo in Malta, coupled with the sighting of a 'Dolphin-shaped Cloud',

[67] Ibid., 12 April 1802, p. 84. Cf. 16 March 1802, p. 79: '[The moon] seemed far & distant in the sky there were two stars beside her, that twinkled in & out, & seemed almost like butterflies in motion & lightness.'
[68] *CN*, II, 2047.
[69] Ibid., 2048.

may have presaged the eventual change in the text of 'The Ancient Mariner': the star 'Almost atween the tips' of the 'horned Moon' in 1798 became securely lodged 'Within the nether tip' after 1805.

Recording another occurrence of the same climatic phenomenon on 15 January 1805, Coleridge wrote, again from Malta, that:

> This Evening…was the most perfect & the brightest Halo ~~around~~ circling the roundest and brightest moon I ever beheld – so bright was the Halo, so compact, so entire a circle, that it gave the whole of its area, the moon itself included, the appearance of a solid opake body – an enormous Planet/& as if <this Planet had>…a <circular belt-like> Trough ~~over~~ of some light-reflecting Fluid for its rim, <(that is the Halo)> and its centre, i.e. the Moon a small circular bason of some fluid that still more copiously reflected, or that ever emitted light…[70]

Coleridge's fascination with exciting ocular events produced layers of visual impression which combined to reflect back upon his poetry; newly-perceived atmospheric and celestial phenomena were incorporated into verse that was scientifically up-to-date yet constantly at risk of becoming outmoded by day-to-day life.

Editing this entry, Kathleen Coburn used triangular brackets (guillemets) to indicate that the phrase '(that is the Halo)' was one of Coleridge's later, clarifying emendations to the passage. This addition is not simply a reminder that the rim of 'light-reflecting Fluid' and the 'Trough' are descriptions of the halo itself, but rather a special Coleridgean characterisation that marks its appearance: the precise shape of the halo is piercingly represented by the parentheses on the page – 'that is the Halo': (). The curved brackets imitate the nature of the '<circular belt-like>' lunar spectacle in a way that the textual replacement of '~~around~~' with 'circling' is unable to achieve in the opening line. This was not the first time that Coleridge exhibited minute typographical sensitivity in his use of brackets as 'lunulae', little syntactical moons which were creatively linked to his astronomical observations and tied to his social environment.[71]

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[70] Ibid., 2402, *f*128.
[71] Cf. John Lennard, *But I Digress: The Exploitation of Parentheses in English Printed Verse* (Oxford:

In his editorial note to Coleridge's poem 'A Letter to –', J.C.C. Mays outlined the precise social significance of the second title line in the manuscript (Figure 1), which is the putative date upon which Coleridge wrote the poem: 'April 4, 1802. – Sunday Evening.' Mays stipulated that:

> The date was the eve of WW's departure to propose to the sister of the woman C loved, thereby taking a step which involved irrevocable separation from Annette Vallon and their child. C had stayed up all night on 3 Apr to urge on WW this course of action, which his own conscience prevented him from taking himself (*CN* III 3304). And the date also marks the end of a visit from WW and DW, in which C's hopes for WW's future mingled with despondency and apprehension for his own present and future state.[72]

Coleridge's poem was born out of mixed feelings of worry and loneliness at Grasmere whilst it also looked ahead to future anxieties. Elements of the syntax in the poem bear acute witness to this; Coleridge's struggle to keep his friends together at this pivotal moment and his endeavour to wrest a happy course for them all is evident in his creative use of lunulae and other punctuation marks. The grammar of the poem acts as an imaginative holding, buoying and charging Coleridge's principal human connections.

Lines nine to twelve of the 'Letter' in Mays' edition read as follows:

> For, lo! the New Moon, winter-bright!
> And overspread with phantom Light,
> (With swimming phantom Light o'erspread
> But rimm'd & circled with a silver Thread) (9-12)

In his fine book on parentheses in English verse, John Lennard first called attention to the fact that in this passage 'The two crescent moons, old and new, just failing to lock horns, looked exactly like two lunulae: ( ): and the lunulae which Coleridge placed around lines 11-12 were intended to represent the two crescents which Coleridge had

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Clarendon Press, 1991). Throughout his book, Lennard employed Erasmus' coinage of *lunula* – literally 'little moon' – to distinguish the grammatical structure of parenthesis from the bracket itself. I employ the same distinction.

[72] *PW*, I.2, p. 679. All further quotation from 'A Letter to –' is from this edition.

seen'.[73] In order to substantiate fully Lennard's verb choice – that Coleridge *intended* to do this – further close analysis is desirable, together with an explanation, where possible, of Coleridge's conscious thought patterns at this time. In pointing out that Coleridge's brackets – his lunulae – physically instantiated the phase of 'the New Moon, winter-bright' on the written page, Lennard did not discuss another trick showing how purposeful Coleridge was in this stanza in a manner which attests to his cosmological knowledge.

In this instance, Coleridge portrayed the new crescent Moon with 'the Old Moon in her Lap' (13), a phenomenon now known as earthshine, when light from the earth illuminates the night side of the 'old' Moon with a soft glow. In the poem, the chiastic structure of lines ten and eleven specifically mirrors Coleridge's understanding of how the Moon really works: the chiasmus linguistically replicates the 'phantom light' which the old Moon actually reflects, and which Coleridge affirmed through the technical acts of inversion and repetition. Coleridge's syntax is therefore explicable in terms of the appearance of the Moon. The words in between the brackets, which he used typographically to replicate the new Moon, are themselves reflected in the face of the old Moon.

'Dejection: An Ode', the form in which this poem was published in the *Morning Post* on 4 October 1802, is prefaced with an epigraph from the '*Ballad of Sir* Patrick Spence' that clearly describes 'the New Moon, | With the old Moon in her arms', precisely what Coleridge represented here.[74] His lunulae appear to carry the words in suspension as if they were inscribed on the old Moon. It is a magnificent piece of

[73] Lennard, *Parentheses in English Printed Verse*, p. 131.
[74] Epigraph from *Sir Patrick Spens* in Bishop Percy's *Reliques of Ancient English Poetry*, 3 vols. (4th ed., 1794) to 'Dejection: An Ode' (Jul 1802?), in *PW*, I.2, p. 697. Cf. 5 May 1802, *Grasmere Journal*, in *DWJ*, p. 96: '…we walked in the twilight & walked till night came on – the moon had the old moon in her arms but not so plain to be seen as the night before. When we went to bed it was a Boat without the Circle.'

poetical *trompe l'oeil*. At the second repetition of 'phantom Light', the reader must imagine that lines eleven and twelve are written across the disc of the old Moon itself. Coleridge thus makes what is in the brackets clearly visible. The old Moon may be in shadow, and as grammatical markers brackets may suggest a somewhat tentative aside, but he brings the language into the light. Coleridge found a way of usurping the traditional, subsidiary role of brackets by transforming them into lunulae heedful of the natural, living function of what they stand for. His parentheses operate in the same fashion as the Moon which he depicted. These lines are brilliantly lambent; they reflect the shine of the whole poem: they are *mooning*. Lennard is spot on – the grammatical acrobatics were certainly intended.

It is the very fact that Coleridge's lines *moon* which holds the clue as to why he constructed these minute, syntactical manoeuvres. Coleridge wanted his poem appropriately to reflect his own state of mind. As Mays highlights, he was acutely dejected and alone, anxious for himself, his friends and their futures. He was also mooning in the sense that he was love-struck. This poem is written for Sara Hutchinson, the sister of the woman Wordsworth was about to marry, and the addressee whom Coleridge had '*vainly* woo'd | O dearest Sara!' (29-30). In an effort to console himself, Coleridge invoked another 'crescent Moon' (39) that reminded him of his friends who had just departed. Referring to the Moon as 'A boat becalm'd dear William's Sky Canoe!' (41), Coleridge yoked his verse to the prologue of Wordsworth's *Peter Bell*. In the *Grasmere Journal*, Dorothy had employed a similar tactic, consistently making the Moon one of her primary pools of shared memories. Coleridge, however, was seemingly too miserable for these associations to provide much reassurance: 'I see them all, so excellently fair! | I see, not feel, how beautiful they are' (42-43).

For evidence (aside from that already presented), that Coleridge often felt

otherwise about the genuinely restorative power of the Moon, but that he was given to bouts of self-doubt, it is essential to return to the end of line 9 of the manuscript version of the 'Letter', written in his own hand:

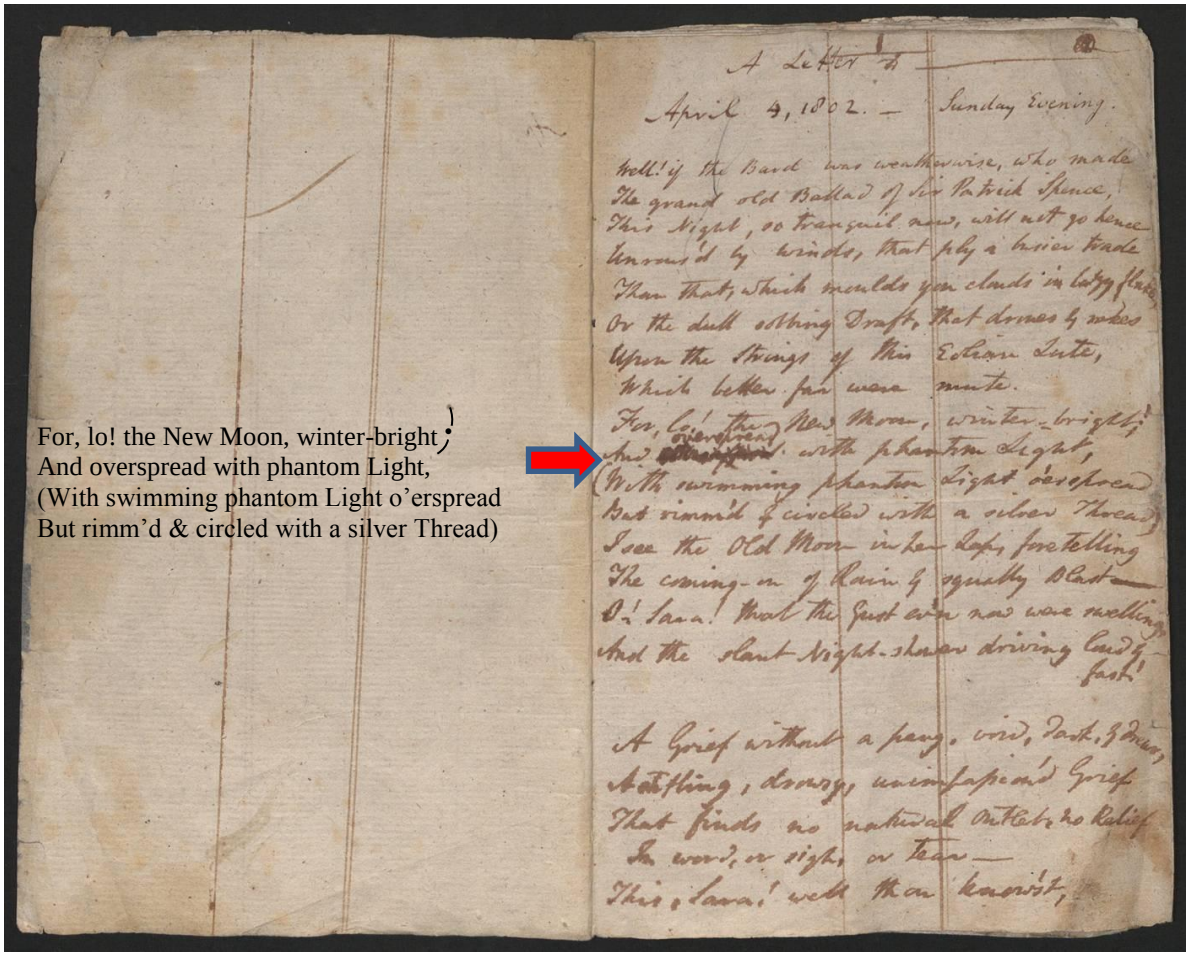


Figure 1. From DC MS. 39, 'An account book of verse', showing the first ms page of Coleridge's poem, 'A Letter to – ', April 4, 1802, in Coleridge's hand, with my own facing transcription on the verso of ll. 9-12. This poem was subsequently revised and titled 'Dejection: An Ode' [Jul. 1802?]. I have viewed this manuscript at The Jerwood Centre, Grasmere.

A codicological attempt can be made to respond to the question that Coleridge posed in a moment of absolute desperation in the poem: 'These lifeless Shapes, around, below, Above, | O what can they impart?' (52-3). Indeed, the manuscript shows that Coleridge was feeling for an answer. Line nine of DC MS. 39 ends with a very peculiar typographical mark that is *not* reproduced in Mays' edition of either the reading or variorum texts of this poem or of 'Dejection: An Ode', and which is by no means a

lifeless shape. In total, looking across both poems, there are *three* variant punctuation marks at the end of this line as shown below:

> Reading text of 'A Letter to –': For, lo! the New Moon, winter-bright!
> Variorum text of 'Dejection: An Ode': For lo! the New-moon, winter-bright;
> DC MS. 39 (see Figure 1): For, lo! the New Moon, winter-bright !

Whether or not Coleridge initially opted for a comma or semi-colon at the end of the line which he subsequently turned into an exclamation mark, or *vice versa*, is debatable and hardly as interesting as the typographical mark that he actually created in the original manuscript, which is a piece of punctuation locked in the process of becoming. [75] It surely would have dawned on Coleridge, considering how much care and emotional investment he put into the role of the various lunulae in the following three lines, that what he had created – possibly by accident – was itself a very special crescent moon which would have taken him back, not to Wordsworth's 'boat becalm'd', but to his own maritime forbear. At the end of line nine, Coleridge perfectly replicated, as a visual image, his description of the Moon which 'clombe above the Eastern bar' (201) in 'The Ancient Mariner':

> The horned Moon, the one bright Star
> Almost atween the tips. (210-11)

The punctuation of line nine thus bears witness to a tiny yet incredibly salutary and sustaining remembrance for Coleridge to which he might well have had recourse for relief. *Peter Bell*, Dorothy's *Alfoxden and Grasmere Journals*, 'The Ancient Mariner', and the 'Letter', all allude to a typographically similar series of textually interwoven crescent moons – an image which gave Coleridge much resilience in this poem. Importantly, Coleridge began to find a formative source of comfort in the 'Letter' by thinking of Sara gazing at the same Moon with which he inaugurated his

[75] *PW*, II.2, pp. 865, 888. Line 9 of the reading text of 'Dejection: An Ode' also ends with an exclamation mark: 'For lo! the New-moon winter-bright!' Cf. *PW*, I.2, p. 698.

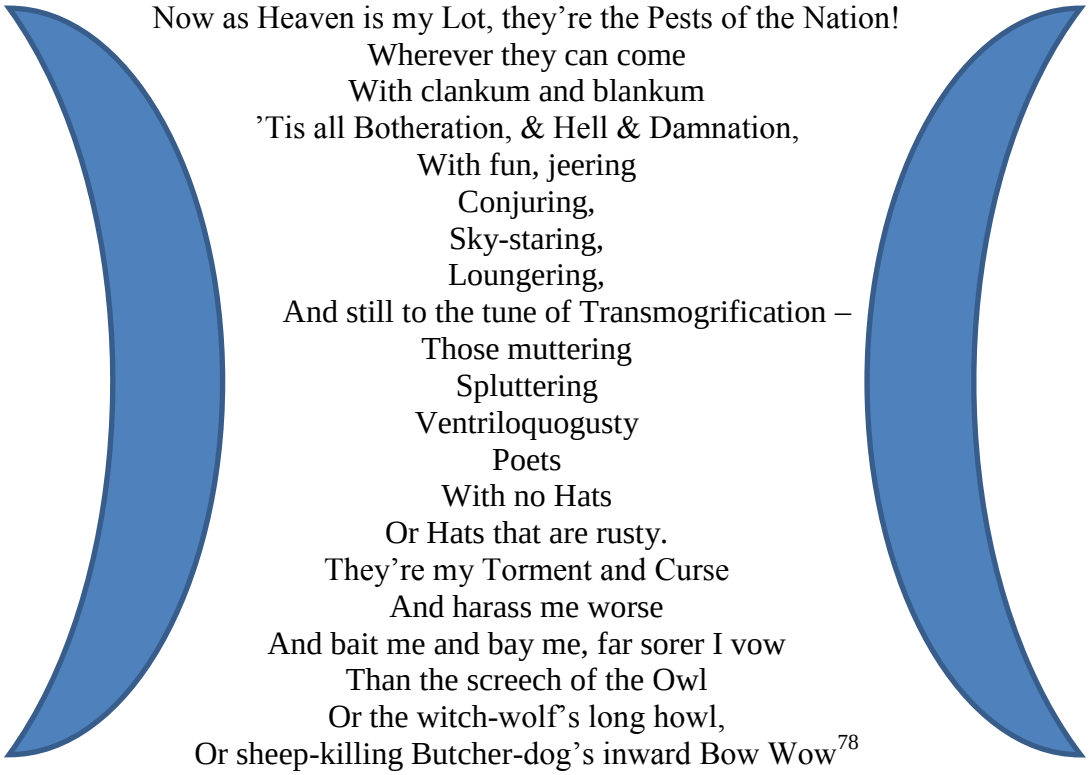
poem to her: ‘I guess, that thou hast stood | And watch’d yon Crescent, & it’s ghost-like Moon’ (82-83). To think of Sara ‘gazing now, like me’ (55) was, Coleridge said, a ‘Sweet Thought’ which ‘yet feebly stirs my Heart!’ (57). The feat of recollection, however ‘Feebly! O feebly!’ (58) it was enacted – and which might seem to be ineffectual but was in fact felt just enough to be efficacious – takes place as an invocation to the previous lunulae of lines eleven and twelve as a quiet piece of performative utterance: ‘(I well remember it)’ (59). In what is supposedly a standard parenthesis, Coleridge created a pause, a mental resting-place that stirred dim awakenings of shining brackets fifty lines back and which paid homage to them in the same winking terms. He derived the force to carry the poem onwards from exactly this type of syntactical bond and imaginative commitment.

Coleridge’s concerns necessarily gravitated together; mooning united his loved ones around him on the eve of their departure and anchored him in his plaintive mood. He *did* find, or he marked, or he tried time and again to save up resourcefully, ‘fair Remembrances, that so revive | The Heart, & fill it with a living Power’ (111-12). Coleridge’s lunulae are alive in the poem and in his memory; wherever they wax and wane they dramatised his conflicted conscience in the texture of the lines, generating a voice which whispered ‘(I well remember it)’, ‘(I well remember it)’. In so doing, the brackets invoked the quality of other, elective moons which provided spiritual equilibrium by reflecting great friendships. They are active reminders of the power of Coleridge’s ‘shaping Spirit of Imagination!’ (242), syntactical ‘Leaves and Fruitage’ (237) that kept him going, and over which he exerted a kind of mastery. The gathering drive and pressure of the poem is attributable to Coleridge’s capacity to bind ‘fair Remembrances’ with his lunulae, ‘linking on sweet Dreams by dim Connections’ (70). Part of the declarative strength that the ‘Letter’ finds itself capable of building to and

registering in its conclusion is drawn from the 'strong music in the Soul' (309) which Coleridge imprinted, purposively and attentively, into the delicate syntax of the poem to be a residual solace, a 'beautiful & beauty-making Power!' (312).

Coleridge repeated 'the verses he wrote to Sara' to Dorothy on 21 April; she 'was affected with them & was on the whole, not being well, in miserable spirits'. Six days later, on 27 April, Dorothy recorded that 'We had a Letter & verses from Coleridge'. [76] The poem Coleridge sent, 'A Soliloquy of the Full Moon, She Being in a Mad Passion', was written in late April 1802 and never published. In all likelihood, Coleridge wrote it as a piece of entertainment for the group and to cheer Dorothy. It proved that his discussion of the Moon did not have to be serious and elegiac; he was capable of an extremely jocular lunar mode. Mays noted that the poem 'celebrates, from another point of view and in a different spirit, the full moon, as the ['Letter'] had fixed on the new(ish) Moon. Whether C was prompted by any such thoughts is unknown'.[77] However, the shape of the 'Soliloquy' indicates that Coleridge *was* prompted by such thoughts, and that his formal intentions in writing the poem are key to corroborating its jovial subject matter. To explain this, the first twenty-one lines of the poem are reproduced below:

[76] 21 and 27 April 1802, *Grasmere Journal*, in *DWJ*, pp. 89, 92.
[77] *PW*, I.2, p. 691.



Now as Heaven is my Lot, they're the Pests of the Nation!
Wherever they can come
With clankum and blankum
'Tis all Botheration, & Hell & Damnation,
With fun, jeering
Conjuring,
Sky-staring,
Loungering,
And still to the tune of Transmogrification –
Those muttering
Spluttering
Ventriloquogusty
Poets
With no Hats
Or Hats that are rusty.
They're my Torment and Curse
And harass me worse
And bait me and bay me, far sorer I vow
Than the screech of the Owl
Or the witch-wolf's long howl,
Or sheep-killing Butcher-dog's inward Bow Wow[78]

There are two manuscript texts of this poem. Mays reproduced (as do I) the one in Coleridge's hand that was sent to William and Dorothy on 27 April, following 'the layout of C's holograph…in which all lines are centred on the page-width'.[79] The other is the fair copy version in Sara Hutchinson's hand entered into her red leather-bound notebook of verse (DC MS. 41) in late April 1802. The poem was written on leaves 2r-3r of Sara's notebook (DC MS. 41. 27) and, significantly, the lines were *not* centred, but all aligned to the left-hand margin.[80] Unfortunately, the full effect of the silhouette of the lines is not felt in Mays' edition either because the first four lines are printed on the preceding page, which quite disrupts the form of the poem and thus stifles the joke that Coleridge planned for William and Dorothy to share. Coleridge's centring of these opening twenty-one lines as a single body of verse was deliberate and its textual profile

[78] Ibid., pp. 691-92, ll. 1-21.
[79] Ibid., p. 691.
[80] I have consulted DC MS. 41 as part of the online collection of the Wordsworth Trust manuscripts and texts available on the database *Romanticism: Life, Literature & Landscape*, Adam Matthew Digital 2011, Wordsworth Trust, eds. Penelope Bradshaw, Jeff Cowton, Jared Curtis, Michael Eberle-Sinatra, Stephen Gill, Ian McCalman, Judith Wallick Page <http://www.romanticism.amdigital.co.uk/Default.aspx>.

is quite decisive to its meaning.

The whole point of the poem, which has been lost, is that it accurately charts the phases of the Moon, picturing the speaker – which is both the Moon and by implication Coleridge himself – *waxing gibbous* (or oratorically expanding). Early on, Coleridge jibed merrily at the capacity he and Wordsworth seemed to possess for making the Moon grow as they pleased to suit their poems. In similar fashion to the 'Letter', Coleridge wrote over the face of the Moon to represent an entire lunar cycle within the confines of a poem. This time, however, the effect is unequivocally ludic. The opening twenty-one lines physically show the Moon at 'the very first moment that I came to Light' (23). The shape initially created is the same as the new Moon of the 'Letter', which Coleridge depicted in this poem as similar to 'a sickle with never a handle' (25), but his motive was now pure jest. I have endeavoured to represent this formal technicality with the help of two large lunulae in my above transcription. Coleridge would have expected William and Dorothy to have latched on to the contours of the poem very quickly indeed.

The expansion of the poem and the Moon are inextricably linked. It is not coincidental that the 'tune of Transmogrification' (9) is part of a long, disobedient line that has no place in the crescent part of the poem and which hints at the poem's wide, morphing figure still to come. Wordsworth, 'hunting for witch-rhymes' (30), added a little more shine to the Moon when he wrote *Peter Bell*, which 'chang'd me at once to a little Canoe' (32), before Coleridge invoked himself as a real chatter-box, firstly turning the Moon 'into the half of a small Cheshire Cheese' (40), a half-moon, and then into an 'Ostrich's Egg' (50), a gibbous. This was possibly due to his realisation that in 'The Ancient Mariner', the 'Letter', and now this 'Soliloquy', Coleridge gave the Moon a vital part to play. Almost exactly three quarters of the way through this sixty-six line

poem the Moon, an ‘Ostrich’s Egg’, is three-quarters of the way through its monthly cycle.

The sickle shape of the lines, of course, has long-disappeared as the Moon tries to keep up with the waxing poem; in the process, Coleridge wittily ridiculed his own ability to talk on and on by filling out the figure of the verse. He was showing off, portraying himself as outshining the Moon, and the Moon, amusingly, gets so fed up with this that it breaks the mimesis it achieves with the poem. The Moon pokes fun at Coleridge, declaring that it ‘heard the Rogue muttering –’ (54), before finally getting the last laugh ‘in contempt of the Loon’ (51). Having declared itself ‘the jolly full Moon’ (52) – filled with light and full to bursting with Coleridge’s ‘Spluttering’ (11) of words on the page – it will not permit Coleridge the final act of ‘mak[ing] me a Bowl’ (62), which ‘was more than his might’ (64).

The Moon has no intention of being unnaturally and impossibly full and the printed text responds to its wishes, much to the pretend annoyance of the ‘hulking and skulking’ (55) Coleridge. The three, very short, six word lines (61-63) that come back at the end do so to check and frustrate Coleridge’s garrulity. Their position is a reminder that the Moon’s repeated and triumphant declaration in the last line of the poem – ‘I am I myself I, the Jolly full Moon’ (66) – signals a circular return to the crescent beginning of the poem and with it to a new lunar cycle. The form and teleology of the poem is in sync with the natural, gravitational pattern of the Moon’s orbit. ‘Those muttering | Spluttering | Ventriloquogusty | Poets | With no Hats’ (10-14) – Wordsworth and Coleridge in *Peter Bell* and the ‘Letter’ – cannot unreasonably exploit the Moon in their great moments of poetic dejection and delight which come from ‘Sky-staring’ (7). The natural world sets poetical limits. Lunulae, which are an exquisite source of consolation in the ‘Letter’, are reinvented in the ‘Soliloquy’ to ‘the tune of

Transmogrification –' (9) for fun and larks. Dorothy was most probably very roused by their lustre. Whether blue or japing, Coleridge was a *master* of parentheses, and the strata of his poems, their forms and semantic energy, sensitively reflected this to achieve variously mooning reconciliations.

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The associative practice of star-gazing permitted the Wordsworths and Coleridge to 'cling closer to each other'. The community was acutely skilled and responsive in calibrating lunulae, which were a prevailing visual tool to assist the workings of memory. Wordsworth's remark, following the death of John, that 'We see nothing here that does not remind us of our dear brother', was testimony to the imagistic force of remembrance, particularly in crescent form, to refract past experiences all about them. The intellective procedure by which they called each other to mind at Alfoxden and Grasmere became, in 1805, the methodological basis upon which they enshrined their communal grief. Creative recollections brought about a hopeful, hoped for equanimity out of desolation.

In critical terms, the detection of shape working in the same echoic way as words powerfully extends the connective, dialectical charge of the language of allusion. Moreover, the functioning of the Moon as a mnemonic coincided with a remarkably fertile period of experimental science for Wordsworth and Coleridge at Dove Cottage. In February 1801, Coleridge reported to Humphry Davy that William Calvert had 'a great desire to commence fellow-student with me & Wordsworth in Chemistry', and had cooked up a scheme 'to build a little Laboratory' at Windy Brow, close to Coleridge at Greta Hall. Coleridge indicated that Wordsworth was:

> strongly inclined to adopt the scheme…because he feels it more & more necessary for him to have some intellectual pursuit less closely connected with deep passion, than Poetry, & is of course desirous too not to be so wholly

ignorant of knowledges so exceedingly important.[81]

Wordsworth's reported language of 'deep passion' and 'knowledges so exceedingly important' was prescient of concerns which he developed fully in the Preface to *Lyrical Ballads* (1802). One month later, in March 1801, Wordsworth wrote to the publishers Longman and Rees to acknowledge that 'Mr Coleridge and I conjointly are in your debt for two Copies of Withering's Botany and two botanical microscopes'.[82] Coleridge simultaneously requested 'three Prisms' from Poole, anxious to consolidate Herschel's discovery of infra-red radiation for himself. [83] Indeed, in a letter to Davy in May 1801, he entreated the chemist to tell him 'in a couple of sentences…whether Herschel's Thermometric *Spectrum* (in the Philos. Trans.) will lead to any Revolution in the chemical Philosophy'.[84]

This buzz of scientific activity at Dove Cottage, coupled with the naturally retentive technique of linking lunulae together, was the immediate empirical and associative background to the prefatory revisions of 1802, composed as microscopes were peered through, chemical experiments completed, and Herschel's light theory subjected to the scrutiny of poets with prisms. It was an exciting time, and Coleridge, Southey, James Webbe Tobin, Josiah and Tom Wedgwood, and Joseph Priestley all experimented with Davy's nitrous oxide gas.

Science was reaching out to a broad audience at the moment Wordsworth was rewriting the Preface. Major periodicals in the late 1790s and 1800s, including the *Monthly Review*, the *British Critic*, the *Analytical Review*, the *European Magazine*, and the *Gentleman's Magazine* printed long, compendious articles in installments that

[81] STC to Humphry Davy, 3 February 1801, in *CL*, II, pp. 670-71.
[82] WW to Messrs. Longman and Rees, 27 March 1801, in *WL*, I, p. 321. Wordsworth did not tire of using his microscope. Cf. MW to DW, 29 October 1814, in *The Letters of Mary Wordsworth 1800-1855*, ed. Mary E. Burton (Oxford: Clarendon Press, 1958), p. 23: 'Poor William's right hand is crippled – the speck which he was examining thru the microscope last Saturday has proved another plaguy boil.'
[83] STC to Thomas Poole, 24 March 1801, in *CL*, II, p. 712.
[84] Ibid., STC to Humphry Davy, 4 May 1801, p. 727. Chapter 5 contains a full discussion of Herschel's discovery of infra-red and its significance for Coleridge's Trinitarianism.

précised the latest issues of the *Philosophical Transactions*. Moreover, the genre of the scientific lecture was gaining fashionable popularity. Coleridge attended a portion of Davy's public chemical lectures at the Royal Institution in London in January and February 1802, refreshing a friendship that began when the chemist was working under Thomas Beddoes at the Pneumatic Institute in Bristol between 1798 and 1801.[85]

In the 'Introductory Lecture' which Coleridge heard, and which Wordsworth subsequently knew intimately, Davy stressed the imaginative appeal of chemistry 'Even to persons of powerful minds, who are connected with society by literary, political, or moral relations'. Indeed, 'an acquaintance with the science that represents the operations of nature cannot be wholly useless. It must strengthen their habits of minute discrimination'.[86] Davy argued that 'all the different parts of the human mind are possessed of certain harmonious relations', and that 'The quantity of pleasure which we are capable of experiencing in life appears to be in a great measure connected with the number of independent sources of enjoyment in our possession'.[87] Wordsworth advanced this view, noting in his revisions to the Preface (1802) that:

> …the Poet, prompted by this feeling of pleasure, which accompanies him through the whole course of his studies, converses with general nature, with affections akin to those, which, through labour and length of time, the Man of science has raised up in himself, by conversing with those particular parts of nature which are the objects of his studies.[88]

Wordsworth's elaboration on the connective and neurological power which

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[85] Cf. *CN*, I, 1098n.

[86] Humphry Davy, 'A Discourse Introductory to a Course of Lectures on Chemistry, Delivered in the Theatre of the Royal Institution, on the 21st of January, 1802', in *The Collected Works of Sir Humphry Davy*, vol. II, *Early Miscellaneous Papers*, ed. John Davy (London, 1839), p. 326. Cf. Roger Sharrock, 'The Chemist and the Poet: Sir Humphry Davy and the Preface to *Lyrical Ballads*', *Notes and Records of the Royal Society of London*, 17: 1 (1962), 67: 'There is a strong resemblance between the aims of Wordsworth in the Preface and the purpose Davy set himself in his introductory lecture.'

[87] Davy, 'Introductory Lecture', pp. 314-15, 324. This influence worked both ways. The language of Wordsworth's original Preface (1800) also found its way into Davy's 'Introductory Lecture'. Davy's discussion of 'men collected in great cities, who are wearied by the constant recurrence of similar artificial pursuits and objects' (p. 325) was surely taken directly from a passage in the Preface where Wordsworth wrote about the causes 'now acting with a combined force to blunt the discriminating powers of the mind', and which he blamed on 'the encreasing accumulation of men in cities'. Cf. Preface to *Lyrical Ballads* (1800), in *Prose*, I, p. 128.

[88] Ibid., Preface to *Lyrical Ballads* (1802), p. 140.

'pleasure' possessed to unite the disciplines transformed poetry into 'the impassioned expression which is the countenance of all Science'.[89] He condoned the claims adumbrated in Davy's 'Lecture', and emphasised a shared cerebral aim to be the fundamental bond between the poet and the 'Man of science, the Chemist and Mathematician'. This consisted in the simple truth that 'We have no knowledge, that is, no general principles drawn from the contemplation of particular facts, but what has been built up by pleasure, and exists in us by pleasure alone'.[90] Since the poet 'thinks and feels in the spirit of human passions', Wordsworth dictated that the language of poetry cannot 'differ in any material degree from that of all other men who feel vividly and see clearly'.[91] In rhetoric reminiscent of Coleridge's letter explaining why Wordsworth backed the plans for Calvert's chemical laboratory, Wordsworth grandiosely divulged the claims to authority which made the poet special. Whilst 'The Man of science seeks truth as a remote and unknown benefactor', the 'unalienable inheritance' of the poet 'binds together by passion and knowledge the vast empire of human society, as it is spread over the whole earth, and over all time'.

For Wordsworth, 'passion' was the divine afflatus of poetry, the ultimate sympathetic fulfilment of the knowledge which gave pleasure to scientists and poets alike. Consequently, the poet had a specific ideological duty that the scientist could not perform, and which Wordsworth confirmed in a discourse transposed from its psychological roots in Locke, Condillac and Hartley. The poet's mission was to bring the sciences fully to life by carrying 'sensation', which was transmitted most effectively via passion, 'into the midst of the objects of the science itself'.[92] In their nocturnal life at Alfoxden and Grasmere, the Wordsworths and Coleridge had already proven the

[89] Ibid., p. 141.
[90] Ibid., p. 140.
[91] Ibid., p. 142.
[92] Ibid., p. 141.

value of a lunular lexicon which was ruled according to a pleasurable concatenation of impulses and memories. It undoubtedly served as a fine exemplar of a science which was 'carried alive into the heart by passion'.[93]

In what is both the climax to the second edition of the Preface in April 1802, and the fitting prose analogue to the type of crescent poetics that had evolved since 1797, Wordsworth proposed the same paradigm which acted upon the neuroses to maintain the dialogue between the poet and the scientist:

> If the labours of Men of science should ever create any material revolution, direct or indirect, in our condition, and in the impressions which we habitually receive, the Poet will sleep then no more than at present; he will be ready to follow the steps of the Man of science, not only in those general indirect effects, but he will be at his side, carrying sensation into the midst of the objects of the science itself. The remotest discoveries of the Chemist, the Botanist, or Mineralogist, will be as proper objects of the Poet's art as any upon which it can be employed, if the time should ever come when these things shall be familiar to us, and the relations under which they are contemplated by the followers of these respective sciences shall be manifestly and palpably material to us as enjoying and suffering beings. If the time should ever come when what is now called science, thus familiarised to men, shall be ready to put on, as it were, a form of flesh and blood, the Poet will lend his divine spirit to aid the transfiguration, and will welcome the Being thus produced, as a dear and genuine inmate of the household of man.[94]

The conditional voice of this passage belied the workings of a poetic practice with which Wordsworth had already grown comfortable, and a lifestyle that accounted for the microscopes, botany books, and prisms in his house. Indeed, the Preface (1802) itself was partly modelled as a response to Davy's inaugural chemistry lecture. Clearly, various sciences were already 'manifestly and palpably material' to the Wordsworths and Coleridge 'as enjoying and suffering beings'. Scientists such as William Herschel *had* created a 'material revolution' in 'the impressions which we habitually receive', the profound ramifications of which further chapters explore in depth. For Wordsworth, the language of discovery was expressible in the impressionistic terminology of eighteenth-century associationism. Pleasure was the somatic principle with which Wordsworth

[93] Ibid., p. 139.
[94] Ibid., p. 141.

allied poetic and scientific enterprises, not just in his Preface but in his own life.[95]

Celestial observation, in particular, put on 'a form of flesh and blood'. At Alfoxden and Grasmere it was 'a dear and genuine inmate of the household of man'. This vitalizing language weaved astronomy back into an aesthetic discourse which Wordsworth established in the Preface (1800), initially stating that he wished to keep the reader 'in the company of flesh and blood, persuaded that by so doing I shall interest him'.[96] The augmented Preface of 1802 expanded this democratic and humane 'company' to include sciences such as astronomy which affected 'our condition' and interaction with the world.

Tracing Wordsworth's and Coleridge's messianically conceived acts of 'transfiguration' is the resourceful work of this thesis which merges poetry with new empirical bodies of knowledge. However, this union has something much more creatively compelling to recommend it than mere source-hunting. Locating the elective affinities between the *Philosophical Transactions* and poetry stakes a return to the *evidence* of the imagination – to the inventions which give energy and shape to the language and forms of memories, poems, and philosophical ideas. Unravelling the bits of scientific code which have entered and entangled artistic visions is a way to unscramble the thought patterns and consciousness of the creators themselves.

The armature provided by the lunulae in the 'Letter' and the 'Soliloquy' structured Coleridge's emotional revolutions as moons served a variety of serious and comic purposes. His syntax was load-bearing; it registers the absence or presence of strain conceived as mimetic patterns of restraint and exertion. Similarly, the

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[95] For an account which interweaves Enlightenment philosophies of communal 'pleasure' with Wordsworth's Prefaces see Rowan Boyson, *Wordsworth and the Enlightenment Idea of Pleasure* (Cambridge: Cambridge University Press, 2012), pp. 109-21. Cf. Stephen Hatherell, '"Words and Things": Locke, Hartley and the Associationist Context for the Preface to Lyrical Ballads', *Romanticism*, 12: 3 (2006), 223-35.

[96] Preface to *Lyrical Ballads* (1800), in *Prose*, I, p. 130.

Wordsworths' complete 'transfiguration' of the night sky into a richly allusive tapestry of crescents offers an insight into the mind's imaginative pressure. They consistently honed a lunular set of memories in a therapeutic effort to 'cling closer to each other'. It was a sedimented and remedial grammar of the Moon and stars.

CHAPTER THREE

*

MILTON, WORDSWORTH AND THE ITALIAN ORIGINS OF THE 'ORBICULAR' SONNET

> But if (fie of such a but) you be born so near the dull-making cataract of Nilus that you cannot hear the planet-like music of poetry; if you have so earth-creeping a mind that it cannot lift itself up to look to the sky of poetry…thus much curse I must send you, in the behalf of all poets, that while you live, you live in love, and never get favour for lacking skill of a sonnet…

These lines, taken from the peroration to Philip Sidney's *A Defence of Poetry* (c. 1580), are indebted to the most important document in the Roman transmission of the Pythagorean theory of the music of the spheres from the Classical to the Christian world.[1] The *Somnium Scipionis*, preserved in manuscripts by Cicero and most probably by Macrobius, forms the conclusion of Cicero's *De Re Publica* (54-51 BC) and was the only part of that text known to be extant before 1820.[2] In Scipio Aemilianus' dream, his grandfather, Scipio Africanus the Elder, appeared to him and recounted how 'various harmonies' were fashioned by the mathematical interrelation of the nine celestial spheres in proportion to their movement and distance, with each planet emitting its own distinct tone based on its orbital revolution. This *musica mundana* 'cannot be perceived by human ears', Scipio Africanus continued, because 'Men's ears, ever filled with this sound, have become deaf to it…We find a similar phenomenon where the Nile rushes

[1] Philip Sidney, *A Defence of Poetry*, in *Miscellaneous Prose of Sir Philip Sidney*, ed. Katherine Duncan-Jones and Jan Van Dorsten (Oxford: Clarendon Press, 1973), p. 121. The allusion to Cicero is not noted in the Oxford edition.

[2] In 1820, Cardinal Angelo Mai, philologist and prefect of the Vatican Library, discovered up to a third of the *De Re Publica* in a palimpsest containing St Augustine's commentary on the Psalms (*Codex Vaticanus* 5757) thought to date from the fifth or sixth century after Christ. Cf. Cicero, *De Re Publica*; *De Legibus*, trans. Clinton Walker Keyes (1928; London and Cambridge, Mass.: Harvard University Press, 1977), pp. 9, 257; Leo Spitzer, *Classical and Christian Ideas of World Harmony*, p. 17.

down from those lofty mountains at the place called Catadupa; the people who live near by have lost their sense of hearing on account of the loudness of the sound'.[3]

In the late Renaissance, it was not the 'cataract of Nilus' that prevented people from attuning their ears to this Pythagorean-Platonic system, but rather the advent of Newtonian mechanical physics and Humean philosophical scepticism; indeed, these advances are generally heralded as its death-knell.[4] However, it is my contention that 'earth-creeping' empirical and philosophical methodologies, together with the mathematical laws that dictated them, did not spell the demise of 'the planet-like music of poetry'. Rather, by examining the relationship between Milton's political sonnets of the late 1640s and mid-1650s with those that Wordsworth wrote in 1802-1803, it is possible to see how one tradition of cosmological poetics was renewed in terms of another. The intersection of these two stellar backgrounds centres on the Tuscan poets of the Italian *cinquecento*, to whom Milton was most indebted for reimagining the music of the spheres in the shape of their sonnets. Tracing this lineage in full has never been done. Nor, in fact, has it been noted that it is the concept of *gravity* which makes this pathway most readily available. Close analysis of the symbiotic structures of Milton's and Wordsworth's sonnets recovers a faded literary-astronomical history that, through Milton, freshly connects the *cinquecento* with Wordsworth.

The 'Mystical dance' (V, 620) of the planets in Book V of *Paradise Lost*, whose 'harmony divine' (V, 625) pleased 'God's own ear' with 'charming tones' (V, 626), exercises exactly the same sense of taut and controlled movement which captivated Milton in the sonnets of Giovanni Della Casa, and Wordsworth in the minute manoeuvrings of Milton's own. The sonnets are the meticulous products of a 'rough'

[3] Cicero, *De Re Publica*, VI. 18. All text from Classical sources is cited by book and line number.
[4] For this widespread response see, by way of example, S.K. Heninger, Jr., *Touches of Sweet Harmony: Pythagorean Cosmology and Renaissance Poetics* (San Marino, Calif.: The Huntington Library, 1974), p. 17; Marjorie Hope Nicolson, *The Breaking of the Circle: Studies in the Effect of the "New Science" upon Seventeenth Century Poetry* (Evanston: Northwestern University Press, 1950), p. 106.

asprezza elegance, of syntactical 'mazes intricate, | Eccentric, intervolved, yet regular | Then most, when most irregular they seem' (V, 622-24).[5] This is not simply a trite analogy to map roughly the relationship between planetary and poetic kinesis. Far from it. Milton and Wordsworth radically reconceived the forces of prosodic regularity and licence, constraint and bondage, not as planetary motions imitative of a pervasive mythological idea, but yoked instead to the very real issues of personal freedom and national liberty that were at stake during the English Civil War and the Napoleonic conflicts in the aftermath of the French Revolution. Liberty – how it is destroyed and how it is defended – became the new, concentrated focus for orbital poetics.

Wordsworth's first published poem, which appeared in the *European Magazine* in March 1787, was the 'Sonnet, on seeing Miss HELEN MARIA WILLIAMS weep at a Tale of Distress'. His early enthusiasm for the form was unabated; he wrote over five hundred throughout his lifetime, meriting a collected edition of *The Sonnets of William Wordsworth* in 1838. In the 'Advertisement' to that volume, however, it was not sonneteers such as Williams and the loco-descriptive William Lisle Bowles, whose collections Wordsworth read at Cambridge,[6] which Wordsworth remembered as formative influences, nor even the work of Thomas Gray and the more abstruse Thomas Russell, which had appeared with mixed approval in the Preface to *Lyrical Ballads* (1800) and in one later and subsequently cancelled version of the 'Appendix on Poetic Diction' (1802).[7] Indeed, by 1838, Wordsworth had somewhat recast his historical appreciation for the genre, declaring that:

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[5] Unless otherwise specified, all quotation from Milton's *Paradise Lost* is from *PL*.
[6] Wordsworth read Williams' *Poems, in Two Volumes* (1786) in 1786-1787 and Bowles' *Fourteen Sonnets* (1789) and / or *Sonnets Written Chiefly on Picturesque Spots During a Tour* (1789) in 1789. Cf. Wu, *1770-1799*, pp. 18, 149.
[7] Preface to *Lyrical Ballads* (1800) and 'Appendix on Poetic Diction' (1802), in *Prose*, I, pp. 132-34, 163, 189 (n. 116). Cf. Markham L. Peacock, Jr., *The Critical Opinions of William Wordsworth* (Baltimore: The John Hopkins University Press, 1950), pp. 152 (n. 22), 425 (n. 225).

> My admiration of some of the Sonnets of Milton, first tempted me to write in that form. The fact is not mentioned from a notion that it will be deemed of any importance by the reader, but merely as a public acknowledgement of one of the innumerable obligations, which, as a Poet and a Man, I am under to our great fellow-countryman.[8]

It was not until May 1802 that Wordsworth 'took fire' following Dorothy's readings of Milton's sonnets, an experience which superseded in his memory earlier poetic stimuli.[9] Possibly conscious of this literary inversion, Wordsworth admitted in his Fenwick Note to the poem 'At Vallombrosa', first published in 1842 as one of the *Memorials of a Tour in Italy, 1837*, that:

> many will think that…I have spoken of the Author of Paradise Lost in a strain of panegyrick scarcely justifiable by the tenour of some of his opinions whether theological or political & by the temper he carried into public affairs in which unfortunately for his genius he was so much concerned'.[10]

Wordsworth's 'strain of panegyrick' for Milton, 'our great fellow-countryman', was born out of the impact his sonnets made upon him in 1802, the structural properties of which constitute the detailed study of this chapter. Wordsworth never forgot this obligation. The opening quatrain of the 'Dedication' in the collected edition of 1838 consolidates the standing of Miltonic architectural principles as Wordsworth's foremost guide for sonnet-writing:

> *Happy the feeling from the bosom thrown*
> *In perfect shape* (*whose beauty Time shall spare*
> *Though a breath made it*) *like a bubble blown*

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[8] 'Advertisement' to *The Sonnets of William Wordsworth. Collected in one volume, with a few additional ones, now first published* (London: Edward Moxon, 1838).
[9] *Fenwick*, p. 19. Dorothy could have read the sonnets in various editions of Milton's *Poetical Works* recorded in the Rydal Mount library catalogue, or indeed in Robert Anderson's *A Complete Edition of the Poets of Great Britain. Volume the Fifth. Containing Milton, Cowley, Waller, Butler & Denham* (London and Edinburgh, 1792-1795), pp. 169-72. Cf. Shaver, *Catalogue*, pp. 175-76; Wu, *1770-1799*, pp. 4-5. Coleridge acquired his set of Anderson by April 1796 and it would have been available to Wordsworth at Alfoxden. Wordsworth received his own set from his brother John in 1800. In the Fenwick note to 'Yarrow Visited', Wordsworth recalled that he was 'much pleased' to meet Anderson on his second tour of Scotland in 1814, 'and to acknowledge my obligation to his collection…in all probability, but for this same work, I should have known little of Drayton, Daniel, and other distinguished poets of the Elizabethan age and their immediate successors till a much later period of my life.' Cf. *Fenwick*, p. 28.
[10] *Fenwick*, p. 72. Cf. p. 177: 'The name of Milton is pleasingly connected with Vallombrosa in many ways. The pride with which the Monk, without any previous question from me, pointed out his residence, I shall not readily forget.'

For summer pastime into wanton air;[11]

The '*perfect shape*' of the '*bubble blown*', which is nicely captured in the expansive parenthetical '*breath*' of the middle two lines, is exactly attributable to the Miltonic imagination that sculpted Wordsworth's own sonnets in 1802.

What 'singularly struck' Wordsworth about Milton's sonnets in 1802 when he had them by heart, the poet recalled to Walter Savage Landor in 1822, was 'the style of harmony, and the gravity, and republican austerity of those compositions'.[12] Wordsworth's use of the word 'gravity' in this context has not excited critics; indeed, real investigation has not established precisely what *is* Miltonic about the first batch of sonnets Wordsworth wrote for *Poems, in Two Volumes* (1807), despite general scholarly agreement that they deserve that epithet.[13] Of course, Wordsworth did mean that he was impressed by the seriousness and authority of Milton's tone, and equally intended to register a feeling of poetic *pietas* when he spoke of his 'gravity'. What has gone unnoticed though, and which a reading susceptible to the astronomical connotations of 'gravity' opens up, are the remarkably sensitive ways that Wordsworth was in touch with the architectonic principles underpinning Milton's sonnets. The figurative moral force of Milton's achievement was the direct result of his intricate negotiation with the definite weight and attractive force – the ponderability, the relative heaviness, the tendency to downward motion – of the sonnet form. Milton's 'gravity, and republican austerity', his emphasis and his harshness, was something he inherited from the *asprezza* techniques of Pietro Bembo, Giovanni Della Casa and Torquato

[11] 'Dedication' to *The Sonnets of William Wordsworth*, B 2.
[12] WW to Walter Savage Landor, 20 April 1822, in *WL*, IV, p. 126.
[13] A notable exception is Thomas Hutchinson, who in his Appendix to his edition did not believe Wordsworth modified the structure of the archetypal Italian (Petrarchan) sonnet. Cf. *Poems in Two Volumes by William Wordsworth*, ed. with a note on the Wordsworthian sonnet by Thomas Hutchinson, 2 vols. (London, 1897), I, p. 217. The best critical starting places for Milton, Wordsworth and the sonnet remain: Raymond Dexter Havens, *The Influence of Milton on English Poetry* (1922; New York: Russell & Russell, 1961); Lee M. Johnson, *Wordsworth and the Sonnet* (Copenhagen: Rosenkilde and Bagger, 1973); Stuart Curran, *Poetic Form and British Romanticism* (Oxford: Oxford University Press, 1986).

Tasso, an Italian aesthetic style which fundamentally redistributed the normative weight of the Petrarchan sonnet.

This Italian artistic flair and bravura was galvanised in sixteenth-century poetic treatises. The ancient astronomical belief in the music of the spheres was translated into the notion that poetry itself produces a 'planet-like music'. Sidney's reference to the 'dull-making cataract of Nilus' has a strong Ciceronian resonance which he meant incisively to qualify the poet's role in the production of poetry. This allusion is thus hugely significant. The *Defence* culminates with Sidney's alignment of poets with the 'Learned men' who, according to Scipio Africanus, 'by imitating this harmony on stringed instruments and in song, have gained themselves a return to this region'.[14] Renaissance artists thus undertook an enormous responsibility; skilled work had the proficiency to echo an ancient cosmic order inherent in the musical patterning of the spheres, replicating in miniature the sempiternal beauty of the divine nature. If each poem was a literary microcosm capable of imaging the eternal perfection of creation, Sidney thereby raised the stakes of writing by conferring upon the poet the opportunity to play God.[15]

The endeavour to fulfil these conditions resulted in the concoction of a ubiquitous analogy between the components of prosody and celestial consonance which took an orbicular shape, the sphere, as the universal model for Godlike poetry. The 'planet-like music' that initially structured the cosmological postulates of Plato's *Timæus* and *The Republic* was transmuted into a framework that could be used to analyse Renaissance poetics by similar rules of number, rhythm, pitch and weight, as set out by Cristoforo Landino in his vernacular *Comento* (1481) on Dante and the *furor*

[14] Cicero, *De Re Publica*, VI. 18.
[15] Heninger, *Touches of Sweet Harmony*, pp. xiii, 3-5. Cf. Heninger, 'Sidney and Milton: The Poet as Maker', in Joseph Anthony Wittreich, Jr. (ed.), *Milton and the Line of Vision* (Madison: The University of Wisconsin Press, 1975), pp. 57-95.

poeticus.[16] This Platonic agenda was sustained in Antonio Minturno's *L'Arte Poetica* (1563) and in Richard Wills' *De Re Poetica* (1573), the latter of which maintained that 'The origin of metrical form is from God the Almighty Creator, in that He created this universe and whatever is contained in its sphere with a fixed design, as it were by measure; to such an extent that Pythagoras has asserted that there is a harmony in celestial and in earthly things'.[17] 'Measure' was the gauge which set balance, mass and magnitude, a harmony prescribing the limits to the Pythagorean universe even as it meted out the metre of a poem.

Following Wills, the 'Roundel or Sphere' was consequently the 'most excellent of all the figures Geometrical' for George Puttenham in his discussion 'Of Proportion Poetical' in *The Art of English Poesy* (1589) because its 'ample capacity' resembled 'the world or universe'. In poetical terms, this translated into a poem's ability to handle linguistic quantities and morphological patterns – an indication of its richly spherical poetic copiousness. Moreover, the sphere was 'most voluble and apt to turn', much like the fluctuations of a poem's rhythmical metrics; yet, it also conserved smoothness and was 'without any angle, or interruption', akin to the surface polish of well-wrought verse that conceals, even as it makes available, its elaborate texture. Puttenham's characterisation of the sphere as 'having no special place of beginning nor end, [which] beareth a similitude with God and eternity', united poetic and divine faculties within the parameter of the same iconic shape.[18] This was theologically congruent with the

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[16] Plato, *The Republic*, trans. Paul Shorey, 2 vols. (1935; London: William Heinemann, 1956), II, X. 616B-617C. Cf. Fernand Hallyn, *Le Sens des Formes: Études sur la Renaissance* (Geneva: Droz, 1994), pp. 173-75. Cf. p. 175: '…dans le monde, l'harmonie musicale n'est réalisée que dans la structure fine de la région sublunaire; la poésie, en revanche, maintient l'harmonie de sa création jusque dans chaque syllable de chaque vers'; Hallyn, 'Cosmography and poetics', in Glyn P. Norton (ed.), *The Cambridge History of Literary Criticism*, vol. 3, *The Renaissance* (Cambridge: Cambridge University Press, 1999), pp. 442-48.

[17] Richard Wills, *De Re Poetica*, trans. Alastair Fowler (Oxford: Basil Blackwell, 1958), p. 63; Clay Hunt, *Lycidas and the Italian Critics* (New Haven and London: Yale University Press, 1979), pp. 80-81.

[18] George Puttenham, *The Art of English Poesy (1589): A Critical Edition*, ed. Frank Whigham and Wayne A. Rebhord (Ithaca and London: Cornell University Press, 2007), p. 187. The significance of

privileged position the sphere attained in the philosophy of Jacob Böhme, together with its place in the astronomy of Johannes Kepler, who attested to its spiritual, poetic and scientific plurality in a letter to Michael Mästlin in 1595: 'In globo igitur est trinitas, Sphaericum, Centrum, Capacitas. Sic in mundo quieto: Fixae, Sol, Aura, sive aethra intermedia: Et in trinitate Filius, Pater, Spiritus'.[19]

The symbol of the sphere encapsulated the craft of early modern poetry as intimately bound and responsive to a 'planet-like' astronomical motion which operated in alliance with a deific rubric, giving dual impetus to the hexameral epics of Guillaume de Salluste Du Bartas and John Milton. *Prolusion II*, written when Milton was a student at Christ's College, Cambridge, was entitled 'On the Harmony of the Spheres' and stipulated that 'if [Pythagoras] held any doctrine of the harmony of the spheres…it was only as a means of suggesting allegorically the close inter-relation of the orbs and their uniform revolution in accordance with the laws of destiny for ever'. He concluded with a nod to Cicero and to Sidney, blaming 'our own deaf ears, which are either unable or unworthy to hear these sweet strains'. For Milton, Pythagorean science exemplified a consolidating and interactive unity that was 'allegorically' valuable; the beauty and regularity of each part of the cosmos was correspondent with the fitness of the whole and expressible in flawless song, a notion that could be transposed on to the careful syntactical arrangement necessary for good poetry. In fact, Milton thought poets should strive to recreate these harmonic ratios as a type of architectural *sprezzatura*. He believed such attempts would safeguard the 'secret mystery' by which poems achieved

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'volubility', in Puttenham's spherical meaning of the word, is the subject of Coleridge's poetic theory and the paradigm for his conversation in Chapter Four.

[19] For Böhme see Émile Boutroux, *Historical Studies in Philosophy*, trans. Fred Rothwell (1912; Port Washington, N.Y.: Kennikat Press, 1970), pp. 185-95, 232; Johannes Kepler, *Gesammelte Werke*, vol. XIII, *Briefe 1590-1599*, ed. Max Caspar (Munich: C.H. Beck, 1945), p. 35. The following English translation (which does not reference the original) is from Nicolson, *The Breaking of the Circle*, p. 132: 'The number THREE is represented in the sphere by the surface, the centre, the content; in the stationary world by the fixed stars, the sun and the ether; in the divine Trinity by the Father, the Son and the Holy Ghost'.

their power, keeping 'cloaked or veiled' the elusive and indispensable ways in which form recapitulates meaning. [20]

Milton's poetry in the early 1630s was receptive to this heavenly music as a way of tempering mental concord and discord, a Platonic wedding together of the mind's dispersive qualities. The 'chains that tie | The hidden soul of harmony' (143-44) are invoked at the dénouement of *L'Allegro* by the poet who wishes to be free of 'eating cares' (135) and 'Married to immortal verse' (137); they are reimagined by the poet of *Il Penseroso*, who calls on 'divinest Melancholy' (12) to 'unsphere | The spirit of Plato to unfold | What worlds, or what vast regions hold | The immortal mind' (88-91). In *Arcades*, 'the celestial sirens' harmony' (63) is a 'sweet compulsion' (68) that 'none can hear | Of human mould with gross unpurged ear' (72-73), a chorus of 'inimitable sounds' (78) which the Genius of the Wood aspires to 'hit' upon with his 'inferior hand' (77). More personally still, in the *Ad Patrem*, Milton cautions his father not to 'despise divine poetry' since 'Nothing shows our celestial beginnings, our heavenly seed, more clearly' (17-18). Indeed, in that Latin poem, Milton depicts his own 'fiery spirit' whirling 'round the hurtling spheres…singing' and flying 'among the starry choirs' (35-37).[21] John Carey has pointed out that the concept of the soul's affinity and return to the stars and planets is unambiguously derived from the *Somnium Scipionis*, a

[20] John Milton, *The Prolusions or Academic Exercises*, trans. Phyllis B. Tillyard, prefaces and notes Kathryn A. McEuen, in *Complete Prose Works of John Milton*, vol. I, *1624-1642*, ed. Don M. Wolfe (New Haven and London: Yale University Press, 1953), pp. 235-38. Cf. M.N.K. Mander, 'Milton and the Music of the Spheres', *Milton Quarterly*, 24: 2 (1990), 63-71; Clay, *Lycidas and the Italian Critics*, p. 52: 'The form, however, cannot act alone: unless it infuses the particular passive material which it was created to animate and exerts its molding force upon it, form cannot actualize its own potentiality. But the passive matter also does its own work in the creative process: it exerts a force to pull against its form and to constrain it to its proper mode of action. The dynamic interaction between these two principles is the cause of the distinctive life of everything.' The thematic and linguistic closeness of this passage to the model of 'dynamic interaction' contained in the Miltonic and Wordsworthian sonnets explored in this chapter, together with the Coleridgean view of polarity discussed in Chapter Four, is striking. Cf. Poulet, *Metamorphoses of the Circle*, p. 55: 'The spider web is not without rapport with the drop of dew and the soap bubble…it exists but a moment and is destroyed by the elements'. The dew-drop is the fundamental figure for this chapter, the spider-web for the following one.

[21] Unless otherwise specified, all quotation from Milton's shorter poems is from *CSP*.

text with which Milton was thoroughly familiar.[22] Evaluating the historical coincidence of this Pythagorean tradition of spherical harmony with its poetic, Italian-inspired counterpart in Milton and Wordsworth shows that Sidney's Ciceronian link between 'lacking skill' in the sonnet and being deaf to 'the planet-like music of poetry' was not an arbitrary classical or generic connection.

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The first incarnation of 'the planet-like music of poetry' which this chapter has traced is legendary, antique, amorphous and impossible exactly to date. The second is very real, can purposefully be dated to the winter of 1629, and is best approached through the most illuminating exposition Wordsworth ever delivered on the sonnet. Writing to the Reverend Alexander Dyce in 1833, who dedicated his *Specimens of English Sonnets* to Wordsworth in the same year,[23] the poet summed up his own reflections on the genre:

> It should seem that the Sonnet, like every other legitimate composition, ought to have a beginning, a middle, and an end — in other words, to consist of three parts, like the three propositions of a syllogism, if such an illustration may be used. But the frame of metre adopted by the Italians does not accord with this view, and, as adhered to by them, it seems to be, if not arbitrary, best fitted to a division of the sense into two parts, of eight and six lines each. Milton, however, has not submitted to this. In the better half of his sonnets the sense does not close with the rhyme at the eighth line, but overflows into the second portion of the metre. Now it has struck me, that this is not done merely to gratify the ear by variety and freedom of sound, but also to aid in giving that pervading sense of intense Unity in which the excellence of the Sonnet has always seemed to me mainly to consist. Instead of looking at this composition as a piece of architecture, making a whole out of three parts, I have been much in the habit of preferring the image of an orbicular body, — a sphere — or a dew-drop. All this will appear to you a little fanciful…[24]

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[22] John Carey, 'Milton's *Ad Patrem*, 35-37', *The Review of English Studies*, N.S. 15: 58 (1964), 180-84. Cf. Cicero, *De Re Publica*, VI. 15: 'For man was given life that he might inhabit that sphere called Earth, which you see in the centre of this temple; and he has been given a soul out of those eternal fires which you call stars and planets, which, being round and globular bodies animated by divine intelligences, circle about in their fixed orbits with marvellous speed.'

[23] Dyce's selection of sonnets included fifteen of Wordsworth's and, appropriately, all of those of Milton's which Wordsworth most enjoyed. Cf. Alexander Dyce, *Specimens of English Sonnets* (London, 1833), pp. 110-26, 190-204.

[24] WW to Alexander Dyce, 22 April 1833, in *WL*, V, pp. 604-5.

Dyce found the lines 'very interesting' and they dissuaded him from writing a prefatory essay to his volume, as he told Wordsworth by way of reply on 5 July, from the 'consciousness that I should be able to offer only *commonplace observations* ' by comparison.[25] These sentiments were hardly 'fanciful' and have not merited enough consideration. [26] So graphically, in fact, does Wordsworth divulge the special attributes of the Miltonic sonnet that this paragraph is absolutely vital to the recovery of its genesis.

The 'pervading sense of intense Unity' which characterised Milton's practice was something Wordsworth had long recognised. In a letter to Poole written from Germany in 1798, Coleridge recounted how Wordsworth, in a bid to convince the German poet Friedrich Klopstock of Milton's superiority to Richard Glover, 'explained his definition & ideas of harmonious Verse, that it consisted in the arrangement of pauses & cadences, & not in the even flow of single Lines'.[27] It is not the case, as stated by Jerome Mazzaro, that 'Wordsworth imposed on what he sees as the tripart Miltonic structure a second, "orbicular" or rounded movement'.[28] The letter to Dyce makes it quite clear that Milton deemed the syllogistic, tripartite assembly unfavourable in the first instance and that Wordsworth certainly did not foist an 'orbicular' construction on to him. Indeed, he inherited it through meticulous reading. Taking Milton's orbicularity seriously, by placing it in its proper astronomical context, renders it possible to reconstruct very minutely Wordsworth's understanding of his sonnets. Wordsworth's sensitivity to 'gravity' makes available his reception of Milton.

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[25] Ibid., p. 605, n. 1.
[26] Taylor Stoehr, 'Syntax and poetic form in Milton's Sonnets', *English Studies*, 45: 4 (1964), 289-90: '[Wordsworth] does not show exactly how and why the run-on quatorzain pleases…Dew-drops, overflowing octaves, tides, trespassing pentameters – the reader will find in almost any literary handbook or history. But he will find little to convince him that the enjambment of lines 8 and 9 in any of Milton's sonnets makes it a better poem'. This is not the case. Wordsworth is speaking very accurately by singling out the enjambment, which is vital to the sonnets' success.
[27] STC to Thomas Poole, 20 November 1798, in *CL*, I, p. 442.
[28] Jerome Mazzaro, 'Tapping God's Other Book: Wordsworth at Sonnets', *Studies in Romanticism*, 33: 3 (1994), 339.

The roots of Milton's 'pauses and cadences', his new-found structural unevenness that was anathema to established formal conventions, lie with his anti-Petrarchan volume of Giovanni Della Casa's *Rime e Prose* (Venice, 1563) which has the following inscription scribbled on the title page in his own hand: 'Jo. Milton, pre. 10d 1629. Dece'. Refusing to submit to the staid rules of 'the Italians', by which Wordsworth principally meant Petrarch, Milton took up with the Tuscans for the price of tenpence in December 1629 as this ownership label details.[29] The volume, now in the New York Public Library and contemporaneously bound together with Milton's copies of Dante Alighieri's *L'Amoroso Convivio* (Venice, 1529) and Benedetto Varchi's *Sonetti* (Venice, 1555), appeared in a sale catalogue in 1834 which noted that 'The corrections of the text, and the marks at particular passages, many of which are imitated in his poems, show that [Milton] had read the Sonnets of Casa with great attention'.[30]

Milton's acute scrutiny and replication of Della Casa in his own sonnets, together with the manner in which the Tuscan poet's innovations were taken up by Tasso in his 'Sonetti eroici', are at the core of what Wordsworth recognised to be his 'orbicular' drive. To the best of my knowledge the early part of this history of influence, though familiar to Miltonists, has not been incorporated into Romantic scholarship; it needs to be if we are to give real credence, by way of analytic examples, to Geoffrey Jackson's claim that Wordsworth's sonnet 'provides an excellent vehicle for rhetorically expressing an anger or indignation that almost seems to be logically driven by the powerful rhyme scheme and yet is restrained by the tightness of its

[29] Cf. STC, 'Introduction to the Sonnets', in *Poems, by S.T. Coleridge, second edition. To which are now Added Poems by Charles Lamb, and Charles Lloyd* (Bristol: Printed by N. Briggs for J. Cottle, 1797), p. 71: 'I have never yet been able to discover either sense, nature, or poetic fancy in Petrarch's poems; they appear to me all one cold glitter of heavy conceits and metaphysical abstractions.'

[30] Samuel Leigh Sotheby, *Ramblings in the Elucidation of the Autograph of Milton* (London, 1861), p. 124. Cf. William Riley Parker, *Milton: A Biography*, 2 vols. (Oxford: Clarendon Press, 1968), I, p. 61; II, p. 749, n. 14; Maurice Kelley, 'Milton's Dante-Della Casa-Varchi Volume', *Bulletin of the New York Public Library*, 66 (1962), 499-504.

"orbicular" container, so that the vehemence seems to be precisely balanced by the restraining forces'.[31] Implicit in Jackson's remark is the belief that the shape of Wordsworth's sonnets are well-suited to libertarian themes by virtue of the prosodic energies which they regulate and resist. To flesh this out it is imperative to trace the source of the genetic literary juncture between the conception of orbicularity as descriptive of the roundedness of the sonnet form and as indicative of a spherical or globular body receptive to attractive and repulsive energies comprehended as gravitative forces: a planet.[32] Crucially, this reveals that the logical development and metrical minutiae of Wordsworth's political sonnets register the planetary perturbations of their Miltonic and Tuscan forbears in their articulation of freedom.

Della Casa's innovations to the rhythms of the sonnet were designed to break up the Petrarchan hendecasyllable that was deteriorating into a series of monotonous linguistic and imagistic repetitions whilst keeping the same fundamental sequence in the rhyme scheme. [33] He accomplished this by constantly adjusting and attending to what he perceived as the sonnet's *gravità*.[34] Structurally, he broke up the verses (*rompimento dei versi*), permitting enjambment from quatrain to quatrain or quatrain to tercet, an outcome he modulated by using caesuras to create strong pauses within the lines. This was unorthodox, forbidden by Petrarch, and is the origin of the impression Wordsworth pinpointed in his letter to Dyce as operative in 'the better half' of Milton's sonnets: 'the sense does not close with the rhyme at the eighth line, but overflows into the second portion of the metre.' Linguistically, Della Casa artificially inverted the

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[31] Geoffrey Jackson, 'Appendix II: Wordsworth and the Sonnet', in *Sonnet Series*, p. 930.
[32] "orbicular, adj. and n.", *OED Online*, senses: A. 1a, 2a.
[33] C.P. Brand, *Torquato Tasso: A Study of the Poet and of his Contribution to English Literature* (Cambridge: Cambridge University Press, 1965), p. 140.
[34] G.M. Crescimbeni, in his *Istoria della Volgar Poesia* (1698; Venice, 1703-1731), pointed out that 'Della Casa…quando conosceva esser troppo ardui e difficili i battuti sentieri, per poco deviando dalla dolcezza del Petrarca a un novello stile diede principio, col quale le sue rime compose, intendendo sopra il tutto alla gravita.' This remark is quoted in Walter L. Bullock, 'The Lyric Innovations of Giovanni Della Casa', *Publications of the Modern Language Association of America*, 41: 1 (1926), 85.

natural word order of phrases and mixed verb cases (*antipallage*), deliberately accumulated elisions, employed parallelism, suspended the meaning by interpolating clauses which thereby increased the length of periods, and eschewed soft sounds and *sdruccioli* (lines closing in two unstressed syllables) in preference for harsh, aspirant consonants, a collocation of open vowels, and masculine line endings (often with double consonants before the last syllable).

Della Casa's sonnet 'O Sonno' ('To Sleep') showcases many of these techniques. The opening quatrain is exemplary: the lines are richly assonant and repetitive, full of internal caesuras and broken line endings that are replete with heavy, stressed consonants in the penultimate syllable; they force the voice to try to accommodate a disjunctive and wildly varying tempo with all the difficulties of pronouncing equally, or giving measure to, a hugely complex series of verbal elisions, expansions, inversions and pauses:

> O Sonno, o de la queta, humida, ombrosa
> Notte placido figlio, o de' mortali
> Egri conforto, oblio dolce de' mali
> Sì gravi ond'è la vita aspra et noiosa…[35]

The overriding sensation of reading Della Casa is one of difficulty sustained and overcome by being driven down hard through the pressure of the accumulating echoic clauses to the close. The *rompimento dei versi*, coupled with the strong, sonorous vowel sounds, act as insistent prosodic jolts which fuel poetic suction, a mechanism for verbal inertial drag. The initial hiatus after the apostrophic opening 'O Sonno,' demands a

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[35] Giovanni Della Casa, *Rime*, a cura di Giuliano Tanturli (Milan: Fondazione Pietro Bembo, 2001), Sonnet LIV, 'O Sonno', pp. 164-66. Cf. Introduzione, pp. xxiii-xxvi. For two good English introductions to Della Casa see Antonio Santosuosso, *The Bibliography of Giovanni Della Casa: Books, Readers and Critics, 1537-1975* (Florence: Leo S. Olschki, 1979), pp. 1-25; Giovanni Della Casa, *Giovanni Della Casa's Poem Book*, ed. and trans. John B. Van Sickle (Tempe: Arizona Center for Medieval and Renaissance Studies, 1999), pp. 1- 37. The best study of Della Casa's influence on Milton, and the one to which I am most indebted, remains F.T. Prince, *The Italian Element in Milton's Verse* (Oxford: Clarendon Press, 1954). Cf. John Milton, *The Sonnets of Milton*, ed. John S. Smart (Glasgow: Maclehose, Jackson and Co., 1921), pp. 26-38. Wordsworth wrote three sonnets 'To Sleep' for the 'Miscellaneous Sonnets' of *Poems, in Two Volumes* (1807).

pause twice the length of either of the others accorded in the opening line, both to facilitate the pronunciation of the fourth 'o' which comes immediately after the comma, and to emphasise the speed with which the line spills into the next with the rapidity of the assonant adjectives. A return to the traction of the 'o, o' pattern of the first line recurs in lines two and three ('figlio, o' / 'conforto, oblio') to moderate the pace generated from the persistent vacillation in vowel assonance between, predominantly, 'o' and 'a' in the first and fourth line and 'o' and 'i' in the second and third. The syntactical gathering of sense and parts as the sonnet progresses, achieved by the *asprezza* techniques which closely group lexical obscurities and make scansion awkward by the insertion of innumerable and unexpectedly placed commas and semi-colons, directly contributed to the crabbed Latinate diction of Tasso. It was the formative influence on Tasso's 'magnificent' style set out in the *Discorsi del poema eroico* (1594), which Milton knew well,[36] and in which he singled out Della Casa's 'O Sonno' as a supreme instance of the configuration of these effects.[37]

For Tasso, engineering this difficulty was the degree by which a poem realised greatness and sublimity. Grandeur was promoted by 'the length of the members and sentences', 'the prolonged suspension of meaning', 'Harshness in the combination [of sounds]', 'the running together of vowels', 'Double conjunctions', 'disjunction', and above all by 'the sound or clash of two consonants striking the ear at the end of the line'.[38] It is little wonder that Della Casa was held in such high esteem. Most significantly, the *Discorsi* concluded by eliding 'magnificence' in writing with a sensitivity and appreciation for *gravità*. Nothing 'makes for more gravity than placing the thing of most gravity at the end', Tasso declaimed, whilst 'sweetness of sound or

[36] Prince, 'The Influence of Tasso and Della Casa on Milton's Diction', *The Review of English Studies*, 25: 199 (1949), 222.
[37] Torquato Tasso, *Discourses on the Heroic Poem*, trans. Mariella Cavalchini and Irene Samuel (Oxford: Oxford University Press, 1973), pp. 143-44.
[38] Ibid., pp. 140-51.

rather tenderness and even-ness are generally adverse to gravity'. Again, 'It greatly increases gravity to dwell on something at length and make it almost pivotal'.[39] Deliberate obscurity, climax, and harshness of versification are the qualities that alter the compositional fabric of a poem which in turn affect the proportions of its concrete density. This reformulation of stanzaic equipoise was harnessed by Milton's disjunctive imagination to express the possibilities of poetic and political liberty; it was Della Casa's greatest bequest.

That which is 'pivotal' has an assigned and carefully pieced weight; the 'magnificent' style thus disrupts the fulcrum point of energy which is physically felt, tipping the lever of a poem. Obeying Tasso's strictures involves ascertaining which word, phrase or trope has 'most gravity'; each term and every figure must be weighed and accorded a different value. The *pondus* of a word, from the classical Latin stem *pendere* meaning 'to weigh, consider', is a measure of the influence it exerts judged as a mark of solemnity (*asprezza*) that is indissociable from the quantitative emphasis or load attached to the length of its pitch.[40] The weighing of a poem is determined by the outcome of the prosodic balance apprehended within it, as a forensic calculating of the stability of its language. The influential, the serious, the grave should not therefore be thought apart from the weighty (regarded as actual heft).

To corroborate this further, Tasso himself made the age-old mythic connection between the qualities subdued in God's universe and the poet's in terms which are attentive to both backgrounds of 'the planet-like music of poetry':

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[39] Ibid., pp. 184-87.

[40] "pondus, n.", *OED Online*, sense: 1. Cf. Charles Lock, 'Weighing Words: review article of Geoffrey Hill, *Collected Critical Writings*. Edited by Kenneth Haynes', *Essays in Criticism*, 60: 4 (2010), 392-93: 'Whatever is (etymologically) "heavy" we must be able to throw, or to pitch. To pitch a ball is to throw it in expectation that it will succumb to gravity: the art of pitching is to be able to anticipate where ball, or accent, will cease to be borne by the air alone. Only in so far as it is subject to gravity can a word (or any other thing) be pitched…Not to apprehend the *pondus* of a word is to abdicate from the task of thinking.'

> Yet the poem that contains so great a variety of matters none the less should be one, one in form and soul; and all these things should be so combined that each concerns the other, corresponds to the other, and so depends on the other necessarily or verisimilarly that removing any one part or changing its place would destroy the whole. And if that is true, the art of composing a poem resembles the plan of the universe, which is composed of contraries, as that of music is.[41]

The poem's delicate unity of 'form and soul' consummates a more than analogical relationship with the consonance of the universe; in the *Discorsi*, the forces governing the Solar System have the same essential valency to maintain poetic order in the face of disorder. The constitution of those forces preserves a record of the poem; the form acts as a footprint, a way into the poetic memory of its created soul. It is Wordsworth's remembered feeling for the particular ponderability of Milton's words which conditions his own political sonnet structure. The balance of emotion achieved in those sonnets conceals a deep gratitude to the aesthetic scales in which it was first registered and received.

The literary origins of Milton's orbicularity would have been familiar to Wordsworth. As an undergraduate at Cambridge, Wordsworth was taught the literature of the *cinquecento* by Agostino Isola, who made his students translate Ariosto, Tasso, Metastasio and Petrarch, and whose compendiums on poetry, which comprised sections analysing Italian metre, were preserved (and somewhat annotated) in the Rydal Mount library.[42] Indeed, in late 1802 and early 1803 Wordsworth was simultaneously writing his Miltonic sonnets whilst translating cantos from Metastasio and stanzas of Ariosto's *Orlando Furioso* (1516).[43] Three sonnets of Michelangelo that Wordsworth most successfully translated in 1805 and 1806, out of 'at least fifteen' tried in total, found

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[41] Tasso, *Discourses on the Heroic Poem*, p. 78.
[42] Agostino Isola, *Pieces selected from the Italian Poets* (1778; Cambridge, 1784); *The Gerusalemme Liberata of Tasso…To which is prefixed, A Compendious Analysis of Italian Metre*, 2 vols. (Cambridge, 1786). This latter volume is recorded to have '*MS. Notes by Mr. Wordsworth*' in Shaver, *Catalogue*, pp. 252-53. Cf. June Sturrock, 'Wordsworth's Italian Teacher', *Bulletin of the John Rylands University Library of Manchester*, 67: 2 (1985), 797-812.
[43] *P2V*, pp. 589-97.

their way into the 'Miscellaneous Sonnets' of *Poems, in Two Volumes*, despite the 'insurmountable' problems Wordsworth had in doing the work, which he attributed to the fact that 'so much meaning has been put by Michael Angelo into so little room'.[44] The difficulties Wordsworth recognised in Michelangelo were the result of the latter's style, which Glauco Cambon believes to possess at once 'experimental restlessness' and 'perilous elegance'. In fact, the 'slowing down effect of disarticulating caesuras…contiguous stresses and enjambment' were devices that 'Michelangelo used to even greater advantage than his sophisticated contemporary Monsignor Della Casa'.[45]

Wordsworth's 'notion of translation', as he told Lord Lonsdale in 1824, was sedulously to avoid '*strangeness* or *uncouthness* including harshness', together with 'attempts to convey meanings which as they cannot be given but by languid circumlocutions cannot be said to be given at all'.[46] Unfortunately, these very principles jarred glaringly with what was required to render Michelangelo's *asprezza*; the reality was the more '*uncouthness*' and parentheses he could have kept in the better. It is rather wonderful and deeply ironic that the best simulations Wordsworth managed of Della Casa and Michelangelo were not in his translations at all, but actually in his overtly

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[44] WW to Sir George Beaumont, 17 [and 24] October 1805, in *WL*, I, p. 628. One of these three translations, 'Yes! hope may with my strong desire keep pace', was printed alongside several of Southey's sonnets in Richard Duppa's *The Life and Literary Works of Michel Angelo Buonarroti* (London: John Murray et al., 1806), pp. 222-23: 'To my friends Southey and Wordsworth I am indebted for the translations that enrich my work'. Duppa (1770-1831) was a long-term friend of Southey's. Cf. Kenneth Curry, 'Uncollected Translations of Michaelangelo by Wordsworth and Southey', *The Review of English Studies*, 14: 54 (1938), 193-99.

[45] Glauco Cambon, *Michelangelo's Poetry: Fury of Form* (Princeton: Princeton University Press, 1985), pp. xii, 61, 175. Cf. Rudolph Carpanini, '"So much meaning…into so little room": Wordsworth's Translations of Michelangelo', in Giovanni Lamartino (ed.), *English Diachronic Translation: Atti del VII Convegno Nazionale di Storia della Lingua Inglese* (Rome: Ministero per i Beni Culturali e Ambientali, 1998), pp. 251-68.

[46] WW to Lord Lonsdale, 5 February 1824, in *WL*, IV, p. 250. Wordsworth was a good pupil of the *asprezza* style in his own sonnets. Cf. James Montgomery's unsigned review of *Poems, in Two Volumes* in the *Eclectic*, January 1808, in Robert Woof (ed.), *William Wordsworth: The Critical Heritage, Volume I: 1793-1820* (London and New York: Routledge, 2001), p. 211: '[The Sonnets] are exceedingly unequal, often obscure, and generally heavy in the motion of the verse: the lines too are frequently so intertwisted, that if they were not printed in lengths of the syllables, it would be difficult to break them into metre at all.'

English political sonnets that drew their shape and versification directly from Milton. The intense sense of nationhood – personal and public – which Milton and Wordsworth espoused was formally underpinned and propelled by the weight of the Italian Renaissance. Inspiration to conceive prosody as heavy, rhyme as a fetter, and rhythm as a resistant and reciprocating bond capable of expressing the perilous circumstances of English liberty, was shackled to Della Casa and Tasso. The complete autonomy and independence of their patriotism was in fact both less and more assured *because* it was guaranteed by the gravity of their collective Tuscan inheritance.

Wordsworth's predilection for the word 'orbicular' to describe the quality of Milton's roundedness was a happy choice; it resounds with the flavour of its epic ancestor and gestures with exactitude towards the sonnet's spherical properties. Wordsworth's 'orbicular body' was no ordinary sphere; he intended it to be a planet, cognisant with the forces at work within it. In an editorial note to his edition of *Paradise Lost*, Alastair Fowler remarks that 'The *world* (universe) is repeatedly referred to in *PL* as *orbicular*' (X, 381). In Book III, Uriel, beguiled by Satan, narrates how he witnessed the creation of the universe from the Sun, detailing the process in which the 'ethereal quintessence of heaven | Flew upward, spirited with various forms, | That rolled orbicular, and turned to stars' (III, 716-18). Conversely employed in Book X, Sin reminds her father, Satan, that it is better he rule in Hell, which is his own 'orbicular world', than serve in Christ's 'quadrature' (X, 381), a reference to the New Jerusalem.

Wordsworth's critique of Milton's sonnets draws felicitously from *Paradise Lost*. This is appropriate, but hardly surprising, given that Wordsworth had always been a very acute reader of that poem. One of the several copies of *Paradise Lost* he owned, the inaugural twelve-book octavo edition of 1674, was bound by Mary Wordsworth's brother, Henry, 'in the skin of some favorite animal', as the first front flyleaf details in a

note on 7 October 1850. It contains a pencil inscription below, on the same page and in the hand of William Wordsworth Jr., stating that the volume 'was also much read + referred to by my Father'.[47] In the *Memoirs* of his uncle, Christopher Wordsworth remarked that 'the Poet's father set him very early to learn portions of the works of the best English poets by heart, so that at an early age he could repeat large portions of Shakespeare, Milton, and Spenser'.[48] So continued a touching and important tradition in the poet's own household.

Orbicularity was the condition responsible for Wordsworth's opinion in 1802 that Milton's sonnets displayed 'an energetic and varied flow of sound crowding into narrow room more of the combined effect of rhyme and blank verse than can be done by any other kind of verse I know of'. That was, until he encountered the 'little room' into which Michelangelo packed his meaning. 'Roominess' was the Italian index Wordsworth recognised that linked Milton and Michelangelo, a measure of spaciousness that recovers a muted literary heritage going back to Della Casa. Crampness is pre-eminent in the sonnets Wordsworth liked best: 'to *Cyriack Skinner*; on his *Blindness*; *Captain or Colonel*; *Massacre of Piedmont*; *Cromwell* except two last lines; *Fairfax*, &c'.[49]

Whether or not this compression is strictly spherical or 'dew-drop' like, a subtle distinction Wordsworth makes in his letter to Dyce, is a vital critical question which has not been asked. For Johann Gottfried Herder, there was no difference between the two:

> The droplet is a sphere; in a sphere all parts move equally into harmony and order around one center. The sphere rests in itself; its centre of gravity is in the middle; its form is thus the most beautiful subsistence of similar substances,

[47] I have consulted Wordsworth's copy of John Milton, *Paradise Lost. A Poem, in Twelve Books* (London, 1674) as part of the online collection of the Wordsworth Trust manuscripts and texts available on the database *Romanticism: Life, Literature & Landscape*. Wordsworth's own signature appears on the title-page (ref no. 1995.R62).
[48] CW, Jr., *Memoirs of William Wordsworth*, I, p. 34.
[49] WW to [Lamb or STC?], November 1802, in *WL*, I, p. 379.

> which come into relation around this center and with equal forces balance one another.[50]

Whilst this equilibrium is accurate for the 'droplet' that rests on the flat surface of a leaf, Wordsworth's natural metaphor permits an alternative expansion of the sense which breaches the linguistic and mathematical limits pertaining strictly to the 'sphere'. A dew-drop which hangs pendulously from the tip of a leaf or branch gathers its energy, volumetrically, in its base; its centre of gravity is much lower. When Coleridge told Thelwall in 1801 that 'To call a poem *a Tear* is quite Italian – Milton was young enough to be your Son when he used the phrase "melodious Tear"', he tapped into a vital part of Milton's Italian legacy.[51] Not only were collections of elegiac verses often called *Lacrymae*, but "melodious Tear" is the closing phrase of the opening stanza of *Lycidas*, which is a 'broken sonnet'.[52] Wordsworth and Coleridge knew that Italian sonnets could be tears in a political as well as an elegiac context, a cresting poetic fusion of tension, grief and striving, a gravitative *Sturm und Drang* that could shift the centre of the sphere in the creation of a truly Copernican poetics.

Milton's sonnets which Wordsworth most admired exhibit both models of orbicularity: one that holds its dynamism round its midriff in an effort to balance opposing forces, the other which syntactically collects its vigour in the sestet as a result of being structurally unable to do so. This is represented in stages from left to right below:

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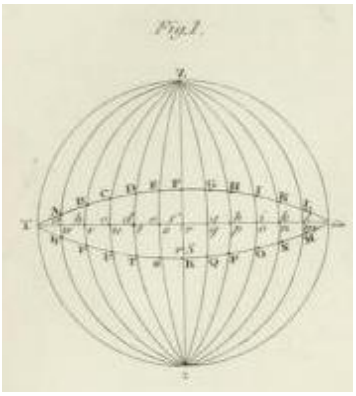
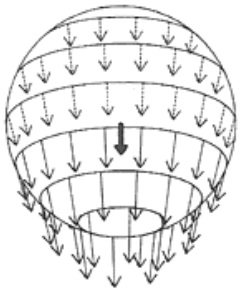
[50] Herder is quoted in Brown, *Shape of German Romanticism*, p. 30.
[51] STC to John Thelwall, 23 April 1801, in *CL*, II, p. 723.
[52] Keith Rinehart, 'A Note on the First Fourteen Lines of Milton's "Lycidas"', *Notes and Queries*, 198 (1953), 103. Cf. Editorial note to l. 14 of *Lycidas* in *CSP*, p. 244.







From sphere to dew-drop is a change of degree, not of kind.[53] No two orbicular bodies are equal; the magnetic powers of attraction and repulsion are differently nuanced within the compass of each of them. The gradations of every sonnet shape and respond to libertarian concerns uniquely. Distinguishing between 'a sphere — or a dew-drop' was Wordsworth's act of intelligent measuring, his response to the various fulcrum points in Milton's poems.

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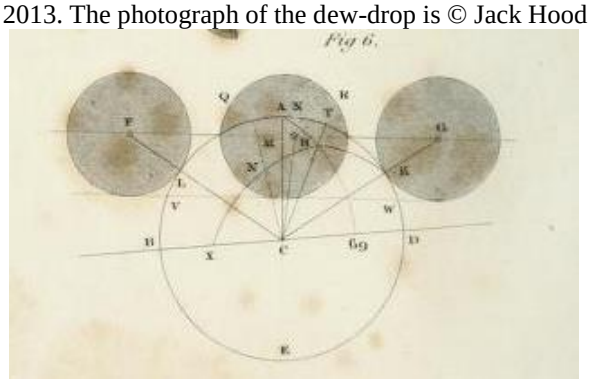
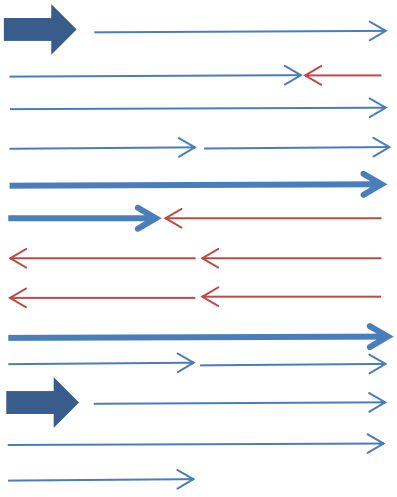
[53] The image on the far left, 'Fig. 1', and below, 'Fig. 6', are from plates in the long article on astronomy in Thomas Tegg (ed.), *The London Encyclopaedia of Science, Art, Literature, and Practical Mechanics*, 22 vols. (London, 1825-29), III, 'Astronomy', plates V and XI, between pp. 106-9. Wordsworth was given this set by Henry Crabb Robinson in 1841 and it covered all the major astronomical developments up to Herschel and Laplace. Cf. WW to HCR, 18 April 1841, in *WL*, VII, p. 190: 'It is a sort of Book which all my life I have wanted, but on account of expense never thought it right to buy.' The previous year the issue of copyright had made Wordsworth markedly cooler towards Tegg and encyclopaedias, for which see WW to Thomas Noon Talfourd, 16 February 1840, in *WL*, VII, pp. 17-18. The central image is reproduced courtesy of Paul Quincey, Principal Research Scientist at the National Physics Laboratory, from his article 'Why We Are Unmoved as Oceans Ebb and Flow', *Skeptical Inquirer*, 18: 5 (1994): <http://www.csicop.org/si/show/why_we_are_unmoved_as_oceans_ebb_and_flow/> accessed 12 March 2013. The photograph of the dew-drop is © Jack Hood 2011.



'Instead of looking at this composition as a piece of architecture, making a whole out of three parts, I have been much in the habit of preferring the image of an orbicular body'.

Commenting on *Ad Joannem Rousium* in *Writing the English Republic*, David Norbrook noted astutely that 'Milton enacted his desire for strenuous independence in his poem's metre, which imitated the relatively irregular forms of the Pindaric Ode but pushed them further than any previous neo-Latin poetry in the direction of metrical irregularity'.[54] The apostrophes with which Milton's political sonnets open reach back to similar invocations by Della Casa and Tasso like trumpet-blasts in the Horatian spirit, sounding out identical metrical challenges. Commencing the second quatrain with the second-person pronoun 'Thy' (5) was typical in classical prayer hymns, as was the use of the imperative form of the verb in the penultimate line,[55] both individually in evidence in 'On the Lord General Fairfax at the Siege of Colchester' and 'To the Lord General Cromwell', two of Wordsworth's favourites:

Fairfax, whose name in arms through Europe rings
Filling each mouth with envy, or with praise,
And all her jealous monarchs with amaze,
And rumours loud, that daunt remotest kings,
[5] Thy firm unshaken virtue ever brings
Victory home, though new rebellions raise
Their hydra heads, and the false North displays
Her broken league, to imp their serpent wings,
O yet a nobler task awaits thy hand;
[10] For what can war, but endless war still breed,
Till truth, and right from violence be freed,
And public faith cleared from the shameful brand
Of public fraud. In vain doth valour bleed
While avarice, and rapine share the land.



The punctuation of this text, which follows the fair copy in Milton's hand in The Trinity Manuscript, maps the planetary network of progressive and retrograde movements that pervade this sonnet and which I have identified with a series of stylistic force lines. Blue indicates forward or clockwise motion whilst red represents the reverse; thick blue

[54] David Norbrook, *Writing the English Republic: Poetry, Rhetoric and Politics 1627-1660* (1999; Cambridge: Cambridge University Press, 2000), p. 165.
[55] Kurt Schlueter, 'Milton's Heroical Sonnets', *Studies in English Literature, 1500-1900*, 35: 1 (1995), 127, 131. Cf. John H. Finley, Jr., 'Milton and Horace: A Study of Milton's Sonnets', *Harvard Studies in Classical Philology*, 48 (1937), 29-73.

arrows signify the heightened syntactical load that is concentrated in certain lines and which preserve narratological structure across the sonnet; they are integral belts of meaning without which the poem would not hold.

In the first quatrain, Norbrook rightly detected that 'The positioning first of "each mouth" and then of "jealous monarchs" as the object of "Filling" brings home the effect of Fairfax's name being crammed into unwilling monarchical mouths, of Parliamentary language overcoming regal discourse'.[56] This trick is intensified by the double conjunctions that begin lines three and four, emphasising 'each mouth' growing wider and wider as the poem copes with the remorseless expansion of clauses. Amidst the profusion, it is hard to discern how many mouths are chewing on 'envy' and how many are digesting 'praise'. The second line lacks the medial caesura that would apportion an equal share of either feeling to 'each mouth'. The latter phrase, 'or with praise', tempers (hence the red arrow) the flow of sense triggered by 'whose' in the opening line and carried into the sixth. Whether or not Fairfax is more praised than envied is not an issue that this line resolves. What this minute Tuscan modulation presages, though, is the weightier syntactical revolving situated at the sonnet's centre, which pits the Parliamentarians against the Royalists and leaves us in no doubt as to Milton's political allegiances.

'Though' in the middle of line six is the sonnet's axle (or Tasso's pivot), a crucial conjunctive adverb that introduces a challenge in the form of a two and a half line subordinate clause forcing a profound fluctuation in the government of meaning (as emphasised by the red arrows). In line seven, 'and' works to expand this new path, setting an oblique, oppositional course from the bearing taken by the same conjunction when it begins lines three and four and which is later reintroduced three times in the

[56] Norbrook, *Writing the English Republic*, p. 183.

sestet on its original tack. The regurgitative implications of lines six to eight constitute a more serious emetic than their slight forbear in line two, since the syntactical reversing which they complete is perfectly congruent with the words. In these lines, Milton depicts 'new rebellions' – Royalist uprisings in South Wales, Kent and from 'the false North', Scotland – as threats to Fairfax's 'unshaken virtue' or courage. The revolts are described at the precise moment in the sonnet when the sense pushes against the progressive weight of meaning that has been accumulating since the introduction of the relative clause 'whose' in the opening line, which refers to Fairfax's soldierly exploits, and enact their own posturing, a turning back in impersonation of Royalist scheming. These plots are made more plangent because their military permutations are envisaged in the retrograde of the verse, as a revolution in all its etymological glory. It is the Royalists that counter; Milton makes *them* the injudicious revolutionaries. The King is by implication the greatest insurgent. Monarchical restitution is backward-looking, not forward-thinking, and thus registers as poetically indigestible in the texture of the poem. Milton consigns the King to the outmoded past.

The enjambment of line seven is part of the prosodic display of Scotland's 'broken league', an imitative miscarrying of the Solemn League and Covenant which originally pledged Scottish support for the Parliamentarians in the First Civil War (1642-46) before a faction known as The Engagers decided to aid Charles I in the Second Civil War (1648-49) in exchange for his sponsorship of Presbyterianism in England. Such a *volte-face* is nicely captured in line eight by the oxymoron 'serpent wings' and by the obscure verb 'to imp'. As the note relays, 'When a falcon had broken wing-feathers its flight was impaired, and new feathers were therefore "imped" to the stumps of the old'. The incongruous choice of a serpent, not a falcon, is a hideous parody of effective anatomical grafting that should confer renewed liberty in the form

of flight. It is a graphic Frankensteinian reinvention of the Parliamentarian body politic which works efficiently through Fairfax as an organic diffusion over the first nine lines of 'arms', 'mouth', 'hand'. The Royalist pockets of resistance are base, abnormal, miscegenated and mythologically potent: they have recurring 'hydra heads'. Monarchical ability 'to imp' support is depicted as profoundly unnatural, rubbing against the grain of the poem. Lines six to eight are impish to echo this; they manifest an orbital drive that resists the principal tendency of the movement in an attempt to halt syntactically Fairfax's martial progress, and they further refuse to be penned in properly by the constraints of the octet. The cyclic texture of the sonnet's numerical middle expresses one kind of revolution in terms of another: Royalist insurrection *plots* a new elliptical course which threatens to alter the cosmic dynamic of the poem, and by implication the world which that poem describes. Milton puts Della Casa's *rompimento dei versi* to original use; caesural pauses forcefully articulate a battle for English freedom conceived in terms of Tuscan prosody.

In line nine, 'O' possesses the figurative power which the comma at the end of line eight fails to deliver, compounded by the connotative swing in meaning attached to 'yet', which reaches to recover the sonnet's syntactical past prior to line six. 'O' brings the sonnet full circle in shape and rhyme, bouncing off the axis 'though' in order to oppose it by returning focus to Fairfax, the heroic leader who 'ever brings | Victory home' (where the 'O' is heard less problematically in 'home') by cauterising the 'hydra heads' he fights. Fairfax's progression to 'a nobler task' is a Herculean labour of a different directive that demands a qualitatively distinct pause, the sonnet's single semi-colon, coming at the end of the ninth line as a grammatical nudge instinct with tacitly resetting the sonnet's sequence.

This sequential resolution is disturbed at the beginning of the eleventh line where the initial vocative cry of ‘Fairfax’ flashingly connects with what just possibly could be the hidden main verb of the poem if taken as a starting, startling spondee: ‘Till truth’. As a military command, the tonal urgency appears but for a second, only to be refolded into the normal syntactical matrix of the sestet. If Milton’s injunction to Fairfax was to ‘Till truth’ – to plough it, or at least to toil to produce it – this masks the more prominent temporal qualifier which, when read as an iamb, renders the expectant sense ‘Until truth’. The rhetorical question posed in line ten, ending in a comma rather than a question mark, coupled with the comma that isolates ‘Till truth,’ at the start of the following line, seems to encourage the iambic slippage into the spondee. This preserves the shuttling ambiguity between temporality (as a preposition) and militant decree (as a verb). Such a strategy laces the ‘orbicular body’ with contingency: the revolution at its core places the sonnet’s centre of gravity in the middle, like that pertaining to a true sphere, and yet the spondaic reading gestures winkingly towards a cumulative, dew-drop-like growth of meaning that is fully exemplified in the ‘Cromwell’ sonnet. Either way, the effect of linguistic plurality alerts the reader to the idea that tilling is part of the powerful agrarian vocabulary that recoups the pastoral for serious work, providing thematic union to the octet and sestet by marrying martial concerns to civic affairs.

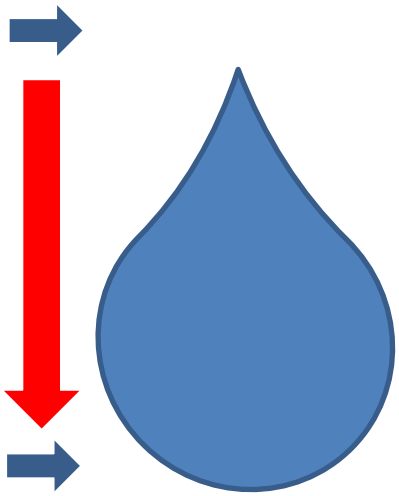
On some early vase reliefs, Hercules was shown to decapitate the Hydra with a sickle, not a sword, and it is this kind of cropping implement Fairfax needs in his ‘hand’ if he is the credible subject of line eleven, charged with the task of dispersing ‘right from violence’ during peacetime. Seeding change would then necessitate its own copiousness: the versatility to quash rebellions in the octet and to prune the heavy and consistently terminal ‘d’ of the sestet, twisting it from the remorseless tapping of a

marching drum to the rich and steady thumping of a spade. Spreading prosperity by tilling 'truth' was the pacifistic mission Milton hoped Fairfax would turn his attention to after the conflict (which never happened), the poet's pastoral solution for 'the land' that presently only cultivates 'avarice, and rapine'. The repetitive menace which locks 'war' with 'endless war' in the tenth line and 'brand[s]' 'public faith' on to 'public fraud', an impishly close phonetic match, needs a more nutritious linguistic breeding ground, a renewal akin to the 'better soil' Wordsworth advocated for his poems in the Preface to *Lyrical Ballads*.[57] This call for growth structurally gathers over the reticulated revolutions of the sonnet's consciousness, possibly and pendently reserving its nurturant instruction in a tight coffer at the start of the eleventh line. The sonnet's concluding second sentence, only a line and a half in length, performs an operational release from the cumulative, hanging energies of the first. It has no recognisable force lines; a dew-drop relinquishing its place, rather than its clutch, on a leaf.

'To the Lord General Cromwell' manifests an agrarian impulse even more strongly to urge the Protector to transcend the recent spoils of war and focus instead on 'new foes', the Parliamentary committee responsible for a stipendiary clergy in 1652, which confirmed the union of civil and religious power that Milton found deeply reprehensible:[58]

[57] Preface to *Lyrical Ballads* (1800), in *Prose*, I, p. 124.
[58] *CSP*, editorial note on p. 328: 'On 18 Feb. 1652 John Owen (formerly Cromwell's chaplain) and other Independent ministers laid certain proposals before [the Committee for Propagation of the Gospel]. They advocated an established church with clergy paid for by the state: dissenters were to be allowed freedom of worship so long as they did not promulgate doctrines contrary to fifteen fundamental tenets.'

Cromwell, our chief of men, who through a cloud
Not of war only, but detractions rude,
Guided by faith and matchless fortitude
To peace and truth thy glorious way hast ploughed,
[5] And on the neck of crowned fortune proud
Hast reared God's trophies and his work pursued,
While Darwen stream with blood of Scots imbrued,
And Dunbar field resounds thy praises loud,
And Worcester's laureate wreath; yet much remains
[10] To conquer still; peace hath her victories
No less renowned then war, new foes arise
Threatening to bind our souls with secular chains:
Help us to save free conscience from the paw
Of hireling wolves whose gospel is their maw.



The opening eight and a half lines rehearse Cromwell's military prowess with a barrage of mounting asseverations and achievements that eventually culminate with an uneasy zeugmatic finality: 'And Worcester's laureate wreath'.[59] The first quatrain reserves its principal verb for last, mimicking the sonnet's overall pattern which saves its arbitrating invocation for the concluding couplet. 'Hast ploughed' looks forward, out of the line it finishes, electively joining up with 'Hast reared' to confer a compressing Cromwellian agency over 'Darwen stream' and 'Dunbar field' that cannot be contained by individual verse units. Cromwell may have been an attentive farmer, labouring to preserve England as a safe heirloom by reaping 'peace and truth' in the name of God, but the price of routing the invading Scottish army in 1648 near Preston, which 'reared God's trophies', is that the 'blood of Scots' has 'imbrued' the land, staining it like the dyer's hand and, Milton hints, ultimately infecting it. This infection runs deep: 'resounds' provides qualification for up to three nominatives over lines seven to nine, creating a concatenation of competing sounds, a syntactical representation of the extent of military sullying.

[59] Cf. Michael R.G. Spiller, "'Per Chiamare e Per Destare": Apostrophe in Milton's Sonnets', in Mario A. Di Cesare (ed.), *Milton in Italy: Contexts, Images, Contradictions* (New York: Binghamton, 1991), pp. 477-88.

The six uses of the conjunction 'and' spanning the 'Fairfax' sonnet are here anaphorically compacted into lines three to nine. For the reader, this compression creates an escalating, epideictic build-up of clauses over the octet-sestet divide with no imperative verb to balance the apostrophe and steer the sonnet. It is an inspired piece of Tuscan interpolation and parataxis. The apposition of Cromwell's achievements divorces him from his main object; the poem's use of climax and inversion of natural word order ('Not of war only' / 'his work pursued'), generates its own 'detractions rude', an assembling syntactical 'cloud' akin to that which Milton says Cromwell has superseded in his victories, but which has also kept him from his true purpose, withheld for *gravità* until the penultimate line. Taylor Stoehr has observed that 'yet' in the first line of the sestet is 'somewhat perplexing'; it 'postpones the major structure of predication' because 'there is nothing for the 'yet' to coordinate, since the structure it begins is not of the same order as anything which has gone before'.[60] Indeed, the adverb does not introduce a late *volta* into the poem as expected but rather increases the anxiety and drive with which the sonnet searches for curtailment. In fact, 'yet' marks the tipping point in the poem; the relinquishing of its grammatical duties is evidence that the sonnet's energies are conspiring in its base. The 'yet' is passed over because a dew-drop is taking shape.

Wordsworth took exception to the concluding couplet and his mistrust of the form was long-lived, despite going on to employ it frequently himself. In 1831, he told William Rowan Hamilton, Irish Astronomer Royal, that 'Shakespeare's sonnets…are not upon the Italian model, which Milton's are; they are merely quatrains with a couplet tacked to the end; and if they depended much upon the versification they would

[60] Stoehr, 'Syntax and poetic form in Milton's Sonnets', 298.

unavoidably be heavy';[61] in 1836, Henry Crabb Robinson confirmed that 'Wordsworth does not approve of closing the sonnet with a couplet, and he holds it to be absolutely a vice to have a sharp turning at the end with an epigrammatic point';[62] in a letter of 1841 to Henry Taylor, Wordsworth reiterated his belief that the effect of double rhymes is 'weak' and 'will generally prove so in a Couplet at the close of a Sonnet'.[63] What Wordsworth disliked in the final 'paw' / 'maw' rhyme of the 'Cromwell' sonnet was its strangely Shakespearean *heaviness*, a shrewdly critical assessment of what he perceived as the unnatural, epigrammatic immediacy with which the dew-drop is rounded-off.[64] The sonnet is a single sentence and its only colon, at the end of the twelfth line, indicates a discontinuity of grammatical construction with that which precedes it; the couplet's independence, Wordsworth probably thought, endangered its organic progression.

However, this flourish need not have troubled him. There is consolation in the fact that he was analytically spot on; Milton adjusted the gravity of the sonnet along Tasso's ordinances, intending his couplet to pack all the weight as a way of signifying the insidiousness of a state-funded clergy. In *Shelley's Style*, William Keach observed an aspect of rhyme that is worth pondering in relation to the 'Cromwell' couplet: 'Rhyming poets must arbitrate among the arbitrary relations of thoughts and sounds a language offers, knowing that what they find can become (in Dr Johnson's terms) capriciously or despotically instead of productively binding, a constraint on rather than a constraint of meaning'.[65] Milton's rhyme has it both ways since it gains its effect

[61] WW to WRH, 22 November 1831, in *WL*, V, p. 455. Hamilton is a key figure in Chapter Six.
[62] HCR, *Diary, Reminiscences, and Correspondence of Henry Crabb Robinson*, ed. Thomas Sadler, 3 vols. (London, 1869), III, pp. 86-87.
[63] WW to Henry Taylor, 8 November 1841, in *WL*, VII, p. 258.
[64] Cf. Rosalie L. Colie, *The Resources of Kind: Genre-Theory in the Renaissance* (Berkeley: University of California Press, 1973), p. 103: '…the sonnet-world and the epigram-world had been, by an errant Newtonian magnetism, drawn together'.
[65] William Keach, *Shelley's Style* (New York: Methuen, 1984), p. 186.

precisely through being 'despotically' binding. In his note to the fourth issue of the first edition of *Paradise Lost* in 1688, Milton defended writing his epic in blank verse with reference to recovering ancient liberty 'from the troublesome and modern bondage of rhyming'.[66] Such 'bondage' is purposefully represented in the 'paw' / 'maw' couplet which enacts the 'secular chains' coupling Church and State. Milton feared freedom of speech would be taken away by 'hireling wolves' (the clergy) who were handed the power to ensnare 'our souls', and the very rhyme embodies this 'Threatening' prospect, epitomising the syntax of dissenting liberty under attack.

Milton had preached this message before; the couplet looks backwards and forwards in his polemical and poetical career. The *OED* gives the meaning of 'paw', when a transitive verb, as 'To touch or handle roughly, awkwardly, greedily, etc'.[67] A quotation from Milton's *Of reformation touching church-discipline in England* (1641) is adduced as an example: 'The obscene, and surfeted Priest scruples not to paw, and mammock the sacramentall bread, as familiarly as his Tavern Bisket.' A key quality of the animalism of the 'hireling wolves' is their rapacious gorging, and as a noun 'paw' is cognate with its Miltonic connotations as a verb. Milton makes the clergy the heretical iconoclasts; in the sonnet, gluttony allows them to guzzle 'free conscience' with all the predictable and digestible surety that the rhyming couplet guarantees. As a noun, 'maw' takes for its primary sense 'The stomach of an animal or (now Brit.
regional or humorous) of a person. Formerly also: spec. †the abomasum or fourth stomach of a ruminant (obs.)'.[68] 'Paw' is quite properly stuffed inside 'maw', much as the cosiness of the rhyme dictates. The tithe-paid clergymen may well have four stomachs befitting a herd of cows, but denying religious liberties on state money, Milton long maintained, was not humorous. In Book X of *Paradise Lost*, Eve tells

[66] Milton's note on 'The Verse', in *PL*, p. 39.
[67] "paw, v.", *OED Online*, sense: 1a and third quotation.
[68] "maw, n.1", *OED Online*, sense: 1a.

Adam that since they have been deceived by the serpent they must look for 'some relief of our extremes' (X. 976). Her suggestion is grim and hopeless:

> Childless thou art, childless remain:
> So death shall be deceived his glut, and with us two
> Be forced to satisfy his ravenous maw. (X. 989-91)

Fowler's editorial comment is useful: the syllabic discrepancy between the three lines 'is perhaps intended to mime first the deficiency of childlessness (l. 989 defective), then the glut denied to Death (l. 990 hypermetrical)'. Since the clergy were to be the sole adjudicators of orthodoxy, free speech was limited. Any surplus would be consumed in their 'ravenous maw', a 'glut' so great the sonnet's shape and rhyme struggle to contain it.

The bond which 'paw' establishes with 'maw' is an establishment one that Milton had explicitly railed against, in those terms, since 1641; in its selection of the rhyme word the couplet rules out every other available choice, silencing all heterodox and dissenting possibilities. If John Smart was right that Milton sent this sonnet to Cromwell himself 'to make its direct appeal', the 'two last lines' which displeased Wordsworth were absolutely integral to that venture's accomplishment.[69] In Carey's words, Milton's purpose was to steer Cromwell 'away from establishment altogether'.[70] Cromwell's correct interpretation of the poem would have involved the Wordsworthian recognition that the sonnet is uncommonly 'heavy', that in *political* terms the greedy rhyme impedes civic rights. Milton designed the weight of prosodic forces as a dew-drop, or more appropriately as a tear, to convey real urgency. Cromwell had authority to rend the 'secular chains' that were upsetting the fragile balance of power in society, mirrored in the constricted society of the sonnet. Wordsworth recognised the poem was ready to burst 150 years later.

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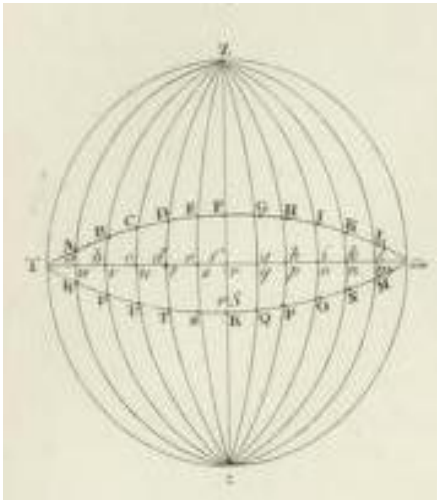
[69] Smart's editorial comment in *The Sonnets of Milton*, p. 89.
[70] *CSP*, p. 328.

'Bursting', however, is not a measure of the anger that shapes 'On the late Massacre in Piedmont', despite the circumstance it relates: the brutal killing of the Vaudois sect in 1655 at the direction of the Duke of Savoy regardless of an edict vouchsafing their practice of Protestantism. Milton was so outraged he wrote letters of protest to European heads-of-state and prepared 'an address to be delivered to the Duke…by Sir Samuel Morland, a special ambassador'.[71] Indeed, Cromwell took up the cause. Given the event symbolised the most atrocious denial of an ancient freedom to worship, might Cromwell not have been a Wordsworthian reader of his eponymous poem after all? Unlike that sonnet, though, 'On the late Massacre in Piedmont' harnesses its anger in a tight phalanx around the eighth line:

Avenge O Lord thy slaughtered saints, whose bones
Lie scattered on the Alpine mountains cold,
Even them who kept thy truth so pure of old
When all our fathers worshipped stocks and stones,
Forget not: in thy book record their groans
Who were thy sheep and in their ancient fold
Slain by the bloody Piedmontese that rolled
Mother with infant down the rocks. Their moans
The vales redoubled to the hills, and they
To heaven. Their martyred blood and ashes sow
O'er all the Italian fields where still doth sway
The triple Tyrant: that from these may grow
A hundredfold, who having learnt thy way
Early may fly the Babylonian woe.



The sonnet adumbrates a tripartite request to God split over three sentences which is spread as a stabilising stratum across the poem to mitigate the 'The triple Tyrant', the Pope: 'Avenge' (1), 'Forget not' (5), 'sow' (10).[72] The parenthetical positioning of 'O Lord' in the first line, which cedes precedence to the imperative verb 'Avenge', gives immediate pause in which to contemplate this opening's fundamental

[71] Ibid., p. 342.
[72] Stoehr, 'Syntax and poetic form in Milton's Sonnets', 299-300. Stoehr identifies 'three request structures' of 'demand, plea and prayer'.

dissimilarity from the two earlier sonnets already considered. The emotive call to action is predominant, though ultimately subdued by the specific mediator of vengeance; syntactical suspense does not nebulously accumulate in the epideictic fashion predicated of previous apostrophic address. For confirmation, the conjunction 'and' appears only once; asyndeton restricts perpetual expansion, whilst parallelism ('thy book record their groans' / 'thy sheep and in their ancient fold', 'Their moans' / 'Their martyred') creates a lattice of well-regulated meaning. This is bolstered by semi-colons in the fifth and twelfth line that marshal 'sway' – the kind which might mistakenly give too much weight to 'Avenge' and to 'The triple Tyrant'.

The verbs are sites of magnetic, lexical attraction. 'Avenge' can have all the 'slaughtered saints' as an object and yet also finely singles out for emphasis 'them…so pure of old'; 'Forget not' pulls the opening two quatrains together by taking as accusatives firstly 'them who kept thy truth so pure of old', who are to be redressed as well as remembered, and secondly the divine 'book' which must 'record their groans'. Retaliation is a part of the act of memorialisation, but it is of a theological order, not a violent one. The enjambment of the sestet makes God a sower, who must 'sow | O'er' the 'Italian fields' the 'martyred blood' of the Vaudois to ensure their perennial renewal as the seed of the Church – an evolution captured handsomely in the sonnet's eleven run-on lines: 'that from these may grow | A hundredfold'. This infinite and peaceful renewal is markedly dissimilar from that at the sonnet's axis.

The trochaic inversion of the first foot of the eighth line, 'Mother', is the harrowing cry of the helpless 'infant'. It is followed by four iambic feet that are punctuated by a syntactical cliff edge, the full stop after the fourth foot. The initial trochaic-iambic pattern creates its own tumultuous prosodic pressure which duplicates the hideous action of 'the bloody Piedmontese that *rolled*' (my italics). A duple stress is

conferred on ‘down’, the sonnet’s vortex and most powerful word, qualifying with unforgettable disgust the measure of physical force exerted.[73] This is the centre of energy; ‘down’ manifests the *gravità* which regulates the ‘orbicular’ armature of the whole sonnet.

The zeugmatic yoking of the following short sentence works to release the torque generated in the eighth line and prepares for the divine endorsement of the sestet by syntactically blessing ‘they | To heaven’ – an uplift carried by the strong iambic beat. ‘They’ is the site of the sonnet’s miracle; it is cognisant both with ‘Their moans’ and the Vaudois themselves, a slight anthropomorphic shift that bears witness to the proliferation of dynamic redoublings the line performs. Firstly, ‘redoubled’ personifies ‘Their moans’ in ‘The vales’ by way of close lexical positioning across the line ending, which places the Vaudois everlastingly in that part of the landscape from which they have been unceremoniously exterminated; secondly, it doubles ‘The vales’ in ‘the hills’, spreading their cry geographically as an act of echoic magnitude; finally, it carries ‘Their moans’ (and them) directly to ‘heaven’ as an act of God. That which is ‘redoubled’ reverberates, gathering rectitude in the sentence. By the end of the sonnet such amplification is projected to ‘grow | A hundredfold’ and ‘fly the Babylonian woe’. The spiritual sanction prophesied in futurity removes the reader from the proximate and present ‘woe’ of the eighth line. The Vaudois find residual strength in the promise of divine intervention, the grounds of which have been sown in the supramundane syntax of the sestet. This is the language of the ‘Lord’ Himself, and the release of energies that it shapes is a confluent display of His grace. The transfiguration of mankind’s volatile passions and hostility into deific forgiveness is enacted in the sphere of the sonnet’s completion.

[73] Ibid., p. 300.

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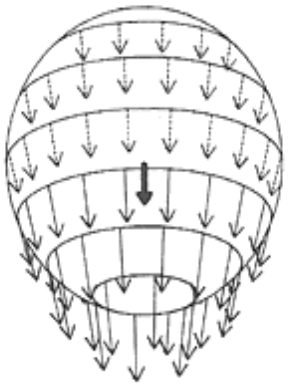
In a letter about epic poetry in 1815, Wordsworth told Southey that the fundamental problem with the *ottava rima* of Tasso's *Gerusalemme Liberata* (1581) was that 'The celestial movement cannot, I think, be kept up, if the sense is to be broken in that despotic manner at the close of every eight lines'.[74] What is particularly pleasing about this description is that it registers the influence of another, closely related poetic context. In the sonnets of Della Casa, Tasso and Milton, the eighth line exhibited a unifying 'celestial movement' that harboured distinctive remembrances for Wordsworth which he absorbed into his own productions of 1802. The 'Prefatory Sonnet' in the first book of *Poems, in Two Volumes* carefully displays its literary heritage, which in turn saturates the 'Sonnets dedicated to Liberty':

Nuns fret not at their Convent's narrow room;
And Hermits are contented with their Cells;
And Students with their pensive Citadels:
Maids at the Wheel, the Weaver at his Loom,
Sit blithe and happy; Bees that soar for bloom,
High as the highest Peak of Furness Fells,
Will murmur by the hour in Foxglove bells:
In truth, the prison, unto which we doom
Ourselves, no prison is: and hence to me,
In sundry moods, 'twas pastime to be bound
Within the Sonnet's scanty plot of ground:
Pleas'd if some Souls (for such there needs must be)
Who have felt the weight of too much liberty,
Should find short solace there, as I have found.



[74] WW to Robert Southey, 1815, in *WL*, III, p. 268. Notably, Galileo thought Tasso defective for precisely this reason. He considered Tasso's dislocated, allegorical style to resemble 'una pittura intarsiata, che colorita a olio', 'a picture made of inlaid wood, rather than one coloured in oils'. Galileo's Classical prejudice in favour of circularity, simplicity, order, and generic separation made Ariosto infinitely superior to his mind. Cf. Galileo Galilei, 'Considerazioni al Tasso', in *Le Opere di Galileo Galilei*, vol. 9, *Scritti Letterari*, ed. Antonio Favaro, Isidoro Del Lungo, V. Cernuti, G.V. Schiaparelli (Florence, 1899), pp. 63-148, 63; Erwin Panofsky, 'Galileo as a Critic of the Arts: Aesthetic Attitude and Scientific Thought', *Isis*, 47: 1 (1956), 3-15, 9. For the argument that it was Galileo's preconceived aesthetic notions of Classical unity and circularity which prevented him from assenting to Kepler's discovery of elliptical orbits, see Erwin Panofsky, *Galileo as a Critic of the Arts* (The Hague: Martinus Nijhoff, 1954), 16-25; Horst Bredekamp, 'Gazing Hands and Blind Spots: Galileo as Draftsman', *Science in Context*, 14 (2001), 153-92, 186.

Composed putatively in late 1802, the Tuscan-Miltonic roots of this poem are everywhere in evidence; Wordsworth is flexing his technical muscles in an act of poetic remembrance. In May that year, Dorothy recorded in her Grasmere Journal that 'Wm wrote two sonnets on Buonaparte after I had read Milton's sonnets to him'; on Christmas Eve, Dorothy noted she had been beside her brother 'ever since tea running the heel of a stocking, repeating some of his sonnets to him, listening to his own repeating, reading some of Milton's & the Allegro & Penseroso'.[75] The intimate sequencing of events which Dorothy's prose narrative relates is not short-hand; the stream-of-consciousness tone is confirmed by the range and *shape* of allusions in Wordsworth's sonnets that such juxtaposed activities fervently encouraged.

The 'Prefatory Sonnet' pays homage to Dorothy's readings aloud of Milton. The anaphoric conjunctions of the second and third lines have a shining ancestry in the sonnets to Fairfax (3, 4, 12) and Cromwell (5, 8, 9), as does the exquisite parallelism of the fourth line with its poised, medial caesura. Even the bees are in apposition, murmuring '*by* the hour' (my italics). 'Contented' plays a zeugmatic and Miltonic role, taking the 'Hermits' and 'students' for nominatives in its representation of the quatrain's growth. The octet lexically rehearses a well-learnt syntactic expansion: 'Cells' morphs into 'Citadels', 'Loom' into 'bloom', and 'High' into 'highest'. The eighth line is one of only three enjambments which confirm the sonnet's 'celestial movement'. The reservation of sense for *gravità* in the tenth and eleventh lines, which are also enjambed, ensures the octet hangs pendulously in expectation: ''twas pastime to be bound | Within the Sonnet's scanty plot of ground'.

Only at this late juncture can the reader retrospectively make sense of the cumulative natural descriptions that have preceded it. In both instances, the run-on lines

[75] 21 May and 24 December 1802, *Grasmere Journal*, in *DWJ*, pp. 101, 134-35.

liberate the meaning. It is clear that 'to be bound | Within' is not to be despotically bound or absolutely restricted, whilst the line unifying the octet and sestet enacts its own independence: 'In truth, the prison, unto which we doom | Ourselves, no prison is:'. The 'prison' is separated by a double comma or breathing space on either side; the colon is followed by another conjunction, belying its role as a grammatical stop-gap that should imprison the sense. In the eighth line, Wordsworth makes it very clear that to expect a *volta* is an act of readerly *misprision*: the enjambment he offers is a Miltonic, gravitative hinge which releases the sonnet from the 'prison' of its Petrarchan forbears. What Wordsworth says of Hartley Coleridge in another poem in this volume, 'To H.C., Six Years Old', expresses in the same linguistic terms the very structure of the 'Prefatory Sonnet': 'Thou art a Dew-drop, which the morn brings forth, | Not doom'd to jostle with unkindly shocks' (27-28).[76]

The sonnet withholds its 'scanty plot' in a truly 'pivotal' fashion, even as its meaning is tilled and weighed in another 'plot of ground' which recovers the politicised agrarian bent of Milton's most impassioned poems. The 'plot' is the poem's intrigue and also its garden of happenings; if this garden represents a 'scanty' score or supply of meaning, the plot's scantiness is also a figuration of its deficient size or compass, making the sonnet peculiarly self-aware of the shape of its sphere of agency. This idea is given significant credence by the rich implications of the 'narrow room'. In both its epistolary usages, one in November 1802 around the poem's supposed production, the other in October 1805 (reincarnated as a 'little room'), Wordsworth used the phrase to praise the harmony and tightness – the orbicularity – of Milton and Michelangelo. This is not coincidence. Wordsworth would definitely have been aware of the Italianate, etymological roots of his opening line. The Italian for 'room' is *stanza*, a 'standing,

[76] For the significance of Wordsworth's allusions to Andrew Marvell's 'On a Drop of Dew' in both his poems to Hartley and the 'Ode', see Newlyn, *Coleridge, Wordsworth and Allusion*, pp. 146-52.

stopping place';[77] Wordsworth's 'narrow room' is imagined 'to be bound | Within' a Tuscan-Miltonic sonnet tradition that confers greater stanzaic autonomy than its Petrarchan counterpart.

Della Casa, Tasso, Michelangelo and Milton are several of the 'Souls' who 'have felt the weight of too much liberty' and have found 'short solace' in prosodic tinkerings with the near-perfect economy of the form. The sonnet is 'no prison' because it is an 'orbicular body' that has learnt its trade in the school of Della Casa, whose lineage it fully engrafts into the texture and shape of the verse. The 'weight of too much liberty' is a thematic concern of the second sonnet series, and the 'Prefatory Sonnet' is a cynosure, pondering the responsibility of those relations: it is a dew-drop whose keen alignment of contours and syntax provides the Italian structure for the collection's enunciation of freedom.

Having listened to Dorothy's readings of Milton in May 1802, Wordsworth 'took fire' and in a Fenwick note recalled producing 'three sonnets the same afternoon'. He had been 'particularly struck', as he also told Dyce, 'with the dignified simplicity and majestic harmony that runs through most of them – in character so totally different from the Italian, and still more so from Shakespeare's fine Sonnets'. Of these, the only one that has been identified is 'I griev'd for Buonaparte'.[78] The 'Prefatory Sonnet' is surely another good contender. That said, what is most intriguing is that the 'Bonaparte' sonnet is a real puzzle. It lacks fundamental Miltonic traits that the 'Prefatory Sonnet' exhibits, even though it was indubitably inspired by the 'dignified simplicity and majestic harmony' of those poems:

[77] "stanza, n.", *OED Online*, etymology and senses: 1, 2.
[78] *Fenwick*, p. 19. Cf. Moorman, *Wordsworth: The Early Years*, pp. 570-72.

I griev'd for Buonaparte, with a vain
And an unthinking grief! the vital blood
Of that Man's mind what can it be? What food
Fed his first hopes? What knowledge could *He* gain?
'Tis not in battles that from youth we train
The Governor who must be wise and good,
And temper with the sternness of the brain
Thoughts motherly, and meek as womanhood.
Wisdom doth live with children round her knees:
Books, leisure, perfect freedom, and the talk
Man holds with week-day man in the hourly walk
Of the mind's business: these are the degrees
By which true Sway doth mount; this is the stalk
True Power doth grow on; and her rights are these.

When Coleridge told William Sotheby in September 1802 that this sonnet, which had just appeared in the *Morning Post*, 'comes upon my Feelings, as in the spirit of the best of Milton's Sonnets',[79] I suspect he was thinking particularly of 'On the late Massacre in Piedmont', which Dorothy almost certainly read out. It is a change in 'degrees' in the Wordsworthian imagination from the sestet of Milton's to his own (my italics):

O'er all the Italian fields where still doth *sway*
The triple Tyrant: that from these may *grow*
A hundredfold

Wordsworth's association of Napoleon with a dangerous Miltonic 'Sway' that inhibits 'the stalk | True Power doth grow on' is carried into the consecutive sonnet, 'Calais, August 15th, 1802', where he again has 'an established sway' (3) and 'The triple Tyrant' is reimagined as inimical to 'joy' (11): 'Happy is he, who, caring not for Pope…' (12). Indeed, in the twenty-second sonnet, 'October, 1803', Wordsworth quite seriously 'measure[d] back the steps which I have trod' (11) when he identified Napoleon as 'one Man, of Men the meanest too!' (2) who was 'Rais'd up to sway the World' (3).

[79] STC to William Sotheby, 19 September 1802, in *CL*, II, p. 869.

However, the 'true Sway' that the 'Bonaparte' sonnet refuses to endorse is any kind of 'celestial movement' that would unify the octet and sestet as an 'orbicular body'. Instead, it enacts the incarcerating 'bondage' (1) described in the nineteenth sonnet, 'There is a bondage which is worse to bear', that is even more horrifying than being 'Pent in, a Tyrant's solitary Thrall' (3). Indeed, for one who wears 'Their fetters in their Soul [sic]' (6), like Napoleon, Wordsworth's disjunctive imagination is here at its most brilliant. The eighth line ends with an imprisoning full stop; a *volta* is obviously intended. Wordsworth is quite clear that 'Thoughts motherly, and meek as womanhood', together with Wisdom's 'children' in the following line, must not have the slightest syntactical relation with the eighth line of the 'Piedmont' sonnet: 'Mother with infant down the rocks. Their moans…'. The *volta* is a protective barrier, much like the English Channel was to Wordsworth when he surveyed 'The Coast of France' (3) from Dover in 'September, 1802', the eleventh in the sequence, keeping apart thoughts which are 'Drawn almost into frightful neighbourhood' (4).

Crucially, the 'Bonaparte' sonnet is the only one of the whole series which has an octet consisting of a Petrarchan and a Shakespearean quatrain, although this does not seem to have excited critics. Its significance is in fact vital when it is remembered, in the words of Nicola Trott, that 'In 1794, Wordsworth had identified with Milton as a republican at odds with his country. From 1802, the enemy is the foreign bogeyman, Bonaparte, and Milton becomes the embodiment of patriotic values now debased'.[80] At the moment his mind was at its most Miltonic it was the *debasement* of those values which Wordsworth represented. As he remembered for the Fenwick note, Milton's sonnets were 'in character so totally different from the Italian, and still more so from

[80] Nicola Zoe Trott, 'Wordsworth, Milton and the inward light', in Lisa Low and Anthony John Harding (eds.), *Milton, the metaphysicals and romanticism* (Cambridge: Cambridge University Press, 1994), p. 124. Cf. Nicholas Roe, 'Wordsworth, Milton, and the Politics of Poetic Influence', *The Yearbook of English Studies*, 19 (1989), 112-26.

Shakespeare's fine Sonnets'. The rhyme scheme of the octet and the strong *volta* are syntactical signals of discord and chaos, of Napoleon's *denial* of liberty. The inharmoniousness is absolutely purposeful. The exasperation of the anaphoric 'what' is reflected in the rhymes of the epiplectic questions. The first 'bb' rhyme misses its mark; 'food' refuses to do 'blood['s]' work, whereas 'good' hits 'womanhood' full on. The careful diurnal rhythms of life that the sestet creates to simulate 'perfect freedom' are to be seen as wholly separate from the wildly investigative and exclamatory mode of the octet. Wordsworth meant there to be no union between 'the vital blood | Of that man's mind' and 'the mind's business'. The sonnet demonstrates its Miltonic inheritance in its artful rejection of Tuscan principles. The horror of Napoleonic foreign policy is an imposition on Wordsworth's 'orbicular' prosody. This is a dew-drop which really *has* 'felt the weight of too much liberty' – and burst; the shape of 'unthinking grief!' and greed, not grace.

In *Poems, in Two Volumes,* 'true Sway' is a measure of a sonnet's orbicularity, the degree to which it takes up its Tuscan legacy into itself. Wordsworth found this structure profoundly liberating and, in some sonnets, he rejected it to signal a tyrannous denial of essential freedoms – an adjustment of *gravità* that aimed to remove it completely. Possibly the most exquisite 'Sway' of the entire collection, although more minute than most, figures in the fifteenth, 'Great Men have been among us':

Great Men have been among us; hands that penn'd
And tongues that utter'd wisdom, better none:
The later Sydney, Marvel, Harrington,
Young Vane, and others who call'd Milton Friend.
These Moralists could act and comprehend:
They knew how genuine glory was put on;
Taught us how rightfully a nation shone
In splendor: what strength was, that would not bend
But in magnanimous meekness. France, 'tis strange,
Hath brought forth no such souls as we had then.
Perpetual emptiness! unceasing change!
No single Volume paramount, no code,
No master spirit, no determined road;
But equally a want of Books and Men!

Right at the heart of the collection are three sonnets, of which this is the second, that mention Milton by name. If the series is a sphere, Milton is its centre of gravity. Indeed, he is a star constellated throughout the volume, a reminding and restorative presence who 'Taught us how rightfully a nation shone | In splendor' (7-8). In the preceding sonnet, 'London, 1802', whose apostrophic invocation of 'Milton!' (1) implicates that poet's addresses to 'Fairfax' and 'Cromwell', Milton's 'soul was like a Star and dwelt apart' (9), a separation nicely conditioned by the firm *volta*. The sestet is elegiac, as Lee Johnson noted, in contrast to the nuptial tone of the opening lines of the first sonnet, 'Composed by the Sea-side, near Calais, August, 1802': 'Fair Star of Evening, Splendor of the West, | Star of my Country!' (1-2).[81] Milton *is* Wordsworth's 'Bright Star!' (8); he provided the *copia* for the 'orbicular' structures that 'hangest, stooping' (3), with which Wordsworth charged the changing emotions of his sonnets.

'Great Men have been among us' is rather special because it displays a mastery of Miltonic *techne* at its most dazzling. The run-on octet is quite beautiful: 'what strength was, that would not bend | But in magnanimous meekness.' The line gathers its moral integrity through the humility of the enjambment and the exquisitely lilting trochaic cadence of the 'bend | But' that culminates with an aptly falling, feminine

[81] Johnson, *Wordsworth and the Sonnet*, p. 49.

ending in ‘meekness’. This is the very *pitch* of goodness and gentility; a line so well-weighted, so aware of its shifting *gravità*, that it outdoes Milton. It supersedes even a similar moment in ‘Calais, August 15th, 1802’, where Wordsworth again used the supple frame of the octet-sestet divide to good effect:

> and I have bent my way
> To the Sea-coast, noting that each man frames
> His business as he likes. (7-9)

The reason why the former is superior is because it achieves its ‘meekness’ between ‘bend’ and ‘But’, shaping its submissive meaning ingeniously and delicately into the precise curve of the line, which cannot quite be said of the ‘bent…way’ of the latter. The onset of the following part of the ninth line, ‘France, ’tis strange’, sounds an incongruous key change (befitting the *volta*) in the sonnet’s prosody. The several exclamations and caesuras which follow never regain the magnanimity of the republican spirit of the extended octet. The poem signals the gap between those that ‘call’d Milton Friend’ and ‘France’ with a shortened sestet whose very rhythms ‘brought forth no such souls as we had then.’

At the close of the Fenwick note to ‘Written in London, September, 1802’, Wordsworth made an interesting admission which he meant to stand broadly for the ‘Sonnets dedicated to Liberty’:

> It would not be easy to conceive with what a depth of feeling I entered into the struggle carried on by the Spaniards for their deliverance from the usurped power of the French. Many times have I gone from Allan Bank in Grasmere Vale, where we were then residing, to the top of the Raise-Gap, as it is called, so late as two o’clock in the morning to meet the carrier bringing the newspaper from Keswick. Imperfect traces of the state of mind in which I then was may be found in my tract on the Convention of Cintra as well as in these Sonnets.[82]

I believe there is one passage in *The Convention of Cintra* (1809) that shows not merely ‘Imperfect traces’ of Wordsworth’s mind, but rather a certifiable genetic match with the

[82] *Fenwick*, pp. 28-29.

perfect lines of 'Great Men have been among us', which lived on in his psyche with an inconceivable 'depth' of social and political feeling:

> …for the mind gains consciousness of its *strength* to undergo only by exercise among materials which admit the impression of its power, – which grow under it, which *bend* under it, – which resist, – which change under its influence, – which alter either through its might or in its presence, by it or before it…these are the qualities in action and in object, in image, in thought, and in feeling, from communion with which proceeds originally all that is creative in art and science, and all that is *magnanimous* in virtue.[83]

The poetic counterpart to this, which fully 'admit[s] the impression' of Milton's 'orbicular' impulse, is surely: 'what strength was, that would not bend | But in magnanimous meekness'. When Wordsworth came to put that line into his libertarian prose narrative some years later, he did not forget the ordering of those qualities: 'strength', 'bend', 'magnanimous'. As he said in the Preface to *Lyrical Ballads*, 'there will be found something [in the metre] which will greatly contribute to impart passion to the words, and to effect the complex end which the Poet proposes to himself'.[84] Milton's sonnets provided this 'something' in spherical forms that powered radical 'passion', a *techne* which imitated trauma. *The Convention of Cintra* encapsulated an 'orbicular' poetic 'passion' that made good on Wordsworth's claims for emotive language in the Preface. It was the finest astronomical mixture, via Della Casa and Tasso, of 'all that is creative in art and science'. Wordsworth's consciousness of this 'true Sway' was magisterially reflected in the intricate growth of his own Miltonic sonnets as spheres and as dew-drops.

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[83] *The Convention of Cintra* (1809), in *Prose*, I, p. 291. Italics mine.
[84] Ibid., Preface to *Lyrical Ballads* (1800), p. 148. Cf. *The Convention of Cintra*, p. 295: 'if…the life in the soul, has been directly and mortally warred against; if reason has had abominations in her inmost sanctuary; – then does intense passion, consecrated by a sudden revelation of justice, give birth to those higher and better wonders [power and virtue] which I have described.'

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Readers of *Poems, in Two Volumes* may have noticed the remarkable profusion of the word 'yet' in the first fourteen 'Sonnets dedicated to Liberty'; it does not feature once in the subsequent twelve:

1. yet well pleas'd to rest, (4)

3. Yet despair
I feel not: happy am I as a Bird:
Fair seasons yet will come, and hopes as fair. (12-14)[85]

6. Yet shall some tribute of regret be paid (11)

8. Yet die not; do thou
Wear rather in thy bonds a cheerful brow: (6-7)

9. Yet silent as a woman fearing blame; (4)

10. Europe is yet in Bonds; but let that pass, (9)

11. yet what power is there!
What mightiness for evil and for good! (7-8)

Strength to the brave, and Power, and Deity,
Yet in themselves are nothing! (11-12)

14. and yet thy heart
The lowliest duties on itself did lay. (13-14)

The word appears ten times in the 'narrow room' of these eight poems and in the last example refers directly to Milton, who bears the cumulative weight of their power in what is the most effacingly attractive example. 'Yet' brings that sonnet full circle; the meekness of the conclusion bends the bold, authoritative cry of the first line: 'Milton! thou should'st be living at this hour' (1). The 'free' (11) spirit of Milton was directed to bring peace in the form of 'manners, virtue, freedom, power' (8), not violence.

[85] This sonnet, which begins 'Jones! when…', is trying to have the best of two Miltonic worlds: the apostrophic immediacy of a political cry for national stability and a more personal revelation of a struggle for independence couched in a startling subclause similar to 'When I consider how my light is spent'. Written in 1802 but reflecting on the situation in France over a decade previously, the phrase 'Jones! when' is itself 'sole register' (9) of a republican Miltonic voice in that poem with which Wordsworth casts back in flashes to happier times to protect future 'joy' (5).

In his own sonnets on ‘Fairfax’, ‘Cromwell’ and ‘Cyriack Skinner’, three of which Wordsworth was very fond, Milton gave ‘yet’ a privileged and adhesive pulling power that indicated the kind of ‘orbicular body’ he was crafting:

> O yet a nobler task awaits thy hand; (9)
>
> yet much remains
> To conquer still (9-10)
>
> Yet I argue not
> Against heaven’s hand or will, nor bate a jot (6-7)

‘Yet’ was one of Milton’s touchstones and a scion of liberty; it was a *revolutionary* word that tried to recover a halcyon past that had faded, even as it swung aspiringly forward to salvage a new poetic freedom. Wordsworth grafted ‘yet’ into his own poems to gain a Miltonic purchase, to spark a tiny ‘orbicular’ traction that might govern a sphere or dew-drop. This interplay operates on the smallest syntactical level; the bid each ‘yet’ makes is not necessarily ‘pivotal’, but the repetitive drive with which it is threaded through the first half of the collection charges the final display. ‘[A]nd yet thy heart | The lowliest duties on itself does lay’ catches the lowness of ‘lowliest’ – the depths of Milton’s modesty – in a climactic dew-drop that started in the fourth line of the opening sonnet. When Wordsworth came to break up his collections into separate classes for *Poems* (1815), the ‘Sonnets dedicated to Liberty’ survived in their original sequence. Although much was reset, yet the shape of Milton’s contribution survived intact.[86]

In February 1833, two months before Wordsworth wrote about ‘orbicular’ bodies to Dyce, he thanked William Rowan Hamilton for sending him a copy of his ‘Introductory Lecture on Astronomy’, given at Trinity College, Dublin, in November

[86] Cf. Editorial introduction to *P2V*, pp. 38-39.

1832. In the course of the lecture, Hamilton quoted reams of Wordsworth's poetry, before telling his students that they should:

> Be not surprised that there should exist an analogy, and that not faint nor distant, between the workings of the poetical and of the scientific imagination; and that those are kindred thrones whereon the spirits of Milton and Newton have been placed by the admiration and gratitude of man. With all the real differences between Poetry and Science, there exists, notwithstanding, a strong resemblance between them...[87]

Thirty years previously, in August 1801, Coleridge had used the same analogy, unbalancing those 'kindred thrones' with an expression of his own creative bias. He told Southey that 'in point of real utility I look on Sir Isaac Newton as a very puny agent compared with Milton – and I have taken some pains with the comparison'.[88] For Coleridge, Newton was bound by predictable, mechanical laws that did not apply to Milton, who instead derived 'the planet-like music of poetry' from two traditions – one ancient Greek, the other early modern Italian – that were very different from the world of classical physics. Even so, for both Coleridge and Hamilton to chance upon the identical correlation is a potent reminder that what linked Milton and Newton was their shared sense for the importance of gravity.

Wordsworth's letter to Dyce has been the vantage point from which to recover Milton's astronomical agency, and consequently his own. Orbicularity drew sustenance from a pervasive Pythagorean myth and, more prominently, a radical Tuscan School of sonnet writers who dethroned Petrarch with an *asprezza* style and panache that worked by non-mechanical methods to shape the orbit of a poem by adjusting its *gravità*. Transposing these ideas on to revolutionary concerns of a new order – waging the battle for freedom with a poetics responsive to gravity – was Milton's and Wordsworth's fundamental contribution to this spherical legacy. Indeed, in their political sonnets,

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[87] WRH, 'Introductory Lecture on Astronomy' (1832), in Graves, *Life*, I, pp. 640-54, 652.
[88] STC to Robert Southey, 11 [12] August 1801, in *CL*, II, p. 751.

weight or *gravità* becomes a syntactical measure of a poem's espousal of republican values. Antonio Santosuosso's remark that the *Rime e Prose* (1558) of Giovanni Della Casa is 'the witness not only of a tortured soul but the poetic perception, in their broken rhyme, of the disintegration of the humanist certitude of man in total harmony with his world',[89] leaves the most 'magnificent' question of all still to be asked. Did Copernicus' publication of *De Revolutionibus Orbium Coelestium* (1543), fifteen years before the first edition of the *Rime,* effect an astronomical shift so profoundly decentring in the *cinquecento* that it registered and reverberated in the 'orbicular' prosody of Milton's and Wordsworth's libertarian poetics?

[89] Santosuosso, *The Bibliography of Giovanni Della* Casa, p. 24.

CHAPTER FOUR

*

COLERIDGE'S ASTRONOMICAL IMAGINATION

> Seeing a mackarel it may happen, that I immediately think of gooseberries, because I at the same time ate mackarel with gooseberries as the sauce.[1]

'Coleridge was a marvellous talker',[2] as Samuel Rogers was surely right to note having listened to him hold court for three hours 'without intermission' over breakfast with John Hookham Frere; but following his oratorical zigzaggery was not easy, he could scotch a tale as soon as start one. Whether light and frothy or feverish and obscure, Coleridge's monologues, which he once affectionately minted as '*One*versazioni',[3] were not ersatz; they were the real thing. Coleridge possessed a powerful, irresistible tang and he knew it. 'He astonishes you, he electrifies you almost as he goes on', recalled John Taylor Coleridge in June 1825, 'but you cannot remember the train afterward'.[4] Even Wordsworth struggled, having reportedly listened nonplussed to a two hour disquisition Coleridge gave when he and Rogers went to his lodgings off Pall Mall on a mid-morning visit. On that occasion, Rogers too left none the wiser: '"Well, for my own part, I could not make head or tail of Coleridge's oration: pray, did you understand it?" "Not one syllable of it," was Wordsworth's reply'.[5]

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[1] *BL*, I, p. 125.
[2] Samuel Rogers, *Recollections of the Table-Talk of Samuel Rogers: to which is added Porsiana*, ed. Rev. Alexander Dyce (London, 1856), p. 203. Hegel's talkative manner was similar to Coleridge's. Cf. Lunch with Hegel, Goethe and his daughter-in-law on 17 October 1827 in which Goethe was reduced to complete silence and Hegel left hungry, in Johann Wolfgang von Goethe, *Goethe, Conversations and Encounters*, ed. and trans. David Luke and Robert Pick (London: Oswald Wolff, 1966), p. 170.
[3] STC to Thomas Allsop, 5 May 1829, in *CL*, VI, p. 790.
[4] Bernard Coleridge, Lord, 'Diary of John Taylor Coleridge', in *This For Remembrance* (London: T.F. Unwin, 1925), p. 40.
[5] Rogers, *Recollections*, p. 203.

This chapter proposes that Rogers's search for the 'head or tail' of Coleridge's conversation was misguided. As Coleridge said himself in a letter to Joseph Cottle in March 1815:

> The common end of all *narrative*, nay, of *all*, Poems is to convert a *series* into a *Whole*: to make those events, which in real or imagined History move on in a *strait* Line, assume to our Understandings a *circular* motion – the snake with it's Tail in it's Mouth.[6]

Coleridge insistently conceived of the creative mind's imaginings in terms of a series of expanding and contracting *circles*. This held true for monologues as well as for monodies. The pulse of the Romantic imagination, as schematised by Coleridge, was not only expressed in relation to, but necessarily constituted by, the gravitational forces of astronomy. These forces worked Coleridge's faculty of association; they put him in mind of gooseberries when he looked at mackerel. It is not coincidental that Coleridge represented the patterning of the pressure exerted by an original psyche in the act of thinking in the *Biographia Literaria* (1817) as a rippling picture of the concentric spheres of the Solar System. Coleridge's language of thought was, in fact, structured and saturated by a set of universal, polar laws that were fundamentally astronomical. *Saturated* is not used lightly; Coleridge most famously brought these powers into play on open bodies of water.

Rhetorical circularity was, of course, what perplexed Rogers in the first place and drew vitriol from Coleridge's critics as well. Thomas Carlyle judged, 'it was talk not flowing anywhither like a river, but spreading everywhither in inextricable currents and regurgitations like a lake or sea; terribly deficient in definite goal or aim, nay often in logical intelligibility'.[7] More generously, but with the same indispensable image at its heart, Philarète Chasles characterised 'the mazes' of Coleridge's metaphysical address

[6] STC to Joseph Cottle, 7 March 1815, in *CL*, IV, p. 545.
[7] Thomas Carlyle, *The Life of John Sterling* (London, 1851), p. 72.

on Spinoza in March 1827 as an example of how 'the poetical genius of Coleridge would flow on, or disport itself in circles like the harmonious and luminous ocean'.[8] According to Mrs John Davy, by July 1844, Wordsworth had managed to temper his incomprehension of Coleridge's speeches, laying the blame instead on his craning audience:

> [Wordsworth] said that the liveliest and truest image he could give of Coleridge's talk was, "that of a majestic river, the sound or sight of whose course you caught at intervals, which was sometimes concealed by forests, sometimes lost in sand, then came flashing out broad and distinct, then again took a turn which your eye could not follow, yet you knew and felt that it was the same river so," he said, "there was always a train, a stream, in Coleridge's discourse, always a connection between its parts in his own mind, though one not always perceptible to the minds of others".[9]

Wordsworth made the persistent metaphor of the river a happy one; it exemplifies the fundamentals of a toiling, twisting conscience. Narratological confines were just that to Coleridge – constricting – and more often than not his mighty stream broke its banks. Or so it seemed to his listeners, who notably had to tilt their heads to keep up.

This chapter establishes that it is precisely in between the characterisation of Coleridge's discourse as steady current on the one hand, and tidal charge on the other, that the generative flow of his mind can be traced in its essential workings. To opt for one source of water – as embodied metaphor – over another is to misunderstand the constitution of Coleridge's spirit. Crucially, the river, the lake and the ocean are particles in the transmission of the same voice; they are all *aqua-vitae*. The strain of Coleridge's conversation, and the mental faculties which engaged his creative resourcefulness at all times, can only be caught if the linear passage of the river is juxtaposed and brought into harmony with the tidal ebb of the sea and the circularity of the lake. Coleridge ardently believed that the shape and strength of a healthy mind was

[8] Philarète Chasles (1798-1873), the French critic and man of letters, is quoted in Appendix F of *TT*, I, p. 556. Cf. 'Coleridge as Talker' in the editorial introduction to these volumes, I, pp. xl-lxiv.
[9] Reminiscences of Mrs John Davy, 11 July 1844, in CW, Jr., *Memoirs of William Wordsworth*, II, p. 443.

one that could both expand from a centre to incorporate new ideas and contract to contain them, a process which he always figured as progressively circular and underpinned by the elemental forces of astronomy.

What Coleridge most feared, as he wrote at the nadir of his depression in late 1810, was to be foundationless: 'Whirled about without a center – as in a nightmair – no gravity – a vortex without a center'.[10] The chaotic, random nature of speech and consciousness was simultaneously a blessing and a curse for Coleridge; crafting a brilliant new relationship between two ideas often came at the expense of rigorous cohesion. Coleridge was acutely aware that making plain the underlying connections of his thoughts was something he long-struggled to do, but which he knew could only be accomplished *in the round*. In his December 1804 discussion of 'two sorts of talkative fellows whom it would be injurious to confound', Coleridge identified that his 'ordinary mishap' was 'to go on from circle to circle till I break against the shore of my Hearer's patience, or have my Concentricals dashed to nothing by a Snore'. This was not flamboyant; 'Concentricals' were the measurements or units of thinking with which Coleridge attempted to come to terms with what he perceived to be his perpetual difficulty:

> I feel too intensely the omnipresence of all in each, platonically speaking – or psychologically my brain-fibres, or the spiritual Light which abides in th~~at~~e brain marrow as visible Light appears to do in sundry rotten mackerel & other *smashy* matters, is of too general affinity with all things / and tho' it perceives the *difference* of things, yet is eternally pursuing the likeness~~ness~~es...[11]

It was typically Coleridgean to elucidate the perennial problem of unity in multiplicity with a ravishing example; the brain's spiritual light was akin to the shine on the underbellies of 'sundry rotten mackerel', or was it the flecked greens on their vertebrae

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[10] *CN*, III, 3999.

[11] *CN*, II, 2372, *f*122. It is very fitting that in Max Beerbohm's iconic drawing, 'Samuel Taylor Coleridge, Table-Talking', the shapes on the mouths of Coleridge's snoring listeners on the far side of the dining table are perfectly imitative of Coleridge's 'Concentricals'. Cf. Beerbohm, *The Poets' Corner* (London: William Heinemann, 1904).

that Coleridge was singling out? The piquant image reveals the immense flexibility of Coleridge's mind: the imagined colours of brain-fibres and those in stipple on the backs of pelagic fish arose adjacently in his memory, they swam in the same fictive solution. At the core of Coleridge's declarations and imaginations lay the desire to forge a coherent narrative, silkily maintaining the elective affinities between variously threaded parts, without sacrificing his veef and his flair, the salt-sweet freshness of the material. He did not see these aims as distinct and he worked hard to sound out a way in which they were not in conflict.[12] His talk was therefore neither all river nor all ocean, but rather a brackish and looping intermediary.

It is only by following *this* unique stream which makes it possible to discover that Coleridge's capacity to integrate sensory data in the moment of perception was laced with a rare logic. He may not have possessed 'the precise gladiatorial power of Johnson', as Henry Nelson Coleridge noted in his preface to *Table Talk* (1835), 'yet he understood a sword-play of his own'.[13] To see Coleridge's talk as a half-baked ooze, or to request that he tighten and pumice his tortuous vocables for the sake of clarity, would be to miss its peculiar shape and elaborate sheen. Coleridge's volubility enacted the remarkable structure of his cognitive processes: *volubility* describes at once a readiness

[12] Cf. *CN*, IV, 4929, *f*31: 'Who ever attended a first course of Chemical Lectures, or read for the first time a Compendium of modern Chemistry (Lavoisier, Parkinson, Thomson, or Brande) without experiencing, even as a *sensation*, a sudden *enlargement* & *emancipation* of his Intellect, when the conviction first flashed upon him that the Flame of the Gas Light, and the River-Water, were the very same things (= elements) and different only as A *uniting* with B and A B unit*ed*?' This way of seeing was an essential condition of the philosophic imagination, as outlined in *BL*, I, pp. 241-42: 'They and they only can acquire the philosophic imagination, the sacred power of self-intuition, who within themselves can interpret and understand the symbol, that the wings of the air-sylph are forming within the skin of the caterpillar; those only, who feel in their own spirits the same instinct, which impels the chrysalis of the horned fly to leave room in its involucrum for antennæ yet to come.' Cf. 'Theory of Life' (1816), first published as *Hints towards the formation of a more comprehensive Theory of Life*, ed. Seth B. Watson (London: John Churchill, 1848), in *SW & F*, I, p. 542: '…though at the risk of provoking a smile, (not, I hope, a frown) from sober judgment, we might imagine the life of insects an apotheosis of the petals, stamina, and nectaries, round which they flutter, or of the stems and pedicles, to which they adhere.

[13] STC, *Specimens of the Table Talk of the late Samuel Taylor Coleridge*, ed. H.N. Coleridge, 2 vols. (London, 1835), I, p. xiii. Cf. [same page and characterising Coleridge's talk]: 'I own that it was always much more delightful to me to let the river wander at its own sweet will, unruffled by aught but a certain breeze of emotion which the stream itself produced.' Cf. xviii-xxii.

of the tongue – fluency or copiousness of speech and verse; a tendency to mutability or inconstancy – the riverine ability to twist and twine smoothly and easily with great versatility; and the '*capacity of revolving, rolling or turning around; aptness to rotate about an axis or centre*'.[14]

For Coleridge, these were the building blocks of conversation and artistic creation alike. Coleridge substantiated this ideal paradigm of thought with infinitely reconciling and reconcilable circles in the 'Theory of Life' (1816) and the *Biographia Literaria* (1817) which he believed could save him from the stultifyingly dull narratives that he associated with imaginative and systemic failure. Exploring the forms of this graphic in its myriad guises shows that its underlying foundations relied on astronomical forces. 'In all subjects of deep and lasting interest', Coleridge told Thomas Allsop in 1820, 'you will detect a struggle between two opposites, two polar Forces, both of which are alike necessary to our human Well-being, & necessary each to the continued existence of the other'.[15] Coleridge saw spider-webs, parentheses, pebbles and insects in the water, the wild diagrams of the *Naturphilosophen*, Neoplatonic ideas about infinity, and theories of the beautiful as all equally responsive to the swings and pulls of astronomy, to an exquisite type of universal, gravitating volubility.

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In the spider-web, Coleridge adumbrated a model of intelligent reasoning from which he had to learn how to become *un*stuck; its webbed tapestry simultaneously illustrated what was damaging and enhancing about the powers of logic and the faculty of association. In March 1810, Coleridge portrayed the associative capacity of the mind as structured by the lattice of the spider-web, referring to an examination of his own memory as testing 'that subtle Vulcanian Spider-web Net of Steel – strong as Steel yet

[14] "volubility, n.", *OED Online*, senses: 1a, b; 2a [italics mine]; 4; 5a, b; 6; 7a.
[15] STC to Thomas Allsop, 8 April 1820, in *CL*, V, p. 35.

subtle as the Ether'.[16] The web holds memories together in a way that should permit vital congruences to arise between ideas that are not otherwise able to coexist. The associative faculty itself can helpfully be seen as an amalgamation of two spidery distinctions Coleridge drew at different times between his definitions of 'the catenating Faculty' and 'the Araneosis of corpuscular materialism'. In 1800, the former was 'the silk thread that ought to run through the Pearl-chain of Ratiocination',[17] whilst in 1805, by contrast, the latter denoted that which was philosophically limiting, '*the one* corrupting into *ten thousand*…a thousand webs, specks, &c dance before the eye'. Indeed, Kathleen Coburn has specifically defined the latter as 'the state of seeing things in multiple divisions, like spider-webs'.[18]

In both instances, the descriptions hinge on the circular and linear parts of the spider-web; the faculties constitute the warp and weft which structures the interplay of the mind's imaginings. A 'thousand webs' were intolerable to Coleridge unless they could be reined in by the connective and guiding 'silk thread' that led to and from a fixed centre. Without those silken force lines the web could not hold, Coleridge's thoughts would be prone to illimitable expansion and suffer from no relational togetherness. This profoundly worried Coleridge, who admitted in March 1800 that:

> My own Subtleties too often lead me into strange (tho' God be praised) transient Out-of-the-waynesses. Oft like a winged Spider, I am entangled in a new Spun web – but never fear for me, 'tis but the flutter of my wings - & off I am again![19]

To this 'winged Spider' Coleridge wrote a little note within the letter itself, breaking the metaphor and stepping out of character by scribbling another line and thus extending the web further: 'By the bye, there is no such Creature. But in similies if a Phoenix, why not a winged spider?' Freeing himself from one part of the web was conditional

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[16] *CN*, III, 3708, *f*11^{v}.
[17] STC to the Rev. John Edwards, 20 March 1796, in *CL*, I, p. 193
[18] *CN*, II, 2402, *f*129^{v} and n.
[19] STC to John Prior Estlin, 1 March 1800, in *CL*, I, p. 578.

upon Coleridge's seeing the whole. Rhetorical liberality – the complete imaginative freedom to combine abstract ideas – required a network of converging transversals, of silk threads which pointed to the central precepts of his discussions.

The spider-web instantiated an aspect of divided unity which haunted Coleridge, even though it was geared towards its final reconstruction. It was an image with which he was never truly at ease and its shape lingered in his metaphysical pronouncements on the circle. In January 1806, Coleridge interrupted his own Neoplatonic disquisition on the divine nature of the circle with reference to his reckless 'super-ingenious Spidership':

> the Central point is primary Consciousness = living Action; the circumference = secondary Consciousness…and the passing to and fro from the one to the other Thought, Things, necessary Possibilities, contingent Realities / = Father, Son, Holy Ghost… The ● is **I** which is the articulated Breath drawn inward, the ○ is the same sent outward, the ⊙ or Theta expresses the synthesis and coinstantaneous reciprocation of the two Acts, the Dualism of *Thought* by *Distinctions*, the Unity of *Thing* by Indivisibility…(O Lord! What thousands of Threads in how large a Web may not a Metaphysical Spider spin out of the Dirt of his own Guts / but alas! it is a net for his own super-ingenious Spidership alone! It is so thin that the most microscopical Minitude of ~~the minutest Midge~~ Midge or Sand-flea – so far from being detained in it – passes thro' without seeing it.–)[20]

The duplicated circular figure which synthesises primary and secondary consciousness, 'the Theta' that represents the 'coinstantaneous reciprocation' of 'the Dualism of *Thought* by *Distinctions*' and 'the Unity of Thing by Indivisibility', was a perpetually mobile union which Coleridge considered to be an act of God. It was an early attempt at conceiving a sending outward and a drawing inward of consciousness – the ultimate unity in multeity – in living, circular terms. It is therefore a direct precursor to the conception of the imaginative act in the *Biographia*, and to the evolutionary process in the 'Theory of Life', where this wholesome shape is fleshed out fully with

[20] *CN*, II, 2784, *f*105^{v}-*f*106. For a discussion of how Coleridge's philosophy was a series of attempts to bridge the gap between Man and God conceived as apprehending the space between the centre and circumference of a circle, see J.R. de J. Jackson, *Method and Imagination in Coleridge's Criticism* (London: Routledge & Kegan Paul, 1969), pp. 43-44, 76.

the astronomical forces which enable the 'Theta' to come together over and over again. Astronomy provides for the divine iteration of Coleridge's mature 'Theta' with each repetition and formation figuring a moment of pure imaginative reciprocity between Man and God.

The pattern also had an established relevance in Coleridge's mind with a spider-web, and it triggered an enormous 'Metaphysical Spider'. Or, to put that another way, his 'catenating Faculty' was abruptly hounded by the onset of 'Araneosis' at the exact moment that he was solidifying the supermundane synergy between the centre and circumference of the circle. Coleridge was made powerfully aware, *in media res*, of what he identified in early 1810 as 'The inflamed Eye of stricken Discontent, filling the very air with black spots & making the optic Spider-webs and Midges run across the brightest passages of the Book of Life –'.[21] In his marginalia to Jakob Böhme's *Aurora*, Coleridge managed an arachnid-free depiction of the 'Book of Life' in a comparable expression: 'the Son is the omnipresent Center of that infinite Circle, whose only Circumference is in ~~his~~ its own Self-comprehension, the eternal Act of which for ever constitutes that Center'.[22] To know Himself at the centre, God must look outside Himself from the circumference, which His very ability to do reaffirms His position at the centre. In his later theological writing, Coleridge would conceive that 'eternal Act' of self-comprehension in gravitational language.

It struck Coleridge as a chronic lack of mental surety and control that precipitated his turn from the divinity of the circle to the 'microscopical Minitude' of the web as he outlined the essential and spiritually conceived interaction between

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[21] *CN*, III, 3685 and n. Coburn notes that Coleridge's source for these lines is Jean Paul's *Palingenesien*, 2 vols. (Leipzig & Gera, 1798), I, p. xi.

[22] STC marginalia to Böhme's *Aurora*, dated c. 1817, in *The Works of Jacob Behmen, the Teutonic Theosopher…To which is prefixed, the life of the author. With figures, illustrating his principles, left by the Reverend William Law, M.A.*, ed. G. Ward and T. Langcake, 10 pts. in 4 vols. (London, 1764, 1764, 1772, 1781), in *CM*, I, p. 564.

intellectual unity and plurality – which was one that he would reaffirm throughout his life.[23] In fact, it was a substantiation of a link that really did exist and which was imperative to the development of the divine, transversal structure of the circle itself in Coleridge's philosophical thinking. According to Georges Poulet, the central lozenge of the spider's web is '*aware* along all the rays and consequently at all the points of the circumference', much as in the circle 'one can immediately perceive in it the relation between the multiplicity of the peripheral points and the simplicity of the central point'.[24] The spider possesses a feeling omniscience from the centre of its web which parallels the nuclear position of God in relation to His interaction with mankind. Coleridge only got tangled in his own 'net' when 'Araneosis' clouded his capacity to see this decisive similarity. Losing himself in the obscurity of his thoughts, he fretted that he would not be able to make himself understood, that he would be pinned forever on a small, sticky part of the web with no hope of a tensile 'silk thread' to guide him back to a holistic, reconciling centre.

At its worst appearance in a letter of 1825, but with impressive detail stemming from a bout of paranoia, Coleridge pictured 'the Vault or snug little Apartment which the Spider spins and weaves for itself, by spiral threads round and round, and sometimes with strait lines', as a 'Lurking-parlour or Withdraw-ing room [which] is an oblong square'. Coleridge continued:

> This too connected itself in my mind with the melancholy truth, that as we grow older…the World, that *spidery* Witch, spins it's threads narrower and narrower,

[23] Cf. 'Aphorism VIIIb', *Aphorisms on Spiritual Religion B*, in *AR* (1825; 2nd ed., 1831), pp. 233-34: 'God is a Circle, the centre of which is every where, and circumference nowhere…I might have learnt [this] from Plato, Kepler, and Bacon; from Luther, Hooker, Pascal, Leibnitz, and Fenelon'; *C & S*, p. 47: '…the SCIENCE of Theology was the root and the trunk of the knowledges that civilized man, because it gave unity and the circulating sap of life to all other sciences, by virtue of which alone they could be contemplated as forming, collectively, the living tree of knowledge'; *CN*, V, 5861n, a manuscript fragment in Toronto from the *Opus Maximum* (VCL S MS. 29) on the eternal act: '…it is an eternal proceeding from the Father to the Son and from the Son to the Father, but such procession being in its nature circular, at once ever refluent and ever profluent…the primary, absolute, co-eternal intercirculation of Deity'.

[24] Georges Poulet, *Metamorphoses of the Circle* (1966), pp. 56, 59.

> still closing in on us, till at last it shuts us up within four walls, walls of flues and films, windowless – and well if there be sky-lights, and a small opening left for the Light from above.[25]

The increasing narrowness of the threads disturbed Coleridge with the same severe sense of intellectual claustrophobia that he recognised in 1810. However, in 1825, 'Araneosis' was operating with the reverse effect, leaving him with nothing *but* a centre, no tentacular web upon which to test out, feel, and order his judgements amidst diverse experiences. Coleridge felt 'windowless'; his misgivings attest to the fact that he held the fluent intercommunication between centre and circumference, conceivable ultimately as the result of a divine synthesis, to be the sole guarantor of imaginative equilibrium.

In a notebook entry from the autumn of 1814, while a more positive mood permitted the 'catenating Faculty' to predominate, Coleridge brought the power-bearing lines of the spider-web – the 'silk thread' – directly into play with the gravitational orbits of the planets in the Solar System:

> No more appropriate Image is well conceivable of [the difference between] a perfect Unity, and a mere aggregate of independent motions, or a better elucidation of an Imperium ex imperiis, ~~and~~ contrasted with ~~an~~ imperi~~um~~a in imperio, than
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> —i.e. a spider's web, or a wheel—and a series of concentric Circles, with the orbits of the Planets, without the crossing Radi~~us~~i from the outermost circle—so that thus Mercury is on the points A & B 20 times while the Georgium sidus is but once—hence force from velocity, ~~intensity~~ Habit from repetition/—
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> The orbits of those planets only are exactly circular that are nearest to the Sun—the farther off the more elliptical/—Now a government is = the ~~out~~spokes that from the outer circumference i.e. *the good of the whole* cross all the interior circles—& make these move as it moves—consequently ~~makes~~ keeps its own force the greatest, or passing thro' a greater space in the same time—
> (3: 4229) [26]

[25] STC to Unknown Correspondent, 21 February 1825, in *CL*, V, p. 414. Cf. STC to Sara Hutchinson, 10 March 1804, in *CL*, II, p. 1082: '…we are unwilling to spin out our waking Thoughts into the Phantasmes of Sleep, which often continueth praecogitations – making Cables of Cobwebs and wildernesses of handsome Groves – To keep our eyes open longer were to *act* our Antipodes.' In this letter, Coleridge commends Sir Thomas Browne's 'Quincuncial Plantations of the Ancients' to Sara. Coleridge's fascination with the quincunx is important: it is a designedly similar shape to the cobweb.

Coleridge found a minute pattern in the natural world, the spider-web, which resonated in a series of increasingly large and complex mechanical worlds. His image of 'a perfect Unity' was echoed simply in the shape of 'a wheel' and more significantly in the turnings of the social or common weal. The figure's capacity to replicate itself was an essential condition for Coleridge of its imaginative suitability as it would enable him to 'perceive the absolutely indivisible as infinitely distinguishable. And this holds from the Universe to a Grape-cluster'.[27] This was also a prerequisite for Coleridge's theological 'Theta' as it corresponded to the eternal pattern of God's movements. The spider-web was becoming consonant with God and with gravity; slowly a picture of the imaginative act was forming for Coleridge that incorporated all of these elements.

What must have made the spider-web so pliant for Coleridge's allusive mind is that it possesses, in Poulet's words, 'not only a base of operations and of convergence, but a cognitive and receptive force by whose operation what comes from outside is seized and experienced within'.[28] Whether conceived as 'silk thread', 'spokes', or 'crossing Radii', the ductile tracks meshing Coleridge's diagram of concentric circles brought the spider's home into radical alignment with Herschel's discovery of the Georgium Sidus (Uranus). In 1816, Coleridge could write to James Gillman that 'by the eternal identity of Allness and Oneness, the whole Universe becomes an infinity of Concentric Circles'.[29] Cobwebs were imaginatively and accurately compatible with Herschel's universe; the circles were expanding along integral, shared force lines.

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[26] *CN*, III, 4229. This notebook entry has been reproduced from its original (and copied here) in an article by H.J. Jackson, '"Turning and Turning": Coleridge on Our Knowledge of the External World', *Publications of the Modern Language Association*, 101: 5 (1986), 848-56, 849. The words inside the square brackets constitute Jackson's emendation.
[27] *CN*, III, 4058, *f*73.
[28] Poulet, *Metamorphoses of the Circle*, p. 55. Cf. p. 57: '…this point of view from which one seizes the ramifications of things [radiates] in the philosophical meditations on the Newtonian cosmos.'
[29] STC to James Gillman, 10 November 1816, in *CL*, IV, p. 689.

In his prose, Coleridge symbolised these force lines stylistically with brackets: (lunulae). They were supposed to act as a syntactical scaffold to prevent him from besieging himself with layerings of dashed parentheses, a practice which deeply troubled Coleridge throughout his adult life. To Godwin, in March 1800, Coleridge disclosed that 'when sober, I talk extravagantly enough for any *common* Tipsiness…An idea starts up in my head – away I follow it thro' thick & thin, Wood & Marsh, Brake and Briar'.[30] A notebook entry from February 1805 confirmed the difficulty Coleridge had in retracing his intrepid epistolary footsteps having pursued ideas around this muddy, muddled countryside:

> Now how to get back, having thus belabyrinthed myself in these most parenthetical parentheses? Cut thro' at once, & now say in half a dozen a Lines what a half a dozen Lines would have enabled me to say at the very beginning / but my Thoughts, my Pocket-book Thoughts at least, moved like a pregnant Polypus in sprouting Time, clung all over with young Polypi each of which is to be a thing of itself – and every motion out springs a new Twig of Jelly-Life…[31]

In a similar vein, Coleridge described his thoughts in 1808 as 'Surinam Toads – as they crawl on, little Toads vegetate out from back & side, grow quickly, & draw off the attention from the mother Toad –'.[32] Lunulae – unlike the remorseless jousting of the hyphen which offers a more piercing exposure of thought to space – represented a mode of safe linguistic expansion; they indicated and permitted a thought to grow with the conditional promise that it would do so within a physically cordoned boundary. Lunulae marked Coleridge's orthographic attempt to wrest and curtail rhetorical jurisdiction from 'young Polypi' by better policing 'sprouting Time'.

Fundamentally, lunulae are two halves of a split circle, or astronomical ellipse. Coleridge must have recognised this because, wonderfully, his sign for the opposition

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[30] STC to William Godwin, 3 March 1800, in *CL*, I, p. 580. Cf. Earl Leslie Griggs's editorial introduction on Coleridge's parenthetical epistolary habits in *CL*, I, pp. xxxv-xxxvi.
[31] *CN*, II, 2431, *f*5^{v}-*f*6. The importance of lunulae in Coleridge's poetry has been assessed in Chapter Two.
[32] STC to William Sotheby, 28 April 1808, in *CL*, III, p. 95.

of any two things was consistently two lunulae back to back crossed with a hyphen:)(. On 10 June 1819, Coleridge and J.H. Green were eating cherries together as they were 'evolving the state, constituted by A)(B, as the *Adjectives*, Centrifugal)(Centripetal, and C)(D. = the Substantives, Fluid and Firmamental'.[33] When Coleridge turned those lunulae around, which he did every time he wrote within brackets, he activated the grammatical signs in terms of the adjectival, astronomical force laws which he applied to them. Lunulae were a favourite with Coleridge because they syntactically adhered to the law of polarity, which Coleridge described variously as 'the manifestation of one power by opposite forces'.[34] In his poems, the gravitational power which Coleridge's lunulae wielded was a source of intense emotive and stanzaic structure. Indeed, the feeling gained significance through the form, through Coleridge's search for the perfect ellipse.

Once opened (with centrifugal force), the first bracket makes it plain that there is a necessary compulsion to close the aside at some stage yet to be determined; the second bracket enacts that technical completion (with centripetal force), performing the role of a gentle stop-gap or soft buffeting for an afterthought that was getting ahead of itself. Parentheses were so key for Coleridge that, '(tho' God be praised)' for their existence, he deemed he may have exhausted that particular literary form, much as he confessed to Tom Poole in January 1810, hinting at their entropic danger:

> Of parentheses I may be too fond – and will be on my guard in this respect –. But I am certain that no work of empassioned & eloquent reasoning ever did or

[33] *CN*, IV, 4547, *f*83.
[34] 'Essays on the Principles of Method', Essay VII, Vol. III, *The Friend* (1818), in *Friend*, I, p. 479. Cf. 'On the Polar Forces' (c. 1818), in *SW & F*, I, pp. 784-85, 785: 'Polarity is not a Composite Force, or Vis tertia con~~sisting~~stituted by the momenta of two counter-*agents*. It is 1 manifested in 2, not 1 + 1 = 2 A divine Energist indeed is the antecedent causative Conditio sine quâ non of the Polarity…Thus it is not the *Power*, Attraction and the Power Repulsion at once hugging and tugging like two sturdy Wrestlers that compose the Magnet; but the Magnetic Power working at once ~~a~~ positively & negatively. A. and R. are the two Forces of the one magnetic *Power*'.

> could subsist without them – They are the *drama* of Reason – & present the thought growing, instead of a mere Hortus siccus.[35]

Commenting on this quotation, which itself has four *jousts* in it, Geoffrey Hill has avowed that Coleridge 'surely foresaw the obligation to enact the drama of reason within the texture of one's own work, since nothing else would serve. His parentheses are antiphons of vital challenge'.[36] It is *brackets* which are peculiarly antiphonal and which *in*fold thought (commas and dashes do not so usefully mirror each other). Coleridge's lunulae, on the other hand, called to one another with the same attractive and composite bond which regulates the planets; they manifested on the page the identical elliptical shape or orbital path of spheres in controlled motion. The brackets accept and respond to an aesthetic, textual challenge with a magnetic, semantic energy of their own which endeavours to pull sentences back into a functioning equipoise. A 'book of reasoning' without parentheses of any sort, Coleridge argued in 1816 having been asked to trim *The Friend* – 'which is sometimes more intangled and parenthetic than need is' – must be 'the work of either adeptship or of a *friable* intellect'.[37] In a concerted effort to ensure his own work did not crumble, Coleridge drew on the uniquely solacing centripetal power that pertains to convex shapes, to the revolutions of lunulae and worlds.

Seamus Perry has nicely captured the point that a herbarium or 'Hortus siccus' is 'a systematic collection of dried plant specimens' to evince the notion that 'an

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[35] STC to Thomas Poole, 28 January 1810, in *CL*, III, p. 282.
[36] Geoffrey Hill, 'Redeeming the Time', in *The Lords of Limit* (1984), repr. in *Collected Critical Writings*, ed. Kenneth Haynes (Oxford: Oxford University Press, 2008), p. 97.
[37] STC to Hugh J. Rose, 25 September 1816, in *CL*, IV, p. 685; Cf. STC to John M. Gutch, early January 1817, in *CL*, IV, p. 701 [also on editing *The Friend*]: 'what with the arrangement…what with the selection & translation of Mottos for each Essay, and what with the cutting up and rounding of the long sentences, & the reduction of the Parentheses – in short, the general popularizing of the Style, that I declare before God, that it costs me more time, and hard labor with far less pleasure than the other half which is entirely new.'

alternative prose, permitting the plants free life, may be hard to contain'.[38] I have been suggesting thus far that the image of the spider-web, together with Coleridge's use of lunulae, both substantiated and enclosed within themselves the answer to this struggle, and that the distinction, as conceived by Coleridge's friends and his critics, that he was either all river or all ocean in prose and speech, is a false one. Instead, I have put forward the view that in between the two conceptions of the 'Hortus siccus' and the neglected garden, Coleridge was trying to furrow out a mental *locus amoenus*, a classical paradise that was having the linguistic landscape both ways. The containment and respite that Coleridge wanted from his lunulae was that which typified a kind of gravitating, linguistic counterbalance capable of stretching across the web of undiluted 'Pocket-book Thoughts'.

That he did not always achieve this equanimity is something of a Coleridgean commonplace, but it has not been advocated that some of the most fascinating evidence for this failure has never even come to light. In what might seem like a minor editorial decision relating to accidentals rather than to substantives, Earl Leslie Griggs made what is actually a highly significant statement of editing intent at the very end of his introduction to the third volume of the *Collected Letters of Samuel Taylor Coleridge* (1959):

> In these volumes I have followed the editorial policy outlined in the Introduction to volume one, with the following exceptions. In order to offer a more readable text I have converted the shilling mark (/) into a dash, and in cases where Coleridge left a quotation or a parenthesis unclosed at the end, *I have silently inserted the quotation mark or the rounded bracket*.[39]

[38] Perry, *Coleridge and Division*, p. 100. For a good discussion of how Coleridge's parentheses bear witness to his positive muddling and 'double apprehension' see pp. 98-101.
[39] Earl Leslie Griggs's editorial introduction to *CL*, III, p. lii. Italics mine. In *CL* I and *CL* II (both 1956), Griggs inserts square brackets around quotation marks and lunulae which he has added, although the issue is never specifically addressed. In the absence of evidence, it remains unclear to me why Griggs changed his editorial policy in the first place.

This constitutes an important caveat that I have not seen ever referred to elsewhere. Griggs's phrase 'these volumes' certainly implicates the fourth volume of Coleridge's *Letters* because it was also published in 1959 and does not have its own introduction. However, since there is no further mention of this issue in either volume five or six, both published in 1971, it must be assumed that Griggs was consistent with the policy here outlined throughout volumes three to six. This means that for two-thirds of the letters in the scholarly edition of Coleridge's epistolary correspondence, Griggs silently closed Coleridge's lunulae when *he* believed an afterthought had waned.

Coleridge probably would have thanked Griggs heartily for clearing up after him. In a masterfully sustained piece of digression that Coleridge wrote to J.A. Hessey in 1823 beginning 'My dear Sir | I find', and which returns to, having been unable to get beyond, the 'I find' nine lines later, Coleridge suddenly apologised with a textual performative utterance: 'I find, I say (you must forgive my hasty *parentheses* in my letters, & I will take [care] that you shall find few to be forgiven in my future publications)'.[40] Griggs was clearly forgiving of Coleridge too, and could have included this last line in his own introduction to the third volume of the *Letters* as a putative reason or principle upon which he based his editorial decision-making.

Equally, though, Griggs's comments have serious ramifications for my line of argument which are less positive. Without returning to the individual manuscripts of the letters, which is not practical, there is no way of telling *which* expanded thoughts and explanatory asides *Coleridge* forgot to close off between 1807 and 1834, or exactly *when* and even *if* he meant to do so at all. 1807 sets the *terminus a quo* after which it is impossible for the reader to be certain of an instance when Coleridge's unifying strength won out over his plurality, when his own centripetal force or 'mother Toad'

[40] STC to J.A. Hessey, 9 September 1823, in *CL*, V, pp. 299-300.

predominated over other 'little toads', and when Griggs did it for him. What *can* be gleaned is that there are 'cases' in which Coleridge did lose control, where the precise fit and join of a letter and his mind did not meet in the act of writing. The centrifugal direction of his thoughts, the 'Twig[s] of Jelly-Life', did on occasions prove unequal to a resistant and reciprocal force. Although we shall never know how numerous Griggs's emendations were, (just how frequently did Coleridge open a bracket without closing it?), it is very illuminating that they certainly do exist. Coleridge's web did not always hold; the 'catenating Faculty' was not one of his permanent possessions.

Grammar structures creative order; at the same time, it makes disorder visible. Editorial silencing has thus muffled the very shape of Coleridge's volubility which, in this chapter, marks an attempt to restructure the balance of Coleridge's imagination. The brackets are charged with meaning; they punctuate the text and point out the cerebral deliberations and artistic flights of Coleridge's desire for limitless provisionality. Griggs presents a unified Coleridge in charge of his prose rather than one suspending (between the lunular crescents of his poems and letters) the mind above the gravity of determined circumstance.

The phrase with which Virginia Woolf kindled an essay on Coleridge's loquacity in 1940 is striking for the particularity of the controlled shape which it summoned: '…as we enter his radius he seems not a man, but a swarm, a cloud, a buzz of words, darting this way and that, clustering, quivering and hanging suspended'. Following Coleridge's conversation, in Woolf's words, is like stepping inside a *circle* of changing energies; it is like listening to 'the waves of the ocean, the flowing of a mighty river, the splendour of the Aurora Borealis, the radiance of the Milky Way'. [41]

[41] Virginia Woolf, 'The Man at the Gate' (19 October 1940), in *New Statesman & Nation*, repr. in *The Essays of Virginia Woolf*, vol. VI, *1933-1941, and Additional Essays 1906-1924*, ed. Stuart N. Clarke (1966-67, 4 vols.; London: The Hogarth Press, 2011), pp. 235, 238. Cf. p. 237: 'The great sentences pocketed with parentheses, expanded with dash after dash, break their walls under the strain of including

Coleridge's words have a magnificent celestial consonance; they resonate with the charged particles which randomly collide to produce bursts and wisps of flickering electrical current in the night sky (the Northern Lights), and also with our spiral galaxy that groups and gathers billions of stars and planets in a central, spinning vortex. His words dart, but they also cluster; they are voluble in all senses in their adherence to the law of magnetic polarity. The Aurora Borealis and the Milky Way are cosmic versions of the river and the ocean, of the 'Quiet stream, with all its eddies, & the moonlight playing on them, quiet as if they were Ideas in the divine mind anterior to the Creation'.[42]

The eddying stream carries within its linear flow the circulating vortices which give it renewed vigour (rather than sapping its strength), and which in 1802 seemed like the scalloping pools of God's musings, the 'Ideas in the divine mind'. This specific interaction of waters continued to fascinate Coleridge. On his Scottish tour with the Wordsworths in August 1803, Coleridge was struck by 'a peat-moss River with a 1000 leisurely circles & ellipses of foam';[43] in 1816, on holiday at the seaside in Mudeford, Dorset, to restore his health, he relished the fact that 'Up to this Garden comes a sort of Sea-lake, which at High-Tide is (to my eyes) very interesting'.[44] The lunulae which give *us* eyes into the description also tentatively point out that this is Coleridge's perspective and that his preferences were not necessarily shared or noticed by William and Dorothy in Scotland, or by James Gillman and others on the south coast. These were the polar waters which channelled Coleridge's discussion of the imagination; their

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and qualifying and suggesting all that Coleridge feels, fears and glimpses…in our tongue-tied age there is a joy in this reckless abandonment to the glory of words. Cajoled, caressed, tossed up in handfuls, words yield those flashing phrases that hang like ripe fruit in the many-leaved tree of his immense volubility.'

[42] *CN*, I, 1154.

[43] Ibid., 1433, *f*6.

[44] STC to J.H.B. Williams, 24 September 1816, in *CL*, IV, p. 684.

movements underlay what he understood to be the deepest psychological patternings of a mind in the act of creation.

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It is not fanciful to refer to the interaction of centripetal and centrifugal forces as firmly rooted in Coleridge's brain; there are a host of good precedents for doing so and which establish that Coleridge was sounding out his theory of the imagination in ponds, parentheses, spider-webs, and at the dinner table. In the *Memoir* of Hartley Coleridge's life that is prefaced to his *Poems* (1851), Derwent Coleridge considered the difference between his brother's and their father's intellect to be, quite literally, astronomical:

> There may have been – I think there was – some faculty wanting in [Hartley's] mind necessary for the completion of any great whole…But the elder Coleridge could conceive and methodise the most magnificent scheme – could arrange in a moment, as if by intuition, any proposed total around a central idea, with a perfect co-ordination of parts. To borrow a metaphor, which is indeed more than a metaphor, the centrifugal and centripetal parts of his mind were well balanced; but the foci of his thought were so distant that their orbit became practically unlimited, though each portion contained the law of its return and the prophecy of its completion. No such power was ever exhibited by his son…[Hartley's] stream was copious, but it had no banks…[45]

The quotation testifies to the fact that Derwent knew his father's work extremely well. Starting in earnest around 1815 and lasting for a decade or more, Coleridge found the forces of astronomy to be 'more than a metaphor'; indeed, he found the delicate play of centripetal and centrifugal forces to express the governing dynamics of the literary imagination.[46] Derwent's turn from the language of astronomy in distinguishing his father's mind, to the idiom of the river in illustrating the retention of Hartley's, is perfectly resonant with the connective tissue that had been building in Coleridge's own

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[45] Hartley Coleridge, *Poems by Hartley Coleridge with a Memoir of his Life by his Brother*, ed. Derwent Coleridge, 2 vols. (London, 1851), I, pp. clx-clxi.

[46] Cf. H.J. Jackson, '"Turning and Turning"', p. 851. In her article on the significance of the spiral as the structure underlying Coleridge's thought, Jackson notes that Coleridge has recourse to centripetal and centrifugal forces in 'the early 1820s…in working out the theory that the individual in nature is subject to the opposing pull of the system at large'. This could usefully be redated to 1815 at the latest, which would make concentric circles as equally important and progressive in Coleridge's thinking as the spiral.

letters and notebooks since about 1800, and which finds its summative prose counterpart in the summer of 1815 when Coleridge was writing the *Biographia Literaria*.[47] Water is the divinely circulating touchstone which countenances the operative and imaginative possibilities of Coleridge's 'more than' astronomical metaphors.[48]

In a notebook entry of September 1815, a succinct version of which is included in Chapter Twelve of the *Biographia*, Coleridge dissected the essentially polar quality of 'Intelligence', reducing it to 'the Idea of an <indestructible> Power displaying itself by two opposite and counteracting Forces, + and –'. These forces, he continued:

> are essentially Opposite, previous to & causative of Direction – and secondly, the Power, of which they are the Forces, is one, indestructible, & unlimited ab extra – The Forces therefore produce a tertium aliquid – the Power is neither wholly objectivized, nor wholly restored to its identity – but exists for it by a perpetual Duplicity, Object & therefore Subject – Subject & therefore Object. – The Objectivizing Tendency we may name then by a metaphor from the Science of Astronomy (which if our System be true, must finally appear as more than a metaphor, nay, as the strictest *analogy* ~~&~~ tho' even this is justifiable only by the difference of the phænomena, not of the ~~powers~~ forces themselves) the centrifugal, the retaining and restoring Force the centripetal.[49]

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[47] Although published in 1817, the *Biographia Literaria* was mostly written (or rather dictated) between June-September 1815. For this textual history see the editorial introduction to *BL*, I, pp. li-lii.

[48] Cf. Poulet, *Metamorphoses of the Circle*, p. 67: 'To convey the phenomenon of universal intercommunication, the perfect image, the favorite image of the philosophers, is not that of the spider in its web, but that of the stone thrown into water, and the circular waves it there creates.' The spider-web is an early instantiation, for Coleridge, of this philosophical idea. For the importance of the circle for Romantic writers, together with the uses of circularity in historical precursors (Plato, Plotinus, Proclus, Böhme) see M.H. Abrams, *Natural Supernaturalism: Tradition and Revolution in Romantic Literature* (London and New York: W.W. Norton & Company, 1971), pp. 147-85; Brown, *Shape of German Romanticism* (1979). For circularity and Coleridge see John Beer, *Coleridge's Poetic Intelligence* (London and Basingstoke: Macmillan, 1977), pp. 213-19; Edward Kessler, *Coleridge's Metaphors of Being* (Princeton: Princeton University Press, 1979), pp. 17-37; Stephen Bygrave, *Coleridge and the Self: Romantic Egotism* (Basingstoke: Macmillan, 1986), pp. 82-97.

[49] *CN*, III, 4265 (§VIII). Cf. *BL*, I, p. 286. For polarity in Coleridge see Owen Barfield, *What Coleridge Thought* (1971; London: Oxford University Press, 1972), pp. 35-36, 138-43, 'Appendix: Polar Logic', 179-93; Thomas McFarland, 'A Complex Dialogue: Coleridge's Doctrine of Polarity and Its European Contexts', in Walter B. Crawford (ed.), *Reading Coleridge: Approaches and Applications* (Ithaca and London: Cornell University Press, 1979), pp. 56-115; McFarland, *Romanticism and the Forms of Ruin: Wordsworth, Coleridge, and Modalities of Fragmentation* (Princeton: Princeton University Press, 1981), pp. 308-54.

In her salient editorial note to this entry which further emphasises the original link between Coleridge's and Derwent's critical remarks about metaphoricity, Kathleen Coburn wrote that 'It is important to notice that the "centrifugal"…metaphor is Schelling's, and that it is Coleridge who points out that it is strictly an analogy'.[50] Whilst Coleridge found in the *Naturphilosophen* a ready-made polar language, it is he who particularly insisted upon the 'more than' a metaphor distinction, of the 'strictest *analogy*' or correlation between intelligence, the imagination and astronomy. In a fragment of the *Opus Maximum* written between 1819 and 1821, Coleridge stipulated that the 'cosmical history' of the *Naturphilosophen* was 'a coherent story of subjective and so far necessitated fictions'.[51] The lasting message he took from their cosmogony was the idea that it was 'a scheme of the logic of the human imagination'.[52]

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[50] *CN*, III, 4265n (§VIII).

[51] Fragment 4 (1819-1821), in *Op Max*, p. 337.

[52] Indeed, an untapped resource for Coleridge's knowledge of Herschelian and Laplacian astronomy from c. 1815-1825 is contained in his various questions and increasingly critical responses to the constructed cosmos of the *Naturphilosophen*. Coleridge tested the ideas of the German philosophers about the formation of the universe and their notion of the soul, particularly as discussed in the work of Steffens, Schelling and Kluge, against his understanding of Herschel and Laplace. It is not accepted that Coleridge read Laplace, see T.H. Levere, *Poetry Realized in Nature* (1981), p. 143. Consequently, these sources of scientific knowledge have neither been commented upon nor documented in full before, and thus I shall try to bring together here as many of them as I can which show Coleridge responding to the *Naturphilosophen* with a good working model of nineteenth-century astronomical developments in England and France: *CN*, IV, 4640 and n; 4778; *CN*, V, 6735; STC to C.A. Tulk, 12 January 1818, in *CL*, IV, p. 808; 'On the Logical Acts' and 'On Synthesis *a priori*', in *Logic* (some outline as early as 1803 but first mentioned as independent work in 1817), pp. 69, 195; 'Preface to an essay on the Law of Life' (c. March 1817), and 'General Introduction; or, A Preliminary Treatise on Method' (in the *Encyclopaedia Metropolitana*, 1818), in *SW & F*, I, pp. 574, 678; Thomas De Quincey, 'Immanuel Kant & Dr. Herschel', 11 September 1819, *Westmorland Gazette*, in *The Works of Thomas De Quincey*, vol. I, *Writings, 1799-1820*, ed. Barry Symonds (London: Pickering & Chatto, 2000), pp. 289-91; STC marginalia to Carl Alexander Ferdinand Kluge, *Versuch einer Darstellung des animalischen Magnetismus, als Heilmittel* (2nd ed., Berlin, 1815), notes dated April-July 1817 and second reading c. Dec 1827, in *CM*, III, p. 379 and n. 10^4; STC marginalia to Heinrich Steffens, *Caricaturen des Heiligsten*, 2 vols. (Leipzig, 1819, 1821), notes dated May-June 1823, and to Steffens, *Geognostisch-geologische Aufsätze, als Vorbereitung zu einer inner Naturgeschichte der Erde* (Hamburg, 1810), notes dated 'Perhaps Jun 1819', in *CM*, V, pp. 291 and n. 39^1, 351 and n. 19^2; STC marginalia to Daniel Waterland, *A Vindication of Christ's Divinity* (2nd ed., Cambridge, 1719), notes dated 'In 1820s?', in *CM*, VI, p. 75 and n. 4^3. A mostly unexplored source for Coleridge's astronomical as well as more broadly scientific reading at this time is issues of William Nicholson's *A Journal of Natural Philosophy, Chemistry, and the Arts*. Coleridge was first made aware of Nicholson's *Journal* by Davy in May 1801 when he dismissed the *British Critic* in favour of it (see STC to Humphry Davy, 20 May 1801, in *CL*, I, p. 735). He annotated vols. XXII, XXVI, XXVII, XXVIII, XXX (London, 1809, 1810, 1810, 1811, 1812) between c. April 1816-September 1817, the period which both covers and is a prelude to many of the above references. Noteworthy articles include: vol. XXII (January-April 1809), William Herschel, 'Observations of a Comet', 3-14; Herschel, 'Account of a new Irregularity...[in] the Planet Saturn', 100-

This does not mean, of course, that Coleridge was not profoundly influenced by the language and ideas of *Naturphilosophie* around 1815. Schelling's introduction of nature into the arena of the absolute mind, made possible by his insistence on the shift from matter-based to energy-based physics, was an exemplary model of consciousness and reason which Coleridge tweaked for his generative paradigm of the imagination. [53] Following Kant in Germany and Priestley in England, *Naturphilosophie* rejected Newtonian atomism, which considered that particles consisted of solid matter, in favour of Ruđer Bošković's theory that matter was made up of centres of attractive and repelling points of energy, first propounded in Bošković's *Theoria Philosophiae Naturalis* (1758). On the supposition that there was no solidity in nature, the *Naturphilosophen* leap-frogged the prior Cartesian dualism between mind and matter; the physical and the spiritual became expressible in terms of the active conflict of antagonistic, energised opposites.[54] The organic, empirical application of this law of

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3; John Goldingham, 'Eclipses of the Satellites of Jupiter', 153-56; vol. XXVII (May-August 1810), John Wood, 'New Theory of the Diurnal Motion of the Earth', 183-88; vol. XXVII (September-December 1810), Pierre-Simon Laplace, 'Observations on Saturn's Ring', 144-46, in *CM*, III, pp. 936-53. A good critical starting place for Coleridge's *Weltanschauung* is Alice D. Snyder, 'Coleridge's Cosmogony: A Note on the Poetic "World-View"', *Studies in Philology*, 21: 4 (1924), 616-24. Laplacian physics would have appealed to Coleridge at this time because Laplace sought to account for all phenomena in terms of attractive and repulsive forces, see Robert Fox, 'The Rise and Fall of Laplacian Physics', *Historical Studies in the Physical Sciences*, 4 (1974), 89-136.

[53] G.N.G Orsini, *Coleridge and German Idealism: A Study in the History of Philosophy with Unpublished Manuscript Materials from Coleridge's Manuscripts* (Carbondale: Southern Illinois University Press, 1969), pp. 198-230; Barry Gower, 'Speculation in Physics: The History and Practice of *Naturphilosophie*', *Studies in History and Philosophy of Science*, 3:4 (1973), 301-56, 331; Burwick's editorial introduction to Frederick Burwick (ed.), *Approaches to Organic Form: Permutations in Science and Culture* (Dordrecht: D. Reidel, 1987), p. xiii.

[54] This fundamental shift in the history of physics and its important ramifications at the turn of the nineteenth century (for Priestley, Kant, Coleridge and the *Naturphilosophen* amongst others) cannot be overstated. It is quite impossible to do justice to it here, but good preliminary sources include: H.A.M. Snelders, 'Romanticism and Naturphilosophie and the Inorganic Natural Sciences 1797-1840: An Introductory Survey', *Studies in Romanticism*, 9: 3 (1970), 193-215; Robert E. Schofield, *Mechanism and Materialism: British Natural Philosophy in An Age of Reason* (Princeton: Princeton University Press, 1970); P.M. Heimann and J.E. McGuire, 'Newtonian Forces and Lockean Powers: Concepts of Matter in Eighteenth-Century Thought', *Historical Studies in the Physical Sciences*, 3 (1971), 233-306; Timothy Lenoir, 'The Gottingen School and the Development of Transcendental *Naturphilosophie* in the Romantic Era', *Studies in History of Biology*, 5 (1981), 111-205; C.U.M. Smith, 'Coleridge's "Theory of Life"', *Journal of the History of Biology*, 32: 1 (1999), 31-50, 37; E.P. Hamm, 'Shipwrecked Romanticism? Henrich Steffens and the Career of *Naturphilosophie*', *Studies in History and Philosophy of Science*, 31: 3 (2000), 509-36; Peter Hans Reill, 'The Legacy of the "Scientific Revolution": Science

polarity governs the work of Schelling and Steffens, who focused on constructing the universe with the web of polar tensions which they saw manifested within gravity, light, magnetism, electricity, and galvanism.

Coleridge inherited polarity from Schelling and adapted these reconciling powers for his own ends in an attractive-repulsive model of the imagination that had its crown in the experience of God and not nature.[55] Gravitation, conceived as the synthesis of centripetal and centrifugal force, made possible for Coleridge the fluent interchange of centre and circumference, of God and Man, and of Man and Nature, which he had proposed as the 'coinstantaneous reciprocation' of the circular figure of the 'Theta' back in 1806. Coleridge's concept of 'Intelligence' operated by virtue of a polar law that was present in Schelling's definition of 'intuition' in his *Ideen zu einer Philosophie der Natur* (1803) that Coleridge was reading c. 1815:

> In the mind, therefore, there is a union of activity and passivity, an originally free and, to that extent, unlimited activity outwards, and another activity extorted from (reflected by) the mind *upon itself*…Now that act of the mind wherein, from activity and passivity, from unrestricted and restricting activity, it fashions in itself a joint product, is called *intuition…that which makes it intuition, is that in it absolutely opposite, mutually restricting activities are united*.[56]

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and the Enlightenment', in Roy Porter (ed.), *The Cambridge History of Science*, vol. 4, *Eighteenth-Century Science* (Cambridge: Cambridge University Press, 2003), pp. 23-43.

[55] These polar forces are outlined as 'five distinct Powers' in *CN*, III, 4420, *f*19. Cf. James Engell, *The Creative Imagination: Enlightenment to Romanticism* (Cambridge, Mass.: Harvard University Press, 1981), pp. 328-44; Raimonda Modiano, *Coleridge and the Concept of Nature* (London: Macmillan, 1985), p. 201: 'In his system of nature Coleridge's most dramatic departure from the *Naturphilosophen* consists in establishing a supernatural rather than a cosmic source for the two primary forces of nature, light and gravitation.'

[56] Coleridge was reading this the second, revised edition of Schelling's *Ideen* (1803) 'Perhaps before 1815, but possibly much later', see *CM*, IV, p. 391. This English translation is based upon the 1803 edition of the German text which Coleridge read, for which see Friedrich Schelling, *Ideas for a Philosophy of Nature as Introduction to the Study of this Science* (1797, rev. 1803), trans. Errol E. Harris and Peter Heath (Cambridge: Cambridge University Press, 1988), pp. 176-77. For other salient references to Herschel and centripetal and centrifugal force in this edition see pp. 80-82, 159-60. Cf. STC's similar quote from Schelling's *System des transcendentalen Idealismus* (Tübingen, 1800), in *BL*, I, p. 297: '…the transcendental philosopher says; grant me a nature having two contrary forces, the one of which tends to expand infinitely, while the other strives to apprehend or *find* itself in this infinity, and I will cause the world of intelligences with the whole system of their representations to rise up before you.' Cf. p. 299 and n. 1 for influence of Fichte as well.

What is particularly Coleridgean about Schelling's formulation of how the brain regulated the contractions and expansions of experience to fashion a 'joint product' is that, in the *Biographia*, Coleridge represented 'the mind's self-experience in the act of thinking' as specifically governed by gravity (rather than by other polar forces), and as taking place on a 'Quiet stream, with all its eddies'. Schelling's polar logic became, in Coleridge's hands, a picture of the imagination that was also a pulsing, aquatic model miniaturing the Solar System:

> Let us consider, what we do when we leap. We first resist the gravitating power by an act purely voluntary, and then by another act, voluntary in part, we yield to it in order to light on the spot, which we had previously proposed to ourselves. Now let a man watch his mind while he is composing; or, to take a still more common case, while he is trying to recollect a name; and he will find the process completely analogous. Most of my readers will have observed a small water-insect on the surface of rivulets, which throws a cinque-spotted shadow fringed with prismatic colours on the sunny bottom of the brook; and will have noticed, how the little animal *wins* its way up against the stream, by alternate pulses of active and passive motion, now resisting the current, and now yielding to it in order to gather strength and a momentary *fulcrum* for a further propulsion. This is no unapt emblem of the mind's self-experience in the act of thinking. There are evidently two powers at work, which relatively to each other are active and passive; and this is not possible without an intermediate faculty, which is at once both active and passive. (In philosophical language, we must denominate this intermediate faculty in all its degrees and determinations, the IMAGINATION. But in common language, and especially on the subject of poetry, we appropriate the name to a superior degree of the faculty, joined to a superior voluntary controul over it.)[57]

In 'philosophical language', the 'intermediate faculty' which unites the 'active and passive motion' of the beating mind is imagination; in astronomical language, which is 'completely analogous', it is gravitation. Imagination and gravitation are the products of polar forces, the 'tertium aliquid' or 'third thing' which 'can be no other than an inter-penetration of the counteracting powers, partaking of both'.[58] It is a nice

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[57] *BL*, I, pp. 124-25. Cf. Yeats's poem 'Long-legged Fly', with the returning Coleridgean couplet at the end of each stanza: 'Like a long-legged fly upon the stream | His mind moves upon silence', in *The Collected Works of W.B. Yeats*, vol. I, *The Poems (Revised)*, ed. Richard J. Finneran (1983; Basingstoke: Macmillan, 1991), p. 339.

[58] *BL*, I, p. 300. Cf. editorial introduction, p. xcv: '…the poetic imagination stands between and connects – it provides the only true link between – the "primary" imagination, our outward perception, and the

touch that Coleridge 'denominate[d]' the imagination in lunulae considering that in his critical model gravity had a reality in the mind as a force integral to the creative process. The print that the insect leaves on the water is the residue of an act of volition which, for Coleridge, united the living power of thought with the natural world in the shape of the planetary orbits. To convey the precise type of *strenuous* balance required to achieve this mental unity, Coleridge had recourse to an astronomical model of the universe; his perception of the imagination garnered a scientific validity.[59]

The creative mind, which shapes images and ideas into one experiential whole, achieves this fundamental synthesis by what is later called in the *Biographia* 'a surreptitious act of the imagination'. This act provided a 'common and central principle' for a 'cycle of equal truths' by contemplating them as 'a continuous *circle*…giving to all collectively the unity of their common orbit; but likewise supplies by a sort of *sub-intelligitur* the one central power, which renders the movement harmonious and cyclical'.[60] In other words, the armature which formed the unifying spirit for Coleridge's '*Esemplastic*' imagination was orbital whilst the one central power was gravitational.[61] Thus, the pattern which the insect leaves on the water is directly relevant to the cohesive workings of the mental phenomena that Coleridge deduced in the *Biographia*. The 'cinque-spotted shadow' cast by the insect closely resembles a star; constellation hopping had its parallel with the web in which Coleridge mapped the mind's association of ideas.

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philosophic imagination, our inner intuition…The creative imagination of art becomes a completing power. It is synthetic in the highest sense.'; STC to Lord Liverpool, 28 July 1817, in *CL*, IV, p. 760: '…in all pure phaenomena we behold only the copula, the balance or indifference of opposite energies.'

[59] Cf. Timothy J. Corrigan, '*Biographia Literaria* and the Language of Science', *Journal of the History of Ideas*, 41: 3 (1980), 399-419, 417. Coleridge outlines this entire system again in two letters to C.A. Tulk, September 1817 and 12 January 1818, in *CL*, IV, pp. 767-76; 804-9.

[60] *BL*, I, p. 267 and n. 1: 'C's whole paragraph apparently refers to self-consciousness as it unifies the manifold of experience through itself or through imagination.' Indeed it does. This union takes place courtesy of gravity.

[61] Ibid., p. 168. Cf. *CN*, III, 4176: 'How excellently the German Einbildungskraft expresses this prime & loftiest Faculty, the power of co-adunation, the faculty that forms the many into one, *in eins Bildung*.'

The poetic genius must leap, creating circular eddies against the stream of mechanical intellect. Coleridge believed that good thinkers possessed this rare volubility; they created *circles* amidst steered, linear currents of thought, aware that the dynamic power of thinking involved a suspended but inevitable sense of intricate and profitable return.[62] For Coleridge, writing in a coterminous notebook of September 1815:

> the Circumference of a Circle does not (except by accident) mean a limit of vision: but has its essential character *objectively*, ~~by~~ as the necessary product of the omni-radiancy of the central point: as we <may> see daily in the concentric lines on a pond, from a drop of Rain or a leaping minnow/.[63]

The circle which gains its character '*objectively*' is expressible with the same centripetal and centrifugal forces which constitute the 'Objectivizing Tendency' of the 'Intelligence'. Its 'omni-radiancy' is equally an allusion to its divine instantiation as God's 'Theta'. Coleridge made the intelligential act necessarily circular, divine and reliant on astronomical powers. The circles emanating from the rippling pond are ideas in the webbed, associative process of formation. The water reflects the universe's fundamental forces, which are also those which commanded Coleridge's construction of the supermundane quality of the imagination. Gravity is the correlative principle that links the minnow's movements with the intelligent mind, and which puts the mackerel-minded Coleridge in the mood for gooseberry sauce.

Inspiration for this may have come to Coleridge, in part, from his reading in 1815-1816 of two works by Heinrich Steffens which he had bound together: the

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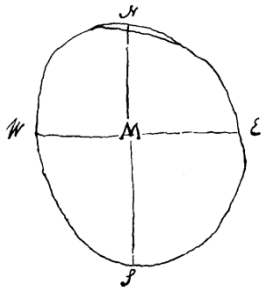
[62] Cf. An anonymous testimony of Coleridge's talk gives a superb, astronomical sense of this return and is quoted by Henry Nelson Coleridge in his introduction to *Table Talk* (1835), I, pp. xxi-xxii: '"Coleridge, to many people…seemed to wander; and he seemed to wander the most, when, in fact, his resistance to the wandering instinct was greatest, viz. when the compass and huge circuit, by which his illustrations moved, travelled farthest into remote regions, before they began to resolve. Long before this coming round commenced, most people had lost him, and naturally enough supposed that he had lost himself…However,…logic the most severe was as inalienable from his modes of thinking, as grammar from his language."'

[63] *CN*, III, 4266, *f*69^{v}-*f*70. This entry was written at the same time as the one defining 'Intelligence' in the notebooks.

Grundzüge der philosophischen Naturwissenschaft (1806) and the *Beyträge zur inner Naturgeschichte der Erde* (pt. 1, 1801).[64] Steffens proposed that the inner structures of nature could be teased out along two fundamental bipolar axes that together signified a globe or sphere, the North-South line of being and the East-West line of becoming, which in turn embodied magnetic and electrical polarities in dynamic conflict. Coleridge constructed numerous graphics of this scheme, which he called the 'compass of nature', and which he applied variously to describe chemical, geological, and biological processes. In one notable instance, he made significant 'changes and additions to Steffens', as Kathleen Coburn remarked in her comments on the following diagram that Coleridge outlined around the time he wrote the *Biographia*:

4226 18.188 f87



Ideal
NS = Line of *Being:* N = Fixive, S = mobile, motive.
EW = Surface of *Becoming:* E. Retractive, insulative, W. dilative
M. Neutrant.
Cosmical
N = Attraction, S. Repulsion. E = Morphic, W. Amorphic.
M = Gravitation.

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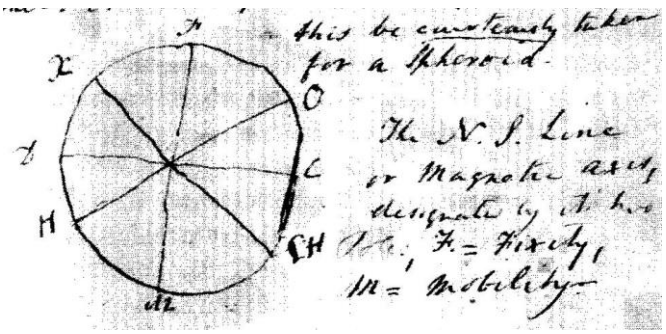
[64] See Lore Metzger's and Raimonda Modiano's co-editorial comments to Steffens in *CM*, V, p. 241.
[65] *CN*, III, 4226, *f*87 and n. Cf. *CN*, III, 4418, *f*14[v]. For a more complex instantiation of this 'globe' which begins to resemble a spider-web see STC marginalia to the flyleaf of Steffens's *Geognostisch-geologische Aufsätze* (1810), dated 'Perhaps Jun 1819', in *CM*, V, pp. 344-45:



In this cosmical picture, Coleridge gave Steffens's 'compass' a new central bearing. Here, the North-South line denotes Attraction-Repulsion with M as Gravitation meeting in between the cross-hairs of being and becoming. This has a strong visual parallel with Coleridge's discussion of imagination as 'the gravitating power' in the *Biographia*, where M is the leaping water-insect that sends concentric ripples to the geographical points on the outside of the sphere: N, E, S, W. These co-ordinates (or ripples) are harnessed and reformulated within by gravitation, M, the 'intermediate faculty', which is also the creative, synthesising imagination in the *Biographia*; in both cases the North-South line shows 'two powers at work, which relatively to each other are active and passive'. In his adaptation of Steffens, Coleridge found the pictorial language which he needed to represent the astronomical imagination in action on the water.

Most brilliantly, the graphic and the leaping minnow are Coleridgean maps for poets; they are structural and natural guides that register artistic experience and which reveal the kind of technical, contrapuntal resourcefulness that is imaginatively indispensable for the successful completion of a poem. Coleridge provided an image, together with the specific physiological forces necessary to power it, which was a visual counterpart to 'the technical perfecting of a poem'. Attaining this equilibrium in poetry is, for Geoffrey Hill, 'an act of atonement, in the radical etymological sense – an act of at-one-ment, a setting at one, a bringing into concord, a reconciling, a uniting in harmony'.[66] Coleridge envisaged poetic composition as an astronomical holding; Steffens provided an initial idea which Coleridge twisted to show that words were counterpoints necessarily suspended with centripetal and centrifugal force.

[66] Hill, 'Poetry as "Menace" and "Atonement"', in *The Lords of Limit* (1984), repr. in *Collected Critical Writings,* p. 4.

The diagram is also an extremely useful hinge for understanding the 'Theory of Life' (1816) because the forces with which Coleridge structured the imagination are the same as those which fuelled his theory of evolution. In the 'Theory of Life', Coleridge again had recourse to Steffens's *Grundzüge* and *Beyträge* for his definition of life as '*the principle of individuation*, or the power which unites a given *all* into a *whole* that is presupposed by all its parts'. Life is reducible to 'the internal copula of bodies, or…the *power* which discloses itself from within as a principle of *unity* in the *many*'.[67] This power is said to be the 'most general law of life' and is explicitly identified as '*polarity*, or the essential dualism of Nature, arising out of its productive unity, and still tending to reaffirm it, either as equilibrium, indifference, or identity'.[68] Crucially, Coleridge symbolised his idea of life with the same reconciling spatial model that he used to illustrate 'the mind's self-experience in the act of thinking' in the *Biographia*, which also resonates with the notebook drawing (above) from the same period:

> …for this is one proof of the essential vitality of Nature, that she does not ascend as links in a suspended chain, but as the steps in a ladder; or rather she at one and the same time *ascends* as by a climax, and expands as the concentric circles on the lake from the point to which the stone in its fall had given the first impulse.[69]

To prove that nature is vital and not materially static, the forces which guarantee its expansion are those which control life itself – 'the *tendency to individuation*' – which 'cannot be conceived without the opposite tendency to connect, even as the centrifugal power supposes the centripetal'.[70] The polar forces which organise mental activity in the *Biographia* control the life of everything in the 'Theory of Life'. The conditions of imaginative perception were extrapolated to encompass the plurality of the natural realm. Coleridge quoted from a sentence in Steffens's *Beyträge* to

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[67] 'Theory of Life' (1816), in *SW & F*, I, pp. 510 and n. 4.
[68] Ibid., p. 518.
[69] Ibid., p. 509.
[70] Ibid., p. 517.

consolidate this, and which joined together the mind and reality with the same astronomical vocabulary: 'In Man the centripetal and individualizing tendency of all Nature is itself concentred and individualized – he is a Revelation of Nature!'[71] In the words of M.H. Abrams: 'The dynamic conflict of opposites, and their reconciliation into a higher third, is not limited to the process of individual consciousness. The same concept serves Coleridge as the root-principle of his cosmogony, his epistemology, and his theory of poetic creation alike'.[72] In practice, the way in which Coleridge effected this supremely pervasive unity in multeity was by charging his philosophy with the same astronomical forces.

The capacity for the imaginative mind to synthesise multitudes into unities in the production of a 'tertium aliquid', an artistic creation or higher third thing, became the identical provision for Coleridge's paradigm of evolution, 'of total intussusception, of the existence of all in each as the condition of Nature's unity and substantiality'. Not to see this, Coleridge warned, was to have 'paralysed [one's] imaginative powers' under 'the influences of the corpuscularian philosophy'.[73] It was to have fallen victim to that 'habitual slavery to the eye' which Coleridge elsewhere characterised as 'the Araneosis of corpuscular materialism'. In other words, it was to get stuck on a small part of the circular spider-web, unable to envisage a thread back to the imaginative, life-giving centre.

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[71] Ibid., p. 551 and n. 4. Cf. p. 550 and n. 4 [the last sentence of the following passage is almost verbatim from the *Beyträge*]: 'Man possesses the most perfect osseous structure, the least and most insignificant covering. The whole force of organic power has attained an inward and centripetal direction. He has the whole world in counterpoint to him, but he contains an entire world within himself.'

[72] Abrams, *The Mirror and the Lamp: Romantic Theory and the Critical Tradition* (1953; London and New York: Oxford University Press, 1971), p. 119.

[73] 'Theory of Life', in *SW & F*, p. 525. Cf. p. 537: 'It has been before noticed that the progress of Nature is more truly represented by the ladder, than by the suspended chain, and that she expands as by concentric circles. This is, indeed, involved in the very concept of individuation, whether it be applied to the different species or to the individuals. In what manner this evident interspace is reconciled with the equally evident continuity of the life of Nature, is a problem that can be solved by those minds alone, which have intuitively learnt that the whole *actual* life of Nature originates in the existence, and consists in the perpetual reconciliation, and as perpetual resurgency of the primary contradiction, of which universal polarity is the result and the exponent.'

Although Coleridge found a malleable series of polar opposites and an invaluable synthetic system in Schelling and Steffens, in an important sense he grew to bite the hand that fed him. There was no place in *Naturphilosophie*, where nature was absolute, for the Trinitarian God of Christianity. In the *Opus Maximum*, Coleridge admitted that:

> in the several works of H. Steffens, especially in his Beiträge…the spirit within me bears witness to the same spirit within him – but that in him the line of its circumvolution was begun from a false centre and with too short and undistended a compass, forced thereby usque ab initio, to close too early on itself, and thus leaving his familiar genius imprisoned within the magic circle of its own describing.[74]

The generative, circular forms of Coleridge's 'compass' were initially indebted to Steffens but advanced beyond their forbear in their inclusion of the Christian God. Coleridge, in fact, figured Steffens as suffering from 'Araneosis' in this passage, 'imprisoned' within his own 'magic circle', much like the claustrophobic nightmare that Coleridge later documented in 1825 where he visualised himself temporarily trapped in the spider's 'Lurking-parlour'.

In Coleridge's 'Theta' or supermundane circle, Schelling's law of polarity was transformed to direct 'the relation to the divine Will in its own Holiness and Absoluteness to the influence of the divine Will in the creaturely Will'. Coleridge's permanent possession from the *Naturphilosophen* was the contemplation of God's influence 'in the completion of the […] idea of Gravity':

> …we have deduced the necessary co-existence both of the centrifugal and of the centripetal forces, and when we last ended we needed nothing but the circumference in order to fix the center, to fill the area, and consequently to compleat the idea of gravitation as one indeed in itself, but composite relatively to its causative antecedents.[75]

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[74] Fragment 4 (1819-1821), in *Op Max*, p. 333. Cf. *CN*, IV, 4662; Thomas McFarland's editorial prolegomena to *Op Max*, pp. lxxxv, cxxix.
[75] 'Appendix A', dated 1820 or later, in *Op Max*, p. 358.

In the synergy of 1806, the relationship between the circles of primary and secondary consciousness was conceived as 'the passing to and fro [of]…Father, Son, Holy Ghost'. By 1820, that 'passing' was specifically denoted as the interactive work of gravity. In Coleridge's system, astronomical forces expressed the activity of the creative mind and the Trinity as analogously operational within the same circle. The most substantial implication of this for Coleridge was that an instance of imaginative leaping signified a completely divine act; the concentric circles were set to the same astronomical tune. In Coleridge's philosophy, gravity united the work of God and the imagination.

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This synthesis was one of Coleridge's central achievements and he found it quite beautiful. In an extract of his essay 'On Poesy or Art', which he gave as a lecture in March 1818, Coleridge stressed that:

> In order to derive pleasure from the occupation of the mind, the principle of unity must always be present, so that in the midst of the multeity the centripetal force be never suspended, nor the sense be fatigued by the predominance of the centrifugal force. This unity in multeity I have elsewhere stated as the principle of beauty.[76]

The construction of beauty in astronomical terminology was something that had been stirring slowly in Coleridge's imagination since the turn of the nineteenth century. The modulated sense of unity that he sought out was something which he had to train his mind attentively to witness. Beauty was instantiated for him in minute aspects of everyday life that revealed a natural or created circular patterning: in spider-webs, rainfall, lunulae, and insects dancing on water, as well as directed more formally in the *Biographia* and the 'Theory of Life' by the discoveries of the *Naturphilosophen*.

[76] By the time of the lecture, Coleridge had not yet written these lines. They were added to the essay later and can be read in 'On Poesy or Art', in *Biographia Literaria by S.T. Coleridge with his Aesthetical Essays*, ed. J. Shawcross, 2 vols. (Oxford: Clarendon Press, 1907), pp. 262-63. The lines are not printed in the scholarly text of this lecture (no. 13) given in *Lects 1808-1819*.

Responding excitedly to J.H. Green's theory of the beautiful in 1829, Coleridge praised:

> The happy illustration of the centripetal and centrifugal, the Beautiful representing the former and the different modifications in the several Fine Arts corresponding to the latter, [which] renders it even easy (i.e. to those to whom it is not impossible) to unfold the Idea into a complete Theory of the Fine Arts… Not only in the whole circle of the Fine Arts but in practical Morals, it will have a most salutary influence to have it an admitted principle – that the Beautiful is the centripetal Power, which dare never be *out of Act* even under the boldest and apparently wildest centrifugations.[77]

The notion of evolving this idea of beauty into 'a complete Theory of the Fine Arts' may seem like a classic piece of late Coleridgean insouciance but it in fact touches on an unexamined and significant aspect of the English literary canon. Coleridge was one of many thinkers for whom the language of astronomy was peculiarly apposite for discussing the activity of writing poetry. What a very brief outline of this school of thought highlights is that Coleridge was not unreasonably seduced by the esoteric pseudo-science of the *Naturphilosophen*, nor were Schelling and Steffens by any means his only precursors for implementing centripetal and centrifugal forces outside the strictest astronomical contexts. Indeed, Coleridge marks a decisive entry point in the development of a tradition of critical response that is still very much alive today.

In the *Timæus* (c. 360 B.C.), which Coleridge could have read at Cambridge and which he did read in the winter of 1801 in Thomas Taylor's 1793 translation, Plato elided God, the soul, the intellect, and the heavens within a circle in his depiction of the creation of the universe, and at one point even described 'the circulations of the immortal soul…being merged in a profound river' that saliently echoes with the *Biographia*:

> By us indeed it is asserted that divinity bestowed sight on us for this purpose, that on surveying the circulations of intellect in the heavens we may properly employ the revolutions of our cogitation, which are allied to their circulations;

[77] STC to J.H. Green, 12 August 1829, in *CL*, VI, pp. 812-13.

> and may recall tumultuous motions of our discursive energies, to the orderly processions of their intellectual periods. That besides this, by learning these and participating right reason according to nature, and imitating the revolutions of divinity which are entirely inerratic, we may give stability to the wanderings of our cogitative energy.[78]

This Platonic strain of divinely circular 'cogitative energy' was taken up in the Renaissance by diverse figures such as Nicholas of Cusa, for whom God was an "infinite sphere" in the *De docta ignorantia* (1440),[79] and by Sir Philip Sidney, who pictured the poet in *A Defence of Poesie* (c. 1580) as someone that 'goeth hand in hand with nature, not enclosed within the narrow warrant of her gifts, but freely ranging only within the zodiac of his own wit'.[80] Indeed, for George Puttenham in *The Art of English Poesy* (1589), poets 'mounted up to search after the celestial courses and influences…they were the first astronomers'.[81] Coleridge drew wit's zodiac functioning in Platonic terms on the water in the *Biographia*, whilst Gerard Manley Hopkins lectured on 'words as heavy bodies' at Manresa College in Roehampton in 1874, which included a prosodic account of how 'The centre of gravity is like the accent of stress'.[82]

In our own time, Geoffrey Hill has firmly stated that 'An enquiry into the nature of rhythm must first attempt to account for the inertial drag of speech. Language gravitates and exerts a gravitational pull'.[83] Likewise, for Seamus Heaney speaking in

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[78] Plato, *The Timæus* (c. 360 BC), in *The Cratylus, Phædo, Parmenides and Timæus of Plato*, trans. Taylor (1793), pp. 476, 482-83. Cf. pp. 425, 465, 478, 551.
[79] Dermot Moran, 'Nicholas of Cusa and modern philosophy', in James Hankins (ed.), *The Cambridge Companion to Renaissance Philosophy* (Cambridge: Cambridge University Press, 2007), pp. 173-92, 187. Cf. Poulet, *Metamorphoses of the Circle*, p. 6: 'Paradoxically, God is at once the center from which the universe comes forth and the infinite sphere which contains it as a point. Following the tradition of Cusa, God is at one and the same time the minimum which is the point, and the maximum which is the sphere. This maximum and this minimum coincide. The final God is identical with the initial God. The circumference is equal to the center, and every point of the sphere is the center…In the infinite every point is a center, or to speak as did Bruno, "the universe is all center".'
[80] Sidney, *A Defence of Poetry* (c. 1580), in *Miscellaneous Prose* (1973), p. 78. Cf. p. 79: 'Neither let it be deemed too saucy a comparison to balance the highest point of man's wit with the efficacy of nature…since our erected wit maketh us know what perfection is, and yet our infected will keepeth us from reaching it.'
[81] Puttenham, *The Art of English Poesy (1589): A Critical Edition* (2007), p. 99.
[82] Hopkins, 'Rhythm and the other structural parts of rhetoric – verse' (1874), in *Journals and Papers* (1959), p. 269.
[83] Hill, 'Redeeming the Time', repr. in *Collected Critical Writings*, p. 91.

The Nobel Lecture (1995), poetic form was 'a buoyancy and a holding, allowing for the simultaneous gratification of whatever is centrifugal and centripetal in mind and body'. Heaney went on to describe the poet's business as activated in completely Coleridgean terms:

> …as a poet I am in fact straining towards a strain, in the sense that the effort is to repose in the stability conferred by a musically satisfying order of sounds. As if the ripple at its widest desired to be verified by a reformation of itself, to be drawn in and drawn out through its point of origin.[84]

The 'musically satisfying order of sounds' is a planetary ripple on Coleridge's water; it is the pressure of the imagination conceived as the music of the spheres. These short but various examples underline a widespread aphasia; poets cannot account in words alone for the complexities of *techne* and for artistic creativity. The type of poetic verification that Coleridge and the others project involves a voiced or tacit acceptance of the role of astronomical forces in the production of poems. It is as if there needs to be another kind of reconciling sanction – beyond what art can feed into the style of an address – an imaginative fermentation that volatilises matter-of-factness.

This chapter has scrutinised the shape and power of Coleridge's volubility in a sequence of conditioned circles that each exact the same measure of gravitational force. Richard Harter Fogle, in his accurate delineation of Coleridge's philosophy, made the important point that Coleridge's 'definition of life as unity in multeity is essentially the same as [his] depiction of beauty and of the poetic imagination…the account of individuation in its highest degree is also Coleridge's account, in other contexts, of ideal aesthetic and poetic structure'.[85] What has not been shown before is that it is the operation of centripetal and centrifugal forces that negotiated all of these matters and

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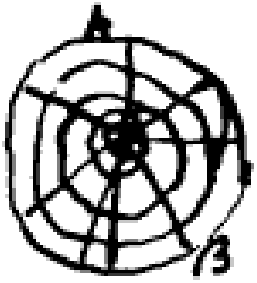
[84] Seamus Heaney, 'Crediting Poetry', The Nobel Lecture 1995, in *Opened Ground: Poems 1966-1996* (London: Faber and Faber, 1998), p. 466. Cf. p. 450. 'I credit poetry, in other words, both for being itself and for being a help, for making possible a fluid and restorative relationship between the mind's centre and its circumference.'

[85] Richard Harter Fogle, *The Idea of Coleridge's Criticism* (Berkeley and Los Angeles: University of California Press, 1962), p. 24.

which connects them. Indeed, even Coleridge's declarative style was modelled on his formulation of the creative mind's astronomical imaginings.

The drawing below, which is a reproduction from Coleridge's notebook entry of 1814, held a multiplicity of lambent ideas and images together which Coleridge insistently threaded through the cells of his practice:



It is a spider-web recognising within its interstices the collusion of the mind's associative tools, the linear 'silk thread' of the 'catenating Faculty' and the lateral, 'thousand webs' of 'Araneosis'; it is the eddying pool, lake or ocean in the linearity of the river, the theological adumbration of infinite, circular ideas which constituted Coleridge's 'Theta' or 'coinstantaneous reciprocation' of God's love with Man's consciousness; it is two lunulae greeting each other on centripetal force lines; it is a cross-section of a mind detecting mackerel and meeting gooseberry sauce; it is Schelling's electric law of polarity writ large within Steffens's 'compass of nature' and set to a new swing; it is the evolution of life's fundamental processes as unity in multeity; it is beauty; it is the rainfall, pebble, and insect pulsing on the water, at the mind's centre, and sending divinely reverberating imaginative ripples outwards in alignment to A – B, to the circumference, to be pulled back into a higher artistic creation by astronomical forces, here outlined in their new, Herschelian orbits; it is, lastly, Coleridge chatting, weaving a web of difficult exchange in front of dazzled

dinner guests, a tiny print of his rhizomatic mind, an iteration of miraculous conversational logic that adhered to the deepest and richest principles of poetic composition as he endeavoured to come full circle.

CHAPTER FIVE

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'THE TELESCOPE OF THE CHURCH': COLERIDGE, ASTRONOMY, AND RELIGION

> Those more ethereal truths, of which the Trinity is conspicuously the chief, without being circumstantially explained, may be faintly illustrated by material objects. – The eye of man cannot discern the satellites of Jupiter, nor become sensible of the multitudinous stars, whose rays have never reached our planet, and, consequently, garnish not the canopy of night; yet, are they the less *real*, because their existence lies beyond man's unassisted gaze? The tube of the philosopher, and the *celestial telescope*, – the unclouded visions of heaven will confirm the one class of truths, and irradiate the other. The *Trinity* is a subject on which analogical reasoning may advantageously be admitted, as furnishing, at least, a glimpse of light, and with this, for the present, we must be satisfied.[1]

In a lifelong effort to conceptualise and communicate his Trinitarianism, Coleridge had recourse to Herschelian astronomy. Following his volte-face from Unitarianism at the turn of the nineteenth century right up until the publication of *On the Constitution of the Church and State* (1830), Coleridge transformed Herschel's discoveries into his most lambent and abiding religious symbols. Amidst the mass of scholarship that has appeared on the subject of Coleridge's theology, no discussion of the central importance of this set of scientific ideas to Coleridge's faith has yet taken place. This chapter proposes to fill that gap by offering a new way into his religious thinking: it charts the fluctuations and growth of Coleridge's spiritual consciousness by tracking his metaphorical use of Herschel. Underpinning Coleridge's dialectic between theology and philosophy is an ordered, thorough, and intelligible map of Herschel's sky – a brilliant analogical universe which Coleridge used to structure his intellectual processes and bring visual clarity to his increasingly complex theological discussions.

[1] STC to Joseph Cottle, late April 1814, in *CL*, III, p. 483.

It is somewhat ironic, therefore, that Coleridge's religious teachings are bookended not by Herschel but by Newton. In March 1796, he wrote for *The Watchman* a satirical 'Defence of the Church Establishment from its similitude to the grand and simple Laws of the Planetary System'. Institutional corruption was mechanically embedded in society to such an extent, Coleridge argued, that it should be aligned with the inevitability of the Newtonian cosmos:

> The fifth definition of the first book of Sir Isaac Newton's Principia is as follows: "The centripetal force is that force by which bodies are from all parts drawn, driven, or do any how tend to a certain point as to a centre." Now as the Sun of the planetary, so is the Court, the centre of the ecclesiastical system; and its centripetal force is its power of conferring good livings and lucrative dignities. The Bishops are the larger bodies in this system, some at greater, some at lesser distances, but all revolving round their Sun, and rejoicing in the heat and radiance of ministerial favour. The Moons are their Lordship's Chaplains…The words of the definition "by which bodies are from all parts drawn," imply that atheists, papists, jacobites, and jacobines are lured to the church by hopes of livings and stalls: and the words "are driven" import, that by force of parental authority or apprehensions of starving, many are compelled to subscribe what they cannot but disbelieve. The last sentence "or do *any how* tend to the centre," signifies, that in this universal gravitation towards the Sun of Royal Patronage, it is of comparatively little consequence what measures a man takes to arrive at preferment provided he get there at last.[2]

The fundamental laws of the universe set out in Newton's *Principia* (1687) provided the ballast for this acerbic journalism. In a notebook entry of 1819-1820, Coleridge remarked that the 'lofty Exposition of the Newtonian System…failed to impress me with any correspondent feeling even when I was a Boy'.[3] As a young man in 1796, Coleridge had still not been impressed by Newton. The celestial consonance which orders the solar system was interpreted by Coleridge as stultifying when applied to the Church. Planetary harmony was transmuted into ecclesiastical sclerosis; Church members accumulated, in Mark Canuel's words, 'not because of shared beliefs but

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[2] '*No. II. Wednesday, March 9, 1796',* in *Watchman*, pp. 67-68.
[3] *CN*, IV, 4633, *f*49.

because of fear and hopes for advancement';[4] Newtonian forces were transmogrified into the inexorable abuses of hereditary episcopal power.

In his last prose work, *On the Constitution of the Church and State* (1830), which considered the Church's role in a pluralist society by outlining a feasible way in which Church and State could be interdependent, Coleridge once again invoked Newtonian science. However, this time Newton packed a very different punch. Subsequent to his remarks in the 'Theory of Life' (1816) that the 'sublime discoveries of Newton…gave almost a religious sanction to the corpuscular system and mechanical theory', Coleridge summoned Newton to underscore the *dynamism* of the ideal Church.[5] Here, the Newton of *The Watchman* found his positive prose counterpart. In 1830, the Christian Church was characterised by:

> …the absence of any visible head or sovereign – by the non-existence, nay the utter preclusion, of any local or personal centre of unity, of any single source of universal power. This fact may be thus illustrated. Kepler and Newton, substituting the idea of the infinite for the conception of a finite and determined world, assumed in the Ptolemaic Astronomy, superseded and drove out the notion of a one central point or body of the Universe. Finding a centre in every point of matter and an absolute circumference no where, they explained at once the unity and the distinction that co-exist throughout the creation by focal instead of central bodies: the attractive and restraining power of the sun or focal orb, in each particular system, supposing and resulting from an actual power, present in all and over all, throughout an indeterminable multitude of systems. And this, demonstrated as it has been by science, and verified by observation, we rightly name the true system of the heavens. And even such is the scheme and true idea of the Christian Church.[6]

Thirty-six years after the piece in *The Watchman*, Newton was no longer a conduit for satire. Indeed, far from it. In fact, the Newtonian conception of infinity proved a suitable analogy for the 'true idea of the Christian Church' in a format which also gave credence to 'the unity and the distinction that co-exist throughout the creation', or to Coleridge's cherished metaphysical idea of multeity in unity. Coleridge

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[4] Mark Canuel, *Religion, Toleration, and British Writing 1790-1830* (Cambridge: Cambridge University Press, 2004), p. 91.
[5] 'Theory of Life' (1816), in *SW & F*, I, p. 498.
[6] *C & S*, pp. 118-19.

wanted religion to be 'the centre of gravity in a realm';[7] the governing dynamics of provincial Church policy did not have to be inimical to the interests and capacities of the State.[8] The stability promised by Newton's universe was not such a bad thing after all.

Crucially, the fiery vilification of all institutions, religious or otherwise, in *The Watchman,* is reconceived in *Church and State* by way of a shift in Coleridge's astronomical thinking. If in 1796 – as part of his revulsion against the prevalence of seventeenth- and eighteenth-century mechanistic philosophy – Coleridge saw Newtonian forces as restrictive and predictable, by 1830 he had changed his mind.[9] In the interim he realised that centripetal force, when taken together with centrifugal force, gave him a cosmic analogy to explain the irreducible motions of his polar logic; 'the attractive and restraining power' of this philosophical methodology was supported on an infinite scale.[10] Coleridge's model for the underlying controls of the imagination is thus also justifiable in a broader discussion of religion. In both cases equanimity was reached via a new understanding of Newtonian astronomy.

Coleridge's mature religious position demarcated the scope for a national Church to accommodate potentially incompatible beliefs. This tolerance was reflected in his realisation that Newton's emphasis upon 'focal instead of central bodies' stimulated an apt comparison with the kind of local Church government he had in mind.

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[7] Ibid., p. 70. Cf. STC to Lord Liverpool, 28 July 1817, in *CL*, IV, pp. 759-60: 'On religion, which is at all times the centre of Gravity in the machine [world], and with and through which Philosophy acts on the community in general, the influence is still more manifest.'

[8] Ronald C. Wendling, *Coleridge's Progress to Christianity: Experience and Authority in Religious Faith* (Lewisburg: Bucknell University Press, 1995), p. 173.

[9] For an account of the response in the eighteenth century to Newtonian mechanistic science, which includes the role of Enlightenment vitalism and culminates in a discussion of the holistic programme of the *Naturphilosophen*, see Reill, 'Legacy of the "Scientific Revolution"', pp. 23-43.

[10] Cf. *BL*, I, pp. 296-97 and n. 3 for the influence of Schelling: '…the transcendental philosopher says; grant me a nature having two contrary forces, the one of which tends to expand infinitely, while the other strives to apprehend or *find* itself in this infinity, and I will cause the world of intelligences with the whole system of their representations to rise up before you.' For a discussion of Newton's *Principia* (1687) see A.C. Crombie, *Styles of Scientific Thinking in the European Tradition*, 3 vols. (London: Duckworth, 1994), I, p. 1068.

Coleridge's changing conception of how the Church could strategically improve affected the valency of his thinking about Newton and astronomy. If Catholicism appeared in *Church and State* as 'a possible reduction of community to private sympathetic alliances that do not take account of "enlarged" spheres of action',[11] then this was because Coleridge was wary of the threat of sectarianism within the Church. In fact, as early as his 1795 *Lectures* Coleridge had declared, in astronomical language, that: 'He who sees any real difference between the Church of Rome and the Church of England possesses optics which I do not possess'.[12] Theological discrepancies should not be allowed, Coleridge argued, outside the realm of any conceivable universe. The perfect Church should be catholic with a small 'c' in order to encourage the social virtues which spring from community living.[13] From 1795, the latest optical theories were involved in setting the parameters of religious debate for Coleridge.

By charting Coleridge's ever increasing regard for optics it is possible to follow and evaluate the changes in his theological position that span the decades separating the publication of *The Watchman* and *Church and State*. Importantly, this process incorporates his fresh faith in Newton and, more significantly, his progression to Herschelian paradigms, showing that the imaginative language with which Coleridge tackled religious issues was most generative when it emerged as a development from his up-to-date astronomical thinking.

In his *Preface* to *Church and State* (1839), Henry Nelson Coleridge condoned the links his uncle had fostered between religion and science, depicting that relationship as necessarily symbiotic:

> The time may come when it may seem fit to God that [the Church of England and the Constitution] shall perish, for ever, or for a season; – and the sure token

[11] Canuel, *Religion, Toleration, and British Writing 1790-1830*, pp. 120-21.
[12] 'Lecture Five', c. 5 June 1795, in *Lects 1795*, p. 210.
[13] Anthony John Harding, *Coleridge and the Idea of Love* (Cambridge: Cambridge University Press, 1974), p. 252.

> of that time will be, when the divorce of scientific from religious education shall have had its full work throughout the length and breadth of the land.[14]

Coleridge himself would have whole-heartedly concurred with these sentiments having adumbrated something similar in his c. 1823 marginalia to Henry More's *Explanation of the Grand Mystery of Godliness* in his *Theological Works* (1708):

> …a Scheme of the Christian Faith which does not arise out of and shoots its beams downward into, the Scheme of Nature, but stands aloof, as an insulated After-thought, must be false or distorted in all its particulars.[15]

From its inception, Coleridge's 'Scheme of the Christian Faith' was articulated in terms of Herschel's shooting beams.

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Between September and November 1799, having recently returned from Germany, Coleridge jotted down in a notebook a line which he repeated virtually word for word almost three years later in another note dated August or September 1802:

> Socinianism Moonlight – Methodism &c A Stove! O for some Sun that shall unite Light & Warmth.[16]

As a potential source for these lines Kathleen Coburn offered a passage from the first volume of the two-part English translation of Thomas Burnet's *Sacred Theory of the Earth* (1684, 1690).[17] Although this is perfectly plausible given that Coleridge was using Burnet in his lecture series *On Politics and Religion* (1795), it neither explains what spurred Coleridge to write the note out twice on quite discrete occasions, nor does

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[14] H.N. Coleridge, *Preface* (1839) in 'Appendix A', in *C & S*, p. 200.
[15] STC marginalia to Henry More, *The Theological Works of the most pious and learned Henry More, D.D. sometime Fellow of Christ's College in Cambridge…According to the author's improvements in his Latin edition* (London, 1708), in *CM*, III, pp. 919-20. It is plausible STC was also annotating More c. 1827-28.
[16] *CN*, I, 467. Cf. Ibid., 1233. The central part of this chapter constitutes a significantly expanded version of Thomas Owens, '"The Telescope of the church": Coleridge, Astronomy, and Religion', *The Coleridge Bulletin*, N.S. 40 (2012), 37-47.
[17] *CN*, I, 467n. Coburn quotes from Thomas Burnet, *Sacred Theory of the Earth* (London, 1684), I, p. 297: "We may commonly distinguish these Inclination-opinions from the Rational, because we find them accompanied with more Heat than Light, a great deal of eagerness and impatience in defending them, and but slender arguments." Coleridge's copy was given to him by Charles Danvers in 1795-96, a friend of Southey's, and retained at Rydal Mount by 1814. The original Latin version, *Telluris Theoria Sacra*, was published in two volumes in 1681 and 1689. Cf. *CN*, I, 61n; Wu, *1800-1815*, pp. 36-37.

it elucidate Coleridge's intended meaning. For that, another possible source bears investigation which explains Coleridge's duplication whilst making scientific sense of the metaphors in the phrase. This second source shows Coleridge drawing out a host of important imaginative connections between his vacillating religious beliefs and nineteenth-century astronomy which he sustained throughout his life.

In the three years which separated the notes Coleridge's Unitarian allegiances waned, much as his erstwhile Hartleian Necessitarianism had by the mid-1790s. By the time he wrote the second note he was far removed from the militant Unitarianism he had preached in Shrewsbury in 1798. In July 1802, as a letter to his brother George demonstrates, Coleridge avowed that 'the Socinian & Arian Hypotheses are utterly untenable' – deistic, antitrinitarian doctrines denying Christ's divinity and His consubstantiality with God – and that subsequently 'the Nature of the Being of Christ is left in obscurity'.[18] This 'obscurity' left Coleridge anxiously searching for a concrete theological position which would not emerge until he made his firm Trinitarian declaration from Malta in February 1805:

> No Trinity, no God…Unitarianism in all its Forms is Idolatry…O that this Conviction may work upon me and in me…that I may be made to know either their especial and peculiar Union, or their absolute disunion in any peculiar Sense.[19]

Coleridge's exasperation might partially serve to explain why he repeated the entry. He may fancifully have hoped that this deed alone would suffice to spur Trinitarianism to 'work upon me and in me'. But in reality it was not merely a memorandum. There is, in fact, a more complex series of allusions at work within the phrase which *did* enable him to grasp the 'especial and peculiar Union' of the Trinity and which gives the second note a completely different tone from the first.

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[18] STC to Revd. George Coleridge, 1 July 1802, in *CL*, II, p. 807.
[19] *CN*, II, 2448.

From Greta Hall, Keswick, in 1801, Coleridge's religious turmoil played out alongside his growing fascination with Herschelian astronomy. This is not something which Neil Vickers discussed in his study of 'Coleridge's "abstruse researches"' between 1800 and 1802. Vickers' thesis is that Coleridge's intense interest in sight and touch during this period was primarily stimulated by Berkeleian philosophy, Erasmus Darwin, and Tom Wedgwood, and that these sources influenced his distinction between Fancy and Imagination.[20] My own contention is rather different. In 1801, nothing aroused Coleridge's attentiveness to his sensory faculties more than Herschelian science, with which material he found a way to enunciate his religious perplexities for the rest of his life.

Writing to Humphry Davy in May 1801, Coleridge asked him to explain 'whether Herschel's Thermometric *Spectrum* (in the Philos. Trans.) will lead to any Revolution in the chemical Philosophy'.[21] The 1800 issue of the *Philosophical Transactions of the Royal Society of London* contained five papers by William Herschel, four of which were concerned with the 'Thermometric *Spectrum*' and his discovery of infra-red radiation. What Herschel had unearthed was that there were 'some striking and substantial differences between light and heat': indeed, invisible 'rays of heat' were emitted in light and various degrees of heat could be obtained from different parts of the light spectrum. Violet rays produced 'two degrees of heat' whilst 'the full red colour, on the opposite side, gave no less than seven degrees'.[22] Whilst some rays of the sun are admitted by the eye 'under the appearance of light and

[20] Neil Vickers, 'Coleridge's "Abstruse Researches"', in Nicholas Roe (ed.), *Samuel Taylor Coleridge and the Sciences of Life*, (Oxford: Oxford University Press, 2001), p. 157.
[21] STC to Humphry Davy, 4 May 1801, in C*L*, II, p. 727. Cf. Levere, *Poetry Realized in Nature* (1981), p. 148.
[22] William Herschel, 'Experiments on the Solar, and on the Terrestrial Rays that Occasion Heat; With a Comparative View of the Laws to Which Light and Heat, or Rather the Rays Which Occasion Them, are Subject, in Order to Determine Whether They are the Same, or Different', *Phil Trans*, 90 (1800), II, 438-507.

colours', others are 'stopped in the coats and humours of the eye [and] act upon them, as they are known to do upon all the other parts of the body, by occasioning a sensation of heat'.[23] Herschel's paper on the 'Investigation of the Powers of the Prismatic Colours to Heat and Illuminate Objects; With Remarks, That Prove the Different Refrangibility of Radiant Heat', proved both that 'we come to the maximum of light, long before we come to that of heat, which lies at the other extreme', and that certain colours are 'more apt to occasion heat' whilst others are 'more fit for vision'.[24]

Coleridge's reading of this material in the period immediately preceding his letter to Davy must account for his otherwise enigmatic request to Poole in March 1801: 'When you come, I shall beg you to bring me a *Present* – it is, three Prisms – they will cost you 8 shillings a piece'.[25] Dividing light like Herschel into its constituents of colour, visible light and heat was top of Coleridge's scientific agenda in the middle of 1801; indeed, it is likely that this is the activity to which he referred in a letter to Longman on 27 March, telling the publisher that he had been 'lately immersed' in 'very important Researches & Studies…& which have made all subjects of ordinary Interest

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[23] Herschel, 'Experiments on the Refrangibility of the Invisible Rays of the Sun', *Phil Trans*, 90 (1800), 292.

[24] Herschel, 'Investigation of the Powers of the Prismatic Colours to Heat and Illuminate Objects; With Remarks, That Prove the Different Refrangibility of Radiant Heat. To Which is Added, an Inquiry into the Method of Viewing the Sun Advantageously, with Telescopes of Large Apertures and High Magnifying Powers', *Phil Trans*, 90 (1800), 256, 272.

[25] STC to Thomas Poole, 24 March 1801, in *CL*, II, p. 712. Coleridge almost certainly already owned at least one prism, which he would have needed for his concurrent examination of Newton's *Opticks* (1704). Coleridge read the third, corrected edition of the *Opticks* (London, 1721), for which see Ralph J. Coffman, *Coleridge's Library: A Bibliography of Books Owned or Read by Samuel Taylor Coleridge* (Boston: G.K. Hall, 1987), p. 152. Cf. STC to William Godwin, 25 March 1801, in *CL*, II, p. 714: '…my hands are scarred with scratches from a Cat, whose back I was rubbing in the Dark in order to see whether the sparks from it were refrangible by a Prism'. In light of the Herschelian material Coleridge was reading at exactly this moment the quotation is not merely fanciful. He probably wanted three more prisms for William and Dorothy; I do not know if he received them from Poole because he did not visit at this proposed time. However, the really interesting question is whether or not the metaphor of the candle that he uses in the same letter to Godwin to describe his feeling that 'The Poet is dead in me' – picturing his imagination lying 'like a Cold Snuff on the circular Rim of a Brass Candle-stick, without even a stink of Tallow to remind you that it was once cloathed & mitred with Flame' – suggested itself primarily because candlesticks had been in constant use as key pieces of equipment for Coleridge as he carried out Herschel's experiments at night.

appear to me *trifling* beyond measure'.[26] In fact, I would argue that it was his restless pursuit of Herschel that made him physically unwell at this time:

> At Wordsworth's advice or rather fervent intreaty I have intermitted the pursuit – the intensity of thought, & the multitude of minute experiments with Light & Figure, have made me so nervous & feverish, that I cannot sleep as long as I ought & have been used to do; & the sleep, which I have, is made up of Ideas so connected, & so little different from the operations of Reason, that it does not afford me the due Refreshment.[27]

> [18 March] Wednesday – Afternoon. Abed – nervous – had noticed the prismatic colours ~~reflected~~ transmitted from the Tumbler – Wordsworth came – I talked with him – he left me alone – I shut my eyes – beauteous spectra of two colors, orange and violet – then of green, which immediately changed to Peagreen, & then actually *grew* to my eye into a beautiful moss, the same as is on the mantle-piece at Grasmere. – abstract Ideas – & unconscious Links!![28]

Recognising the frenzy into which Coleridge was working himself, Wordsworth stepped in to restrain and soothe his friend. From the tone of the episodes, one wonders whether or not Wordsworth's 'fervent intreaty' involved having to confiscate the prisms for Coleridge's own health. But if so, it was ineffective; the tumbler sufficed to split light and to set his mind forging 'abstract Ideas'. In the second passage, the substitution of 'transmitted' for 'reflected' is indicative of Coleridge's new understanding; it is a more intimate verb choice and its selection attests to Coleridge's hands-on approach, to his new-found love for physical experiments. Coleridge quickly attuned himself to the inner workings of light moving through a prism colourfully. Even when he closed his eyes, Coleridge's mind continued to move the prism and to connect vividly the growing shades of green with familiar objects.

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[26] Ibid., STC to Thomas N. Longman, 26 [27] March 1801, p. 715.
[27] Ibid., STC to Thomas Poole, 16 March 1801, p. 707. Cf. Norman Fruman, *Coleridge, The Damaged Archangel* (1971; London: George Allen & Unwin Ltd, 1972), p. 130. Commenting on this passage from Coleridge's letter to Poole, Fruman wrote: 'We would give much to examine even a few scraps of this "multitude of minute experiments with Light & Figure," but, alas, the record of notebooks and letters is blank. It seems best, therefore, to pass over these claims as merely a bubble occasioned by the "nervous and feverish" state Coleridge describes, and not as pointing to a lamentable loss to the world of knowledge. It is most unlikely that he was in any position to carry out "minute" experiments of any kind in science.' Evidently, my own stance differs radically from Fruman's. Coleridge *was* in an excellent position to carry out these experiments himself – which is one good reason why few of the results needed to be written down.
[28] *CN*, I, 925.

It is this Herschelian research which Coleridge both read about and practised for himself that resonates afresh in the notebook entry of August-September 1802. If Socinianism is characterized as 'Moonlight' and Methodism as 'A Stove!', the former has no power to transmit heat whilst the latter gives off next to no light. At the second time of writing, the major problems which Coleridge saw in the Socinian denial of Christ's inherent divinity, coupled with his unease at the reliance of Wesleyan Methodist theology on Lockean empiricism, were refracted through the latest theories of light.[29] In other words, it was precisely the *invisible* which these denominations refused to endorse and which Herschel had shown to be active properties of light. Here were 'unconscious Links!!' of the highest order.

> Perhaps this explains why the 1802 entry merits two exclamation marks:
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> Socinianism moonlight – Methodism a Stove! O for some Sun to unite heat & ~~warm~~ Light![30]

The punctuation was newly indicative of real discovery which in the 1799 entry was tentatively something to be hoped for. Religious anxiety was replaced by renewed conviction. The sun that could 'unite heat and & ~~warm~~ Light!' had in fact just been revealed by Herschel and was also that which Coleridge implemented in a religious context to confer unificatory and divine status upon the Son of God. Holding the dual meaning of 'Sun/Son' together, the pun linguistically enacts Herschel's discovery by silently warming its invisible other half. Coleridge's little slippage – '~~warm~~ Light!' – was exactly what Herschel proved to exist in varying gradations in 1800. The concrete orthodoxy of Trinitarian Christianity, which for Coleridge shattered the half-truths of

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[29] Richard E. Brantley, *Locke, Wesley and the Method of English Romanticism* (Gainesville: University of Florida Press, 1984), pp. 1-26; Douglas Hedley, *Coleridge, Philosophy and Religion* (Cambridge: Cambridge University Press, 2000), p. 47; Graham Neville, *Coleridge and Liberal Religious Thought: Romanticism, Science and Theological Tradition* (London: I.B. Tauris, 2010), pp. 10-11.
[30] *CN*, I, 1233. Cf. John Beer's editorial introduction to *AR*, pp. lxxxvii-lxxxviii.

Arianism, Socinianism, Methodism, and Unitarianism, was from the first instance, and in radically Coleridgean style, expressible in terms of Herschel's infra-red.

This established a powerful precedent in Coleridge's imaginative thinking: astronomy is conceived in theological terms and *vice versa*; Herschel's science is important in itself and as a flexible, methodological armature capable of conceptualising and communicating Trinitarianism. In an article he wrote for *The Morning Post* in August 1803 in which he berated Charles James Fox for affirming that 'the cause of the country, and that of the Ministry are inseparable', Coleridge showed that he was keenly alert to implementing Herschelian analogies, often trying them out in new, even political, contexts:

> If by the phrase inseparable, Mr. Fox would say only, that the one question cannot be treated of historically or argumentatively, without frequent references to the other, he says what no one is disposed to deny. But it is too gross a sophism to infer, that two things, which are, or happen to have been, co-present in time and space, cannot be considered separately in the reason; and that whatever applies to the one must of necessity apply to the other. – Would Dr. Herschell allow this argument, if it were applied to the light and heat of the sun?[31]

Using Herschel to reify mental processes that take place 'in the reason' added an incipient psychological complexity to Coleridge's deployment of new science that he would return to in his later theological material. In 1803, *The Morning Post* was ripe testing ground for lines of argument Coleridge would flesh out in a strictly Christian context. Coming back to the notebook entries proper in a letter of October 1806 to Thomas Clarkson, Coleridge's stipulation 'that the Idea of God involves that of a Tri-unity' is juxtaposed with his conception of Unitarianism, which now offers 'no Sun, no Light with vivifying Warmth, but a cold and dull moonshine, or rather star-light, which shews itself but shews nothing else'.[32] John Beer's assessment that 'Light became for

[31] '*The Men and the Times*', No. II, in *The Morning Post* (20 August 1803), in *EOT*, I, p. 431.
[32] STC to Thomas Clarkson, 13 October 1806, in *CL*, II, p. 1196.

Coleridge a central symbol, second only to love in its power to bind together disparate strands of his thinking',[33] is given renewed credence by the fact that Coleridge's discussions of 'Tri-unity' take place in a metaphorical space consistently allied with Herschel.

In infra-red radiation Coleridge found a supple analogy for theological concerns which he never tired of using. In an essay on 'Virtue and Knowledge' penned for periodical publication in *The Friend* in 1809-1810, Coleridge recycled material that he was first familiar with a decade previously and which links Herschel's discovery specifically with Jesus, the second Person of the Trinity:

> The light of religion is not that of the moon, light without heat; but neither is its warmth that of the stove, warmth without light. Religion is the sun, whose warmth indeed swells, and stirs, and actuates the life of nature, but who at the same time beholds all the growth of life with a master-eye, makes all objects glorious on which he looks, and by that glory visible to all others.[34]

Christ is at the centre of religion for Coleridge: it is the 'he' which is crucial here, and which ensures that the 'light of religion' is neither that of the Moon nor the stove. Trinitarianism is activated with astronomical theories. Similarly, in his marginal annotation of 1816 to William Wall's *A Conference between Two Men that had Doubts about Infant-Baptism* (1706), Coleridge affirmed in doubly Herschelian terms that the Church of England was:

> the *most* Apostolic Church; that its doctrines and ceremonies contain nothing dangerous to Righteousness or Salvation; and that the imperfections in its Liturgy are spots indeed, but spots on the sun, which impede neither its Light nor its Heat, so as to prevent the good seed from growing in a good soil and producing fruits of Redemption.[35]

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[33] John Beer, *Coleridge: The Visionary* (London: Chatto & Windus, 1959), p. 52. For an analysis of how Coleridge's interpretation of Baconian empiricism 'is part of a strategy of reconciling the modern scientific method with religious faith', see Michael Raiger, 'Coleridge's theory of symbol and the distinction between reason and understanding: A genealogical recovery of the Baconian method of science', *History of European Ideas*, 36: 3 (2010), 311-23, 321.

[34] 'Virtue and Knowledge', Essay XIV in *The Friend* (1818), in *Friend*, I, p. 105.

[35] STC marginalia to William Wall, *A Conference between Two Men that had Doubts about Infant-Baptism* (London, 1706 etc), in *CM*, VI, p. 43. Coleridge's edition has not been identified and Wall's work went through about ten editions by 1810. This note was published after the *Aphorisms on Spiritual Religion* in *Aids to Reflection* from the copy lent to the printer. Cf. *AR*, p. 381.

Although sunspots were chiefly associated with the Lyncean Academy's publication of Galileo's *History and Demonstrations Concerning Sunspots and their Properties* (1613), the qualitative distinction made between light and heat indicates that it is Herschel's theory of invisible light, taken together with his solar astronomy, which is being used to vindicate the liturgy of the Church of England.

Indeed, this supposition is strengthened by the fact that Coleridge had already mused on Herschelian sunspots back in the winter of 1801 when he wrote in a notebook that such phenomena were of venial rather than cardinal importance – both for the functioning of the sun and, later, for the well-being of Church doctrine: 'Evils in the Universe. Spots in the Sun / those very Spots discovered by Herschel to be the marks of the Heat & Cold of different Summers'.[36] The 1801 issue of the *Philosophical Transactions* contained an article by Herschel on the nature of the sun which Coleridge recalled much later (1815-1818) to rebuff an assertion about sunspots made by Friedrich Anton Mesmer in his *Mesmerismus* (1814): 'All the phænomena of the Solar Maculæ are explicable without the supposition of detached Bodies, either in Wilson's or Herschell's theory'.[37] Coleridge's pairing of sunspots with infra-red radiation drew

[36] *CN*, I, 1082 and n. In the note to this entry Coburn wrote: 'The public interest aroused by the astronomical discoveries of William Herschel was at a high pitch in 1801 as a result of his contribution to the Royal Society, on sun-spots, in which he discussed the possibility of a relation between spots on the sun, and the national economy as affected by changes of temperature, crops, &c.' Coleridge may well have been familiar with Herschelian sunspots since 1795 if he saw the *Phil Trans* for that year or read a review of Herschel's articles in a periodical. That issue contained: Herschel, 'On the Nature and Construction of the Sun and Fixed Stars', *Phil Trans*, 85 (1795), 54: 'Sept. 2, 1792. I saw two spots in the sun with the naked eye. In the telescope I found they were clusters of spots, with many scattered ones besides…we surmise that its surface is diversified with mountains and vallies.'

[37] STC marginalia to Friedrich Anton Mesmer, *Mesmerismus*…, 2 vols. in 1 (Berlin, 1814, 1815), in *CM*, III, pp. 869-70 and n. 10^{1}: 'Sir William Herschel's paper "Observations tending to Investigate the Nature of the Sun" *Phil Trans* RS XCI (1801) 265-318 provides detailed information on sunspots and concludes that "those appearances which have been called spots in the sun, are real openings in the clouds of the solar atmosphere" (270); in a footnote on the same page, Herschel cites Alexander Wilson's paper "Observations on the Solar Spots" *Phil Trans* RS LXIV pt i (1774) 7-11, which demonstrates that sunspots could arise only in "vast photospheric excavations".' Herschel was a high priority for Coleridge at this time. He features again in a discussion of the soul and animal magnetism in Coleridge's c. 1817 notes to Carl Alexander Ferdinand Kluge's *Versuch einer Darstellung des animalischen Magnetismus, als Heilmittel* (2nd ed., Berlin, 1815), in *CM*, III, p. 379: 'The Soul = the common point of Indifference of a number of magnets aggregated in different Directions, and which therefore may not fall in

on material he was familiar with for two decades and made for a particularly apposite union considering that Herschel chanced upon the discovery of infra-red whilst testing his coloured filters for the sun in order to observe its spots in the first place.

By the time of his marginalia to Edward Irving's *Sermons, Lectures, and Occasional Discourses* (1828), dated between November 1828 and February 1829, Coleridge had worked Herschel into the final formulae of his great shape-shifting dialectical devices, the Noetic Tetractys and the Logical Pentad. This was Coleridge's fullest utterance of the subtle contiguities he saw between Herschelian science and Trinitarianism, written in response to what he called, in the second volume of the *Sermons*, Irving's 'utter misapphrehension of the Trinity…neither apprehending aright the unities or the distinctities'.[38] Building up to that implacable declaration, Coleridge scrawled the following note to a passage in Irving in the first volume:

> In the Solar radiance three sorts of Rays are emitted, the chemical or formative, the calorific and the lucific, i.e. power, warmth and light. In the divine Glory (a metaphor taken from the Sun) Will, Mind and Spiritual Life are eradiated. It is therefore perfectly indifferent, whether I say, that the End of the Utterance and Incarnation of the WORD, i.e. Creation and Redemption, was the Glory or Glorification of God, or that the End was <the communication of> the greatest possible Holiness and Beatitude: for both mean the same – in the first, it is conveyed ~~by~~ in a metaphor, in the second, without any.[39]

The affinities Coleridge designed between the tripartite structure of light and the 'divine Glory' were predicated upon a very solid understanding of Herschel that he had built up from the 1790s. Calorific light was a direct reference to Herschel's discovery of infra-red, which produced heat beyond the visible (lucific) red portion of the prismatic spectrum. In 1801, Johann Wilhelm Ritter (1776-1810), whose work Coleridge read

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either…Suppose the centre of gravity in a System of Suns were (as Herschel imagines to be the case in some Systems) to fall in neither of the Suns – yet what is it to solve?'

[38] STC marginalia to Edward Irving, *Sermons, Lectures, and Occasional Discourses*, 3 vols. (London, 1828), vol. II, in *CM*, III, p. 66.

[39] Ibid., Irving, vol. I, p. 29 and n. Coleridge's amendment of 'by a metaphor' to 'in a metaphor' is suggestive of a distinction he made fully between metaphor and symbol in *The Statesman's Manual* (1816), which is examined later on in this chapter with reference to the telescope. The change from 'by' to 'in' represents a shift from viewing the metaphor simply as a conduit for a new idea to seeing it as having the capacity to contain that idea *within* itself.

avidly, had discovered the 'chemical or formative' properties of light by watching silver chloride-soaked paper blacken beyond the violet part of the spectrum.[40] This region became known as ultraviolet and would have been known to Humphry Davy, to whom Coleridge wrote in 1801 to ask whether 'Herschel's Thermometric *Spectrum*…will lead to any Revolution in the chemical Philosophy'. The answer to that question was resoundingly positive and Coleridge heard about chemiluminescence – the emission of light as a result of chemical reaction – at Davy's lectures on chemistry at the Royal Institution in 1802.[41] The account of Coleridge attending those lectures in order to renew his stock of metaphors is wholly vindicated by the fact that he was explicitly employing scientific ideas gleaned from Davy and Herschel in the name of religion to the end of his life.[42]

Mapping ultraviolet, infra-red and visible rays directly on to the 'Will, Mind and Spiritual Life' respectively was not a happy accident but rather an indication of how serious Coleridge was about the capacity for astronomy and Triune theology to interact profitably. Two pages before the title page to the first volume of Irving's *Sermons* (1828), Coleridge appended the form of his Noetic Tetractys in pride of place:

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[40] Edmund Newton Harvey, *A History of Luminescence: From the Earliest Times Until 1900* (Philadelphia: American Philosophical Society, 1957), pp. 196-97, 340; Noel B. Jackson, 'Critical Conditions: Coleridge, "Common Sense", and the Literature of Self-Experiment', *English Literary History*, 70: 1 (2003), 126.

[41] Waka Ishikura, 'Coleridge, Davy, and the Science of Method', *The Coleridge Bulletin*, N.S. 24 (2004), 69-70. Cf. Humphry Davy to Davies Giddy, 3 July 1800 and 14 November 1801, for a summation of the significance of Herschel's and Ritter's theories: *Collected Letters of Humphry Davy and His Circle*, eds. Tim Fulford, Jan Golinski, Frank James, David M. Knight, Sharon Ruston < http://www.davy-letters.org.uk/?s=>. This website presents 1273 letters written by Humphry Davy and his Circle and represents the first stage in the publication of the first ever edition of Davy's *Collected Letters*. The database is a work-in-progress; it has been running since February 2011 so the transcriptions are not always complete and are all unedited.

[42] John Ayrton Paris, *The Life of Sir Humphry Davy*, 2 vols. (London, 1831), I, p. 92. Cf. STC to Samuel Purkis, 17 February 1803, in *CL*, II, p. 927: 'I rejoice in Davy's progress. There are three Suns recorded in Scripture: - Joshua's, that stood still; Hezekiah's, that went backward, and David's, that went forth and hastened on his course, like a bridegroom from his chamber. May our friend's prove the latter!' It is appropriate that Coleridge should reference 'three Suns' in relation to Davy, whose lectures would have afforded him the opportunity of learning about the three kinds of sunlight. Cf. *CN*, II, 3116, where Coleridge discusses his prismatic experiments in July-October 1807.

Identity
Absolute Will, the alone Good.

Ipseity
The ~~Father~~, I AM, who in affirming himself begetteth
the Son & is thus the Father –

Alterity
The Son – Mind, ~~I~~ Subsistent Idea

Community
Spirit, Life, Love.[43]

Using this diagram, it is clear that Coleridge's connection of 'Will' with ultraviolet, 'Mind' with infra-red, and 'Spiritual Life' with visible light, was a direct attempt to make Herschelian science co-instantaneous with Ipseity, Alterity, and Community, which stood for the Holy Trinity of Father, Son, and Holy Spirit.[44]

Coleridge saw Herschel's science as a tautegorical symbol proper. In his system, light rays were an actual part of the divine trilogy; they were conceived as being involved and essential to hypostatic union. In an important sense, this raises afresh the problem of theological immanence which Coleridge had tried sedulously to avoid in his rejection of the pantheism of Spinoza and Schelling. Time and again, Coleridge's model assumes the same importance, and even begins to supplant, the conceptualising of the

[43] STC marginalia to Irving, *Sermons* (1828), vol. I, in *CM*, III, p. 18. For the genesis of the Tetractys and the Pentad (for which the Pythagorean Tetractys and Noetic Pentad are alternative names) in Coleridge's thought from around 1818, and for their logical roots in the Trinity, see *CN*, III, 4427, 4436; Coleridge's marginalia to Jakob Böhme's *Aurora*, in *CM*, I, pp. 560-63; 'The Role of the Tetradic Logic' (1818-22), in *SW & F*, I, p. 710; *AR*, pp. 179-83; STC to Hyman Hurwitz, 16 September 1829, in *CL*, VI, pp. 816-18. For the best critical and explanatory accounts of the history and importance of the polar logic and the Tetractys, see: Craig W. Miller, 'Coleridge's Concept of Nature', *Journal of the History of Ideas*, 25: 1 (1964), 77-96; Barfield, *What Coleridge Thought* (1972); McFarland, *Romanticism and the Forms of Ruin* (1981); Modiano, *Coleridge and the Concept of Nature* (1985); Mary Anne Perkins, *Coleridge's Philosophy: The Logos as Unifying Principle* (Oxford: Clarendon Press, 1994); Jeffrey W. Barbeau, *Coleridge, The Bible, and Religion* (New York: Palgrave Macmillan, 2008).

[44] It is important to note that 'Will' cannot stand for the 'Absolute', which is the 'Prothesis' or *ground* for the Trinity, because there is no content in the 'Prothesis' – it is not existential. I benefitted greatly from discussions with Nicholas Reid on this matter at the Wordsworth Summer Conference 2012. Cf. Modiano, *Coleridge and the Concept of Nature*, pp. 196-99. **Please see 'Figure 1' at the end of this chapter for a visual model of how Herschelian light theory is weaved into the dialectical scaffold of the Pythagorean Tetractys and the Trinity.**

thing under consideration itself; the framework becomes the picture. Fundamentally, Coleridge was incapable of preserving the distinction between metaphor and concept, and so perhaps his comprehensiveness was arguably as debilitating as it was intellectually enabling.

Nevertheless, this application of the properties of new light to Trinitarianism was ingenious. God as 'Will' radiates ultraviolet; His work on Man is active but invisible. God as 'Mind' or the Son emits infra-red, the '~~warm~~ Light!' or 'light with vivifying Warmth' of Coleridge's notes and letters; He is both fully human and fully divine so that whilst He cannot be seen His handiwork can yet be *felt*. He is the operative and essential channel to the Father, breaching the mundane and supermundane worlds. God as 'Spirit' is visible; He makes manifest the effect of His love in the lives of the Christian community for all to see. The fact that one set of truths was scientific and the other spiritual did not alter the sense for Coleridge that 'both mean the same – in the first, it is conveyed ~~by~~ in a metaphor, in the second, without any'. The status of metaphor was thus elevated to the same level as literal and scriptural interpretation: relationship between ideas was more valuable for Coleridge than individual truth.[45] Light was *the* consubstantial idea that put Biblical exegesis and Herschelian science on the same wavelength.[46]

The Divine Tetractys in turn answered to the four forms of noetic or pure rational logic: Identity, Thesis, Antithesis, and Synthesis.[47] With these two models Coleridge attempted to express all knowledge in a coherent system and thus to locate an original and organic heuristic for thought. This was the ultimate project for his mature

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[45] Christopher Ricks, 'The Pursuit of Metaphor' (1997), repr. in *Allusion to the Poets* (Oxford: Oxford University Press, 2002), p. 245: 'Whatever else a metaphor may be, it is a relation…'
[46] For the importance of Coleridge's distinction between the sacramental and consubstantial symbol see Nicholas Halmi, 'When is a Symbol not a Symbol? Coleridge on the Eucharist', *The Coleridge Bulletin*, N.S. 20 (2002), 85-92.
[47] STC marginalia to Irving, *Sermons* (1828), vol. I, in *CM*, III, p. 18.

philosophy and it was imaginatively underpinned by astronomy. In order to make sure that he never introduced 'any one of the Divine Tri-unity without a clear intuition of the Co-presence of all',[48] Coleridge fashioned Herschel into the lifeblood of his system. In Herschel he found the answer to a problem that had plagued him since November 1799, at which time he first wrote a notebook entry linking light with Socinianism and Methodism:

> I would make a Pilgrimage to the burning sands of Arabia…to find the Man who could explain to me there can be *oneness*, there being infinite Perceptions.[49]

Herschel expanded the range of what was thought to be perceptible and in so doing connected the capacity of human vision with the prospect of infinite possibility.

The philosophical leverage Coleridge aimed for regarding his dialectical models is clear from a contemporaneous note (c. 1824-1830) he made in Richard Baxter's *Catholick Theologie* (1675):

> Year after year, yea, day after day, I see more clearly or feel more livelily the importance of the Noetic Tetrad and the Logical Pentad, as the fundamental Form of all Thinking – and of Trichotomy in all *real* definition…[50]

The underlying importance of trichotomous logic for Coleridge, exemplified by the Trinity in its highest manifestation, meant that his imaginative loyalty to Herschelian conceptions of triunity was unswerving. In a postscript to the third volume of Irving's *Sermons* (1828), Coleridge envisaged the Trinity afresh with a different Herschelian observation:

> P.S. ~~As~~ The improved Telescopes have resolved several supposed single Orbs into double Stars–apply this to the fact–that in the Old Testament and the Apocryphal Wisdom of Solomon, the Second Distinctity in the One God is hidden in the third, viz. the Spirit, while in the N.T. – especially in the writings of John & Paul, the Spirit, when spoken of ~~with~~ as a person, seems to be, if not

[48] Ibid., p. 13.
[49] *CN*, I, 556.
[50] STC marginalia to Richard Baxter, *Catholick Theologie: plain, pure, peaceable: for publication of the dogmatical word-warriours...* 4 pts. in 1 vol. (London, 1675), in *CM*, I, p. 231.For the principle of trichotomy and the tetrad in Baxter see Coleridge's comments to *Reliquiae Baxterianae: Copy B*, 3 pts. in 1 vol. (London, 1696), in *CM*, I, p. 348. Cf. McFarland's editorial prolegomena to *Op Max*, p. lxxxvii.

> positively identified <with>, yet not clearly distinguished from, the Son – i.e. Christ, assurgent, and glorified. – The Telescope of the church has drawn out what *may*, I doubt not, be fairly *inferred*, but cannot, perhaps, be coercively proved from the declarations of the Evangelists and Apostles. And well! for the Subjective, and the Objective may be made plain to Believers of average Capacity; but the Objectively-Subjective requires a more steady Vision and an ethereal atmosphere.[51]

Measuring the angles and distances of double stars began in earnest in the 1780s and it was Herschel's observations that dominated the *Philosophical Transactions* from then onwards. In a notebook entry of 1824-1826, Coleridge remarked that:

> Many a Star which we behold as single, the Astronomer resolves into two, each perhaps the center of a separate System…And many are the unsuspected Double-Stars…[52]

This was probably prompted by an article on double stars written in the July 1824 number of *The Quarterly Journal of Science, Literature and the Arts* reviewing a lecture given by John Herschel and James South at the Royal Society in January 1824. John Herschel continued the work begun by his father, to which Coleridge's first proper exposure came between 23 April – 22 May 1798 when he borrowed the *Philosophical Transactions* for the year 1785 from the Bristol Library. This issue contained the second collection of William Herschel's hugely important 'Catalogue of Double Stars'.[53] In it, Herschel explained that with his seven-foot Newtonian reflector he could:

> give a much smaller image of the stars than the 3 ½ feet achromatic refractors; wherefore the two stars, which in refractors as it were run into each other, will in the reflector remain separate.[54]

Essentially, Herschel found that stars which Newton saw as single were, in fact, concealing others behind them and thus their parallax – their relative magnitude and position – could be calculated. In a subsequent paper of 1802 which Coleridge very

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[51] STC marginalia to Irving, *Sermons* (1828), vol. III, in *CM*, III, pp. 73-74.
[52] *CN*, IV, 5156 and n, which refers to the article: J.F.W. Herschel and James South, 'Observations on the apparent distances and positions of 380 double and triple stars, made in the years 1821, 1822, and 1823, and compared with these of other astronomers; together with an account of such changes as appear to have taken place in them since their first discovery', *QJSLA*, XVII (1824), 250-53. Cf. *CN*, V, 5924.
[53] Wu, *1770-1779*, pp. 182-83. It is possible Wordsworth or Cottle returned this volume.
[54] Herschel, 'Catalogue of Double Stars', *Phil Trans*, 75 (1785), 44.

probably saw,[55] Herschel differentiated between optical doubles – stars which appear close together due to the chance alignment of the Earth – and real doubles – stars which 'remain united by the bond of their own mutual gravitation towards each other'.[56] Herschel went on to discuss 'more complicated sidereal Systems, or treble, quadruple, quintuple, and multiple Stars':

> Those who have admitted our arguments for the existence of real double stars, will easily advance a step further, and allow that three stars may be connected in one mutual system of reciprocal attraction…preserved in a permanent connection, by revolving in proper orbits about a common centre of motion.[57]

Herschel's discovery of double and triple stars encouraged Coleridge to forge an imaginative link with his dyadic or polar concept which led, in the words of Thomas McFarland, 'to conceptions of triplicity, and in the last period of his life, to those of fourness and even fiveness'.[58] The trinities Coleridge found in nature confirmed for him the triunity of the mind and God. Although caution must be taken not to elide polarity with the Triune sphere, in as much as the noetic has no place in the Godhead, it is essential to remember that, in his marginalia to Jakob Böhme's *Three Principles of the Divine Essence* written c. 1818-1819, Coleridge meant both to be conceivable in terms of each other: 'Observe, however, that both the Polar System or Tetractys, and the Tri-une, are necessary views of the same truth, and by no means does either invalidate the practical Results of the other'.[59] The synthesis of the polar logic in a 'tertium aliquid'

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[55] The evidence for this is based on a letter STC wrote to Samuel Purkis on 1 February 1803, in which he excitedly told Purkis that he was going with Tom Wedgwood to France and Italy (which never happened). Cf. C*L*, II, p. 919: '[Coleridge is] a Comet tied to a Comet's Tail, & our combined path must needs be damnably eccentric, & a defying Puzzle to all Astronomers from La Lande & Herschell to YZ…'. The 1802 issue of the *Phil Trans* also contained Herschel's 'Observations on the Two Lately Discovered Celestial Bodies', *Phil Trans*, 92 (1802), 226, which defined comets in precisely the terms used by Coleridge, who referenced Herschel directly in the Purkis letter.

[56] Herschel, 'Catalogue of 500 New Nebulae, Nebulous Stars, Planetary Nebulae, and Clusters of Stars; With Remarks on the Construction of the Heavens', *Phil Trans*, 92 (1802), 479-81.

[57] Ibid., 486-87.

[58] McFarland's editorial prolegomena to *Op Max*, p. lxxxvii. Unlike Schelling, from whom he inherited the concept of polarity, Coleridge attempted to develop a genuine metalogic.

[59] STC marginalia to Böhme's *The Three Principles of the Divine Essence* in *CM*, I, p. 642. Cf. STC to J.H. Green, 30 September 1818, in *CL*, IV, p. 874; Nicholas Reid, *Coleridge, Form and Symbol:* or, *The Ascertaining Vision* (Aldershot: Ashgate, 2006), pp. 124-30.

or ‘third thing’ was *the* reconciling act of the imagination (based on Fichte and Schelling) that Coleridge outlined in the *Biographia Literaria* (1817), and for which he found a counterpart in Herschel’s sky.[60] The new stars provided a map for a complex imaginative schema that Coleridge sought physically to describe.

Moreover, in the notion of a triple system of ‘reciprocal attraction’ Coleridge found a means to calibrate the differences between the God of the Old and New Testaments. If Herschel’s ‘improved Telescopes’ had revealed that three stars, where previously only one was thought to exist, may be ‘preserved in a permanent connection, by revolving in proper orbits about a common centre of motion’, then Coleridge saw that this could be applied to the idea that ‘the Second Distinctity of the One God is hidden in the third, viz. the Spirit’. The Persons of the Holy Trinity are irrevocably bound to one another, much like the gravitational pull linking real triple stars, and yet Herschel’s magnifiers have also shown the latter to be distinct entities. ‘Distinctity’, for Coleridge, was an astronomical measure of the Three-in-One: the lustre or magnificatory power of each part of the Trinity could be measured as an expression of itself and as part of a larger, stable, and self-sufficient whole. Herschel performed a little miracle for Coleridge: he created science with which Coleridge could conceptualise difficult doctrine and communicate it adequately to others.

Coleridge averred that in the Old Testament Christ was hidden in the Spirit whilst in the New Testament the reverse was true: ‘…especially in the writings of John & Paul, the Spirit…seems to be, if not positively identified <with>, yet not clearly distinguished from, the Son’. The progression from Old to New Testament is represented as a parallactic shift or orbital turn which privileges the Personhood of Jesus. Christ is most definitely, in Coleridge’s phrase, ‘assurgent, and glorified’; He is

[60] *BL*, I, pp. 299-300, 299, n. 1: ‘The imagination is, sparely put, an act of ultimate synthesis in the dialectic of mind and nature.’

the rising star. This emphasis is crucial because in the Necessitarianism of Hartley and Priestley it was precisely the notion of personal freedom that was sacrificed by the deterministic laws of association. In the words of Alan Gregory, it was only in the acknowledgement of a personal God that Coleridge found 'a ground that guarantees the eternal significance of persons'.[61] Indeed, the conditional nature of the clause – 'if not positively identified <with>, yet not clearly distinguished from' – resonates both with the vibrations of Coleridgean philosophical polarity and with Herschel's task of searching out the relationship and cataloguing the 'distinctity' of real triple stars.

'The Telescope of the church' syntactically linked Herschel and Trinitarianism in a format legitimised by Coleridge's unifying Tetractys:

> Never, never, can I too often assert…the great truth, that the Divine Tetractys is the Form and Regula Maxima of all Knowledge – "the mystery in which are contained all treasures of science".[62]

Astronomy draws out spiritual truths which otherwise can only be '*inferred*', not 'coercively proved'. The visible and invisible properties of light, taken together with double and triple stars, constituted a bold imaginative endeavour to perceive the world in a new way whilst at the same time satisfying Coleridge's drive to demonstrate that there can and must be unity in multiplicity – the ultimate goal of which is 'the eternal Identity of Allness and Oneness'.[63] Herschel's discoveries had a long gestation in Coleridge's lifetime; their origins were as early as 1795 and they had certainly taken root by the time he was with Wordsworth at Alfoxden. Tracing the religious application of Coleridge's rigorous astronomical knowledge shows his conscious thought patterns

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[61] Alan P.R. Gregory, '"That I May Be Here": Human Persons and Divine Personeity in the *Opus Maximum*', in Jeffrey W. Barbeau (ed.), *Coleridge's Assertion of Religion: Essays on the Opus Maximum* (Dudley, Mass.: Peeters, 2006), pp. 187-211, 189. Cf. Barbeau, 'Science and the Depersonalisation of the Divine: Pantheism, Unitarianism, and the Limits of Natural Theology', in Barbeau (ed.), *Coleridge's Assertion of Religion*, pp. 163-85, 178-79.

[62] *CN*, V, 6474, *f*10^{v}. Cf. McFarland, *Coleridge and the Pantheist Tradition* (1969), p. 227: '[The Trinity] provided a conception that guaranteed the existence of both the Many and the One, and so allowed [Coleridge] to anchor his complete system…in an extramundane ground without abandoning the reality of the natural world.'

[63] STC to James Gillman, 10 November 1816, in *CL*, IV, p. 689.

to have been wonderfully sedimented. He looked for the quiet consistencies between truths – valuing the transmissibility of truth itself – which allowed him to feel for how two or more ideas could orbit together, in harmony, rather than settling for the construction of an ultimately self-limiting intellectual hierarchy.[64]

'The healthy metaphor', according to T.S. Eliot, 'adds to the strength of the language; it makes available some of that physical source of energy upon which the life of language depends'.[65] It was physical energies that Herschel made plentifully available and Coleridge had the kind of curious mind which was supremely and bravely capable of acts of imaginative reciprocity. He thrived in the challenge of nuancing fresh encounters. Coleridge's readiness to conceive the Trinity in Herschelian terms, and *vice versa*, points to an essential flexibility which he thought was a key constituent of words. His metaphors (which in this context were strictly Coleridgean symbols) bear witness to his workings out, to his deepest psychological processes. By establishing why the latest astronomy was chosen to communicate aspects of theology, Coleridge left behind a trail of what most preoccupied him in those ideas themselves at the intersection of the two discourses. Simply put, to recognise how the metaphors function paves a way for following Coleridge's cerebral and spiritual consciousness.

The accomplishment of Coleridge's metaphors is evident from the fact that he employed Herschel's ideas with easy and recurrent conviviality: in a letter of 1816, Henry Gillman was 'the dancing Sunspot of the Family…& Jack a Lanthorn Sun-spot,

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[64] In this sense there is a certain parallel, which I should not wish to draw too closely, between Coleridge and Kafka, as described by Walter Benjamin in a letter to Gershom Scholem, 12 June 1938, in *The Correspondence of Walter Benjamin 1910-1940*, ed. Gershom Scholem and Theodor W. Adorno, trans. Manfred R. Jacobson and Evelyn M. Jacobson (Chicago: The University of Chicago Press, 1994), p. 565: 'It is this consistency of truth that has been lost. Kafka was far from being the first to face this situation. Many had accommodated themselves to it, clinging to truth or whatever they happened to regard as such, and, with a more or less heavy heart, had renounced transmissibility. Kafka's real genius was that he tried something entirely new: he sacrificed truth for the sake of clinging to transmissibility, to its haggadic element.'

[65] T.S. Eliot, 'Studies in Contemporary Criticism', *The Egoist*, 9: V (Oct. 1918), 113-14.

alias, mischievous Doggie;[66] in 1823, Cromwell was characterized as an 'ominous Sun-spot' for ejecting the Republican Parliament;[67] in 1827, the Greek and Roman empires were lumped together for convenience 'as double Stars ~~are~~ seen at great distance are beheld as single';[68] and in language preeminent in his scribbles to Irving's *Sermons* (1828), St Paul and St John 'shine as a Double Star' in 1829 for having revealed the mystery and teachings of Christ.[69] In this familiar way, the letters and notes instantiated active sites of remembrance – tiny places where Coleridge stoked Herschel's ideas in unexpected settings before implementing them with more serious intent. It is constant invention which preserved the affinities between Herschel and the Trinity; the world of every day offered good opportunities to stay rhetorically limber. Coleridge's language was vitally metaphorical, even when no one was looking. Consequently, much of his best theological teaching has a palpable weight (or Herschelian heat) which rises up from within, sensitive and alert to balancing the power of new thinking with Church doctrine.

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In an undated manuscript fragment in the British Library, Coleridge stressed that:

> Similes and Metaphors judiciously used serve not only for illustration and refreshment. To inventive and thoughtful Minds they are often the suggesters of actual analogies – the apparent Likeness being referred to a common Principle…on many occasions they present a far more perfect, both a fuller and ~~yet less equivocal~~ a more precise & accurate language than that of abstract or general words.[70]

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[66] STC to J.H.B. Williams, 24 September 1816, in *CL*, IV, pp. 682-84.
[67] *CN*, IV, 5022.
[68] *CN*, V, 5686, *f*15.
[69] Ibid., 6048, *f*34. In his editorial introduction to *AR*, John Beer stated that: 'The great tradition in Christian thinking, so far as [Coleridge] was concerned, was that which had continued to affirm, and endeavoured to reconcile, the thinking of these two great figures' (p. xlii). By making John and Paul shine as Herschelian double stars Coleridge made this task imaginatively much easier.
[70] BM MS Egerton *2801 f252-f253*, repr. in *CN*, IV, 4623n, *f 20*.

Elsewhere, in *The Statesman's Manual* (1816), Coleridge complained that 'It is among the miseries of the present age that it recognizes no medium between the *Literal* and *Metaphorical*', before proceeding to characterise the 'symbol' as just such a vehicle, capable of 'a translucence of the Special in the Individual'. The symbol, by way of this optical analogy, refers the 'Likeness' of a metaphor to 'a common principle' whilst always partaking 'of the Reality which it renders intelligible'. Indeed, the symbol is 'a living part in that Unity, of which it is the representative'.[71] Coleridge's most obviously translucent symbol and one of his most abiding metaphors for his discussion of religion was the telescope. In astronomical instruments themselves – as well as in the truths they uncovered – he found 'actual analogies' with the goals of his philosophical project and, most significantly, a way to bridge the gap between Man and God.[72] Running parallel to Coleridge's specific uses of Herschel was a string of broader astronomical images that owed much to his concurrent exploration of Herschelian science.

In his first Bristol lecture in 1795, Coleridge conceived an allegory in which Religion 'gave us an optic Glass which assisted without contradicting our natural vision and enabled us to see far beyond the Valley'.[73] This inaugurated an imaginative idea from which Coleridge exacted a lot of purchase; he made the telescope a symbol of Christian revelation or faith that could help Man to know God at the limits of his natural vision and reason. These human confines are set out in the closing peroration to the *Biographia Literaria* (1817):

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[71] *The Statesman's Manual; or, The Bible the Best Guide to Political Skill and Foresight* (1816), in *LS*, pp. 30-31, 79. For the changing significance of the symbol in the Enlightenment and Romantic periods, together with an account of the important distinction between Coleridge's sacramental and tautegorical symbols, see Nicholas Halmi, *The Genealogy of the Romantic Symbol* (Oxford: Oxford University Press, 2007), pp. 124-31; Cf. Barfield, *What Coleridge Thought*, p. 151; J. Robert Barth, S.J., *The Symbolic Imagination: Coleridge and the Romantic Tradition* (New York: Fordham University Press, 2001), pp. 40-41: 'The symbols of poetry and art and the symbols of the material world are never allowed to remain an end in themselves. Because there is a "consubstantiality" of all reality, all things – and all things that stand as symbols of other things – say something of God, the I AM.'

[72] Jackson, *Method and Imagination in Coleridge's Criticism* (1969), pp. 43-44, 76.

[73] 'Lecture One', c. 19 May 1795, in *Lects 1795*, p. 91.

> Religion passes out of the ken of Reason only where the eye of Reason has reached its own Horizon; and that Faith is then but its continuation…the upraised Eye views only the starry Heaven…only to preserve the Soul steady and collected in its pure *Act* of inward Adoration to the great I AM…[74]

This ending is indebted to Coleridge's contemporaneous reading of Böhme's *Aurora*. Tellingly, he thought Böhme's passage below was 'expressed finely and with philosophical precision':

> all the Powers or Virtues are in God the Father, and no Man with his Sense and Thoughts can *reach* to apprehend it. But in the Stars and the Elements, as also by all the Creatures in the whole Creation of this World, a Man may *clearly know* it.[75]

Subsequently, Coleridge's religious quest was conducted with the conviction that the heavens 'preserve the Soul steady' and that meditation on the material universe could open up the realm of the spiritual. Correspondingly, according to John Beer, 'the scientist who bears in mind metaphysical truths will find in them the solution to his problems and the true interpretation of physical phenomena'.[76] Thus, Coleridge reached the conclusion that if he worked with the instruments and laws governing the astronomer's world he would be able to construct the noumenal from the phenomenal. In this pursuit he was on etymologically safe ground: 'telescope' comes from the Greek *tele skopos* meaning 'far-seeing'; *tele* is also related to *teleos* meaning 'end, goal, consummation'.[77] Coleridge would have been pleased that the telescope was the correct *linguistic* device for seeing the end.

In his lectures *On the History of Philosophy* (1818-1819) the exact commensurability between the telescope and religion was fixed in place:

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[74] *BL*, II, p. 247.
[75] STC marginalia to Jakob Böhme's *Aurora*, in *CM*, I, p. 567.
[76] Beer, *Coleridge: The Visionary*, p. 167. Cf. Richard Haven, *Patterns of Consciousness: An Essay on Coleridge* (Amherst: The University of Massachusetts Press, 1969), p. 133: 'If the relation between finite concept and infinite consciousness is the archetype, then an analogous relation should be revealed in physical nature.'
[77] "telescope, n.". *OED Online*, etymology and sense: 1a.

> Now what the telescope is to the eye, just that, faith, that is the energies of our moral feelings, are to the reason. Reason is the eye, and faith (all the moral anticipation) the telescope.[78]

This relationship is reiterated in the *Aids to Reflection* (1825) which looks back to the distinction originally predicated in the Bristol lectures of 1795: 'By the eye of Reason through the telescope of Faith, *i.e.* Revelation, we may see what without this telescope we could never have known to exist'.[79] By characterising faith as the telescope that assists 'the eye of Reason', Coleridge found a trope that enabled him to work through fundamental epistemological problems that he had first mooted in a political context in *The Morning Post* in 1803, and which centre on the distinction in kind between Reason and Understanding.

To Leighton's aphorism that 'FAITH elevates the soul not only above Sense and sensible things, but above Reason itself…supernatural Faith corrects the errors of natural Reason judging according to Sense', Coleridge appended his approval by aligning his telescope (faith) with the capacity to home in on pure Reason:

> In no former part of this volume has the Author felt the same anxiety to obtain a patient Attention. For he does not hesitate to avow, that on his success in establishing the validity and importance of the distinction between Reason and Understanding, he rests his hopes of carrying the Reader along with him through all that is to follow.[80]

It is of no surprise that Coleridge welcomed Leighton's remarks. In an excursive note to an essay in *The Friend* he had declared:

> I have no hesitation in undertaking to prove, that every Heresy which has disquieted the Christian Church, from Tritheism to Socinianism, has originated in and supported itself by, arguments rendered plausible only by the confusion

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[78] 'Lecture 9', 22 Feb 1819, in *LHP*, I, p. 377.
[79] 'Aphorism XXII', *Aphorisms on Spiritual Religion B*, in *AR*, p. 341 and n. 2. Cf. STC marginalia to Christopher Harvey, *The Synagogue: or the shadow of the temple. Sacred poems, and private ejaculations. In imitation of Mr. George Herbert* (6th ed.; London, 1673), dated c. Feb-Jun 1826, in *CM*, II, p. 1046: 'Reason is to Faith, as the Eye to the Telescope.'
[80] 'Aphorism VIII' and 'VIIIb', in *AR*, pp. 207, 220. For the long importance of the distinction between 'Reason and Understanding' for Coleridge see John Beer's editorial introduction to *AR*, pp. lxxix – lxxxiv.

> of these faculties [of Reason and Understanding], and thus demanding for the objects of one, a sort of evidence appropriated to those of another faculty.[81]

Coleridge believed that reinforcing the correct distinction between Reason and Understanding would preserve the Christian Church from the kind of false doctrine which he himself had been seduced by at the turn of the nineteenth century. If the swing from Socinianism or Unitarianism to Trinitarianism was expressible with Herschel, this latter problem required a 'telescope of Faith'.

In his effort to further define and delineate these faculties Coleridge represented the differences between the two powers with a salient astronomical metaphor in *Aids to Reflection*:

> The dependence of the Understanding on the representations of the Senses, and its consequent posteriority thereto, as contrasted with the independence and antecedency of Reason, are strikingly exemplified in the Ptolemaic System (that truly wonderful product and highest boast of the Faculty, judging according to the Senses!) compared with the Newtonian, as the Offspring of a yet higher Power, arranging, correcting, and annulling the representations of the Senses according to its own inherent Laws and constitutive Ideas.[82]

According to Coleridge, Ptolemy depicted the cosmos using his senses, which comprised 'the faculty of reflection' and was based on the Understanding; Newton referred his senses to a higher authority, Reason, which was intuitive because it was built on real laws constructed out of the 'pure Sense' and which consequently 'gives birth to the Science of Mathematics'. Newton's model of *a priori* thinking was 'the Organ of Theology and Philosophy' when applied to 'Objects supersensuous or spiritual'.[83] Newton's reputation was properly restored when Coleridge found favour with the applicability of the logical principles which underpinned his scientific discoveries. Indeed, it is fitting that Coleridge should have expressed this epistemological difference with Ptolemy and Newton because the telescope was the

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[81] 'Government and Reason', Essay III in *The Friend* (1818), in *Friend*, I, p. 177n.
[82] *Aphorisms on Spiritual Religion B*, in *AR*, p. 236.
[83] Ibid., pp. 223-24, 234.

symbol which enabled him to mark the Kantian boundaries between the Reason and the Understanding.[84] More piercingly still, the telescope was 'the Organ of Theology' in that its function was actively to reconcile reason and religion via faith in Trinitarian Christianity.[85]

Looking back to *The Statesman's Manual* (1816), the telescope has a latent yet noteworthy presence following a tradition which from 1795 had aligned it with the twin capacities of ratiocination and faith. 'Reason and Religion differ only as a two-fold application of the same power',[86] where 'two-fold application' tacitly connotes the discrepancy between natural sight and 'armed vision', in which one is simply a higher function of the other.[87] The telescope provides two-fold or dual magnification of normal ocular vision. It is this notion which made Coleridge proclaim that:

> We say falsely, at least far too little, even when we say, as the Spectacles to the Eyes, so the Eyes to the Sight. We should say, as the first Glass in the Telescope to the Second, and as *both* to the Sight – so the Eyes & the Spectacles &c –'.[88]

The eye may not be equal to the power of the telescope, but it is synonymous with its purpose, and thus should be seen as 'the first Glass' in one great optical device.

Coleridge used the mechanics of the telescope to convey to 'the reflecting Reader' the notion 'that CHRISTIAN FAITH IS THE PERFECTION OF HUMAN REASON'.[89]

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[84] In a discussion of the influence of Kantian metaphysics on Coleridge, it might be worthwhile to consider the extent to which the telescope was a symbol which bridged the intellect, an analogical tool with which Coleridge attempted to show the machinations of Kant's transcendental dialectic at work. Specifically, whether or not the telescope was designed to expose or shed light on how the faculties of reason and understanding, or analytic and synthetic judgements, could co-exist and operate in the parameters of one mind.

[85] Richard Berkeley, *Coleridge and the Crisis of Reason* (Basingstoke: Palgrave Macmillan, 2007), p. 189.

[86] *The Statesman's Manual* (1816), in *LS*, p. 59. Cf. 'Government and Reason: Rousseau's Theory', Essay IV in *The Friend* (1818), in *Friend*, I, p. 189: '[The Philosopher]…armed with the twofold knowledge of History and the Laws of the Spirit, as with a telescope, looked far around and into the far distance…'

[87] For the 'armed vision' see *BL*, I, p. 118 and n. 3: 'Both Schiller and Maas use the idiom with reference to William Herschel's (1738-1822) discoveries with the aid of a telescope as a physical paradigm for what can be achieved by purely intellectual means.'

[88] STC marginalia to Heinrich Steffens, *Caricaturen des Heiligsten*, 2 vols. (Leipzig, 1819, 1821), dated May-June 1823 and 'probably earlier' (p. 268), in *CM*, V, p. 297.

[89] 'Editor's Appendix G: Passages Omitted in 1831', in *AR*, p. 541.

Faith makes possible the completion of reason in the realm of religion, much as the telescope operates to extend the limits of sight far beyond nature's remit. Reason enlarges 'the vast S~~o~~un~~uns~~ & Systems of Heavenly Truth…by her Telescope; but their true dimensions are deduced by Faith availing herself of the Instruments of Reason'.[90] Since faith is the essential condition of trust that puts Man's reason in touch with God's, the telescope became the translucent symbol – or instrument of reason – capable of effecting this vital metaphysical alliance. Coleridge's 'reflecting Reader' needed to clarify and hone the instruments of reason in order to find redemptive grace in God – a process which ideally required familiarity with the shuttling draws of a spyglass.

In an important sense, the greatest aid to reflection was not Leighton's aphorisms but the eye, which Coleridge deemed to be 'the Telescope and the Mirror of the Soul, the Seat and Agent of an almost magical power'. The eye is the 'Mirror of the Soul' because 'armed vision' has the capacity to 'rouse and emancipate the Soul from this debasing Slavery to the outward Senses'.[91] The possession of 'armed vision' is doubly beneficial: on the one hand it fortifies Man from *within* with a faith that consecrates and elevates the logic of method to find its fullest perfection in the Christian God;[92] on the other, it denotes the astronomer who regulates his observations by pre-established mathematical laws and not by his senses. This both protects against the sterility of a mechanical philosophy built on the senses alone and codifies, in practical terms, the requisite distinction in kind between Reason and Understanding which allows Man to fulfil his divine potential.

This type of solid clarity provided by the 'armed vision' makes good sense of Coleridge's stipulation in the 'Theory of Life' (1816) that 'where the quantities are the

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[90] STC marginalia to Marcus Aurelius Antonius, *The Emperor Marcus Antonius His Conversation with Himself*, trans. Jeremy Collier (London, 1701), dated c. 1804-11 but this note c. 1826, in *CM*, I, p. 170.
[91] *AR*, pp. 397, 406. Cf. STC marginalia to Böhme, *Forty Questions Concerning the Soul*, dated 20 July 1822, in *Works of Jacob Behmen*…, in *CM*, I, p. 671.
[92] Cf. *CN*, III, 4065; *The Statesman's Manual* (1816), in *LS*, p. 24.

infallible signs of real powers, and our chief concern with the masses is as SIGNS, sciences may be founded thereon of the highest use and dignity. Such, for instance, is the sublime science of astronomy'.[93] In the *Lectures* (1818-1819), Coleridge singled out Kepler as marking the beginning of 'truly scientific astronomy' because 'by laws demonstrably drawn out of his own mind he has, in that mind, not only [lit], but as far as his own purposes require it, controlled the mighty orbs of nature'. The 'armed vision' epitomised a way of seeing that was governed by celestial dynamics and which Coleridge conceived to have profound metaphysical ramifications. This explains why he thought astronomy 'will for ever remain the greatest monument of human greatness'.[94]

It was Herschelian 'forms & schemes of motion' of the stars and planets which excited Coleridge, viewed 'with or without the Glass'. He translated these living patterns into 'so many *words* & hieroglyphic Signs' that bolstered his holistic philosophical program by 'convey[ing] to the Understanding, the Imagination and the Reason…the something more than Distinctivity yet less than Division'.[95] If polarity was the philosophical tool that could communicate this 'something more' then the symbol was the literary figure which could do the same. In the telescope Coleridge found a means to clarify the limits of each mental faculty.

In his marginalia to Irving's *Sermons* (1828), it was the resolution provided by 'improved' Herschelian telescopes which made double stars an appropriate metaphor for the way in which 'the Second Distinctity in the One God is hidden in the third' in

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[93] 'Theory of Life' (1816), in *SW & F*, I, p. 519.
[94] 'Lecture 11', 8 March 1819, in *LHP*, II, pp. 485-86. Cf. *AR*, pp. 401-2; 8 October 1830, in *TT*, I, pp. 210-11. Cf. Stephen Prickett, *Romanticism and Religion: The Tradition of Coleridge and Wordsworth in the Victorian Church* (Cambridge: Cambridge University Press, 1976), p. 19: '[Coleridge's] concept of the Imagination is essentially "stereoscopic"; it stands at the intersection of two different perspectives, and so enables us to see "in depth".'
[95] 'Contributions to a Course of Lectures Given by J.H. Green', January-March 1828, in *SW & F*, II, p. 1403.

the Old Testament. 'Distinctity' was the Herschelian concept that operated between both Reason and Understanding and preserved the importance of the *Persons* of the Trinity. It was Herschel's discoveries which fuelled Coleridge's repeated discussions of the telescope; he was responsible for a new kind of language that entered Coleridge's religious disquisitions and Coleridge was keen to acknowledge it: 'Mistakes of scientific men have never injured Christianity, while every new truth discovered by them has either added to its evidence, or prepared the mind for its reception'.[96] It took a mind like Coleridge's to galvanise physics and metaphysics, to see Herschel engaged in the activity of amassing a blazing variety of Trinitarian and broader epistemological proofs.

Coleridge was well-attuned to the scope and impact of Herschelian ideas by the middle of 1818 when he found new resolve to draw up his 'Logosophia'. This was his grand yet ultimately elusive work that proposed to design a unifying system 'based upon the reconciliation of intellect and faith, and consistent with human nature and experience'.[97] In an effort to explain how such a scheme could possibly manifest itself, Coleridge constructed a dialogic account between 'A' and 'B' called 'The Sciences and Theology' (1818) which was consolidated by Herschel. The astronomer's presence is understandable given that Coleridge's 'reconciliation of intellect and faith' was bolstered by repeated reference to a 'telescope of Faith' throughout his religious teaching:

> A. – But what, my dear B! if instead of two systems…we took a third system, composed of one great science – the Specific Object of which was to present the supplement of this fourfold Defect left by the two other systems? You perhaps remember the suggestion of Herschel from which I have taken my metaphor – viz. the possibility that there may be bodies in the universe, that singly form a system – and that the use and purpose may be that [? of] balancing other more

[96] *AR*, p. 245.
[97] Perkins, *Coleridge's Philosophy: The Logos as Unifying Principle*, p. 21. Cf. *CN*, III, 4416.

> complex systems? – B. – You assist me onward…For doubtless you mean THEOLOGY/…

The necessary cohesion propounded by Coleridge for his 'Logosophia' rested on a Herschelian metaphor that made the latest workings of the solar system analogous with his desire to subsume all sciences under the banner of theology, which was 'the supreme, or (if you please) the CENTRAL'.[98] In Herschel's idea that 'two systems' could 'singly form a [third] system' Coleridge found an intellectual model that gave him the freedom to critique Schelling's model of polarity which, though dynamic in appearance, 'only works by covertly introducing plurality into the first term – and thus contains no genuine meta-logic'.[99] The Trinity, by contrast, reconciled opposites in an original unity and thus made triplicity or triangularity central to the shape of Coleridge's philosophy. The greatest three of all was the Holy Trinity and Herschel's celestial laws infiltrated Coleridge's dynamic synthesis in order to raise up theology as the 'one great science'. The operative mechanics that underpinned this philosophical structure came from Herschel and the permutations and tinctures of his science are widely felt throughout Coleridge's unifying acts as part of his plan to make the physical sciences cohere with Christianity on a non-mechanistic framework.

At the close of *Aids to Reflection*, Coleridge placed mystics and fanatics in relation to religious truth 'by his parable of the travellers who perceive a visionary landscape, but without the equipment necessary to appreciate its true nature'.[100] The 'enthusiastic' mystic found his way by 'the Taper of his Lantern' which, despite giving 'Deep, vivid, and faithful' impressions, comprised a 'scanty Circle of Light'. Meanwhile, the 'Mystic of the second and higher order' was led on by the 'Moonshine'

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[98] 'The Sciences and Theology' (1818), in *SW & F*, I, p. 761 and n. 2: 'C refers probably to the concluding section of William Herschel, "On the Quantity and Velocity of the Solar Motion" *Phil Trans RS* XCVI (1806) 236-7, where the possible relationship of the sun to another system is mentioned.'
[99] Reid, *Coleridge, Form and Symbol*, pp. 117-18. Cf. Holmes, *Coleridge: Darker Reflections* (London: HarperCollins, 1998), pp. 478-79.
[100] John Beer's editorial introduction to *AR*, pp. lxxxviii-lxxxix.

that ‘spreads its soft shadowy charm over all’, but which ‘conceals distances, and magnifies heights, and modifies relations’. In actual fact, discovery of real theological truth was reserved for the ‘frequent visitor of the favored spot, who has scanned its beauties by steady Day-light, and mastered its true proportions and lineaments’.[101]

This passage brings back to life images that were seeded in notebooks in the late autumns of 1799 and 1802. Herschelian light floods the story, whose narrative proceeds on the rich Coleridgean principle that ‘the more instructive Truth’ is felt by ‘the presence of all meanings in every meaning’.[102] Coleridge implicitly yet continually asked his readers to stimulate and enhance ‘the faculty of recognizing the same Idea or radical Thought in a number of Things and Terms which he had <never> previously considered as having any affinity or connection’.[103] The process of recovering Coleridge’s symbols is a way in which to initiate such active recuperation of ideas. This not only reveals his happiness and capability to digest the latest astronomy, but stimulates fresh access to his personal religious progression and public teaching by approaching it from a completely original sphere.

In an effort ‘to be knowing’, Coleridge’s mission was to ‘perceive the absolutely indivisible as infinitely distinguishable. And this holds from the Universe to a Grape-cluster’. Finding out what linked ‘a Grain of Sand…to a System of Worlds’ was the kind of detective work he relished.[104] Negotiating this paradox involved coming to terms with the notion ‘that two very different meanings if not more lurk in the word, *one*’.[105] Given that ‘indivisible’ means ‘all one’, which is syntactically *two*, Coleridge would have found at the root of his project a lexical pairing and small piece of wordplay in which to rejoice. Indivisibility was etymologically divisible and it was this kind of

[101] Ibid., pp. 390-94.
[102] *CN*, III, 2442, *f*18.
[103] *CN*, IV, 4929, *f*31.
[104] *CN*, III, 4058, *f*73.
[105] *CN*, II, 2332.

ambiguity or mental amphibiousness that grouped his thoughts.[106] Herschel gave Coleridge imaginative ways in which to generate and contain multiplicity. Coleridge exploited these in an effort to extricate himself from the lure of the *Naturphilosophen* and to ward off the dangers of pantheism, particularly as it appeared in the philosophy of Schelling. Herschel also provided Coleridge with a symbol of strong logic in the telescope which he used to distinguish the Understanding from the Reason and marry the latter to a perfect conception of Christianity centred on faith.

On 11 September 1831, Coleridge is recorded to have declared that his system:

> is the only attempt that I know of ever made to reduce all knowledges into harmony; it opposes no other system, but shows what was true in each, and how that which was true in the particular in each of them became error because it was only half the truth. I have endeavoured to unite the insulated fragments of truth and frame a perfect mirror. I show to each system that I fully understand and rightfully appreciate what that system means; but then I lift up that system to a higher point of view…

It was sheer unsparing delight, mixed with rare courage and an intellectual candour that could treat new ideas seriously and equally, which gave Coleridge this imaginative capaciousness. His peculiar ability and desire to sift and amalgamate truths was a quixotic attempt to 'discover *the* truth'.[107] As he told William Rowan Hamilton, Irish Astronomer Royal, in 1832: '*Science*, even in its most flourishing state, needs a *Baptism*, a Regeneration in Philosophy'.[108] Baptism was an opportunely chosen word; Herschel received a long and fruitful benediction in Coleridge's theological thinking.

It was singularly Coleridgean to make the telescope an instrument of mental logic and to find the points of congruity between the doctrine of perichoresis – the interpenetration of the Persons of the Trinity – and the expanding universe. It was also very beautiful. Stars, sunspots and light ricochet off Coleridge's Trinitarianism, 'duly

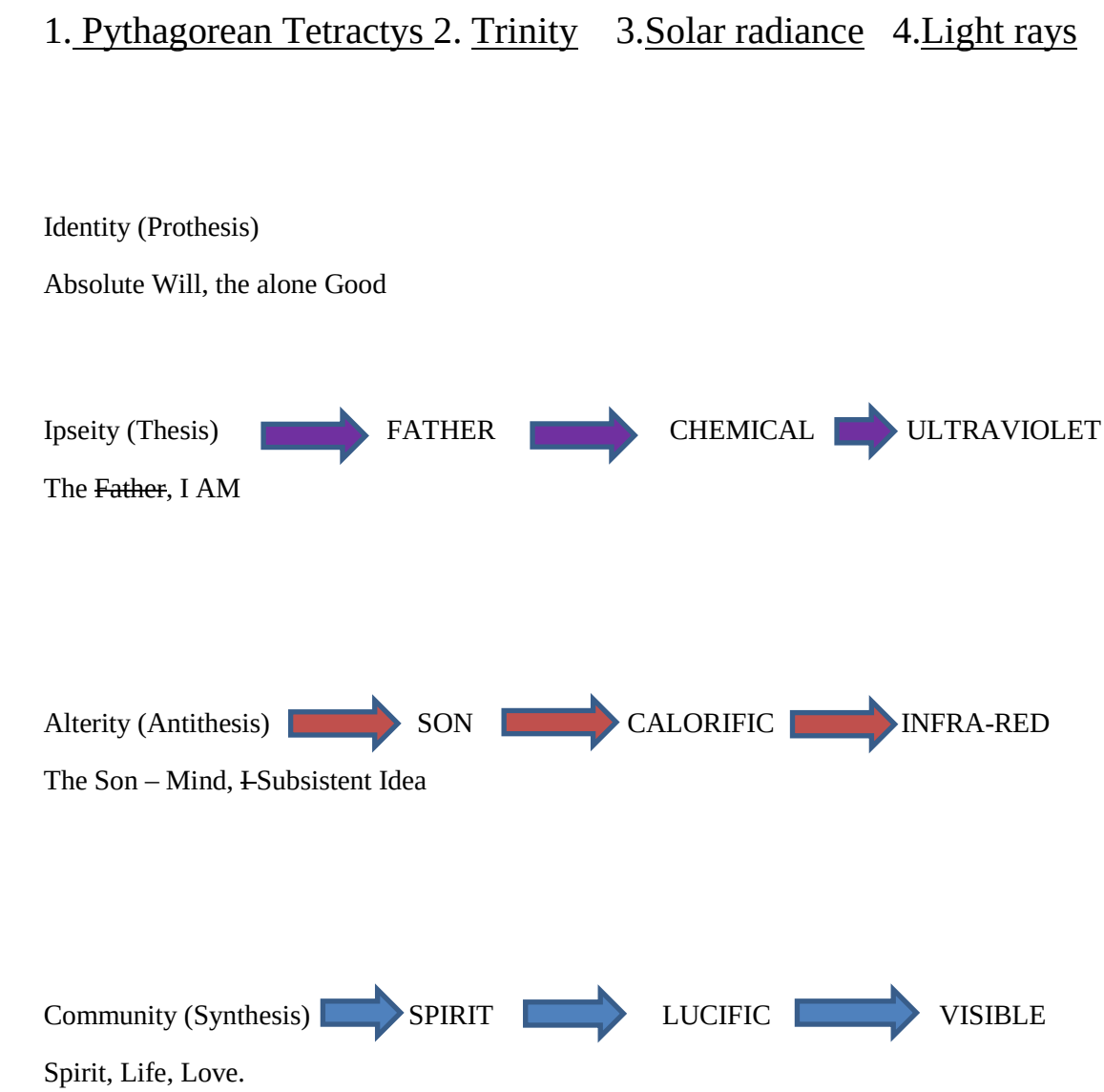
[106] For a full account of the ways in which this kind of 'di-vision' or muddle was imaginatively enabling for Coleridge see Perry, *Coleridge and Division* (1999).
[107] 11 September 1831, in *TT*, I, pp. 248-49.
[108] STC to WRH, 6 April 1832, in *CL*, VI, p. 897.

magnified by and thro' the poetic Herschel of a "*picturesque eye*"'.[109] This description neatly captures the mindset and conviction of Coleridge's plurality at work: the hard philosopher was also 'the poetic Herschel', seeking out metaphysical clues to the world with his telescope.

[109] STC to James Gillman, early October 1822, in *CL*, V, p. 253.

Figure 1

This diagram is a visual aid for understanding the underlying importance of nineteenth-century theories of light for Coleridge's philosophy. Columns 1 and 3 form the marginalia to Irving's *Sermons* (1828), in *CM*, III, pp. 18, 29. The Tetractys, which contains the Trinity within itself – thus binding theology and philosophy – was the dialectical model for Coleridge's attempts to synthesise all knowledge, and its structure was radically expressible in terms of Herschel's and Ritter's discoveries. The technical *workings* of the Persons of the Trinity, Coleridge realised, could be communicated with the help of the latest science. In Trinitarian fashion, Herschel's light theory guaranteed unity even as it conferred multeity. For Coleridge, this made it divine.



CHAPTER SIX

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ASTRONOMY AND MATHEMATICS AT 'THE IDLE MOUNT'

> …none but dryheaded calculating angular little gentlemen can take much delight in $\mathbf{a}\sqrt{\ } + \mathbf{b} \quad \mathbf{a} - \mathbf{b} + \mathbf{c} + \mathbf{d} - \mathbf{e}$ or $\sqrt[2]{\ }\ \mathbf{a}^2$ etc., etc., 'Logarithms Involution and Evolution, properties of curvelines resuming Series, Indeterminate Analysis, Method of Increments' do not they look annihilatingly barbarous? "There is no pleasure like proof" cries the Mathematician. I reverse it, "There is no proof like pleasure".[1]
>
> Was not Tennyson a Fellow of the Royal Society? If so, should not the President and Council take some notice of his death and delegate some one to the funeral to represent them? Very likely you have thought of it already. He was the only modern poet, in fact the only poet since the time of Lucretius, who has taken the trouble to understand the work and tendency of the men of science.[2]

In 1850, two meditative poems were published in London by Edward Moxon that were the patiently won products of restive conscience calculating and responding to the losses and loves of the world about them. One was an anonymous, fragmentary elegy begun in late 1833 and provisionally called 'The Way of the Soul', whilst the other, known as 'The Poem to Coleridge' throughout its fifty-two year gestation, appeared posthumously with the second title 'Growth of a Poet's Mind'.[3] Despite their shared purpose to write poetry at its most psychologically probing and passionately self-rectifying, Tennyson and Wordsworth could not have shaped more distinct scientific memories in their readers. *In Memoriam A.H.H.* and *The Prelude* have been accorded starkly different astronomical receptions. Far from impugning Tennyson's gratification in celestial observation, this chapter raises Wordsworth to the same

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[1] Alfred Tennyson to Elizabeth Russell, 18 April 1828, in Alfred Tennyson, *The Letters of Alfred Lord Tennyson*, ed. Cecil Y. Lang and Edgar F. Shannon, Jr., 3 vols. (Oxford: Clarendon Press, 1981-90), I, p. 23.

[2] Thomas Henry Huxley to Sir Michael Foster, c. 6 October 1892, in Thomas Henry Huxley, *Life and Letters of Thomas Henry Huxley*, ed. Leonard Huxley, 2 vols. (London: Macmillan, 1900), II, p. 337.

[3] For the textual history of *In Memoriam* see Tennyson, *The Poems of Tennyson*, ed. Christopher Ricks, 3 vols. (1969; Harlow: Longman, 1987), II, pp. 304-11. All quotation from *In Memoriam* is from this edition.

astronomical and mathematical vantage points by reconnecting him, predominantly through key textual revisions he made to *The Prelude*, with the scientists of his circle.

Tennyson was elected a Fellow of the Royal Society in 1865. Sir Norman Lockyer, his friend and founding editor of the science journal *Nature*, chronicled that he kept a two-inch telescope at Aldworth to observe double stars, a favourite practice as late as 1890. 'His interest in Astronomy was persistent until his death',[4] recorded Lockyer, vindicating Tennyson's original Fellowship Certificate, which noted he was 'Eminent as a Poet & Man of Letters. Attached to Science & anxious to promote its progress'.[5] Lockyer's obituary of Tennyson in *Nature* in 1892 ensured Huxley's appraisal achieved permanent recognition:

> in the study of science, as Tennyson has shown us, we have one of the necessary bases of the fullest poetry – a poetry which appeals at the same time to the deepest emotions and the highest and broadest intellects of mankind. Tennyson, in short, has shown that science and poetry, so far from being antagonistic, must for ever advance side by side.[6]

Scientists solidified *In Memoriam* in the literary-critical imagination as a poem alive to empirical phenomena, especially alert to the latest developments in geology, biology and astronomy. From A.C. Bradley and T.S. Eliot to our own time, scouring Tennyson's elegy for insights into optical refraction or for references to the nebular hypotheses of Herschel and Laplace has been perfectly acceptable.[7] What has met with

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[4] Norman and Winifred L. Lockyer, *Tennyson As a Student and Poet of Nature* (London: Macmillan, 1910), p. 4.

[5] Tennyson, 'Certificate of a Candidate for Election', dated 2 January 1865, held at the Royal Society of London, ref. EC/1865/13. Tennyson was elected 1 June 1865. His candidacy was supported by seventeen Fellows.

[6] Lockyer, 'Notes', *Nature*, 46 (13 October 1892), 572.

[7] Cf. *In Memoriam*, XXI, ll. 18-20; LV-LVI; LXXXIX, ll. 47-48; CXVIII, ll. 7-12. For A.C. Bradley's comment that Tennyson was the only great poet 'to whose habitual way of seeing, imagining, or thinking it makes any real difference that Laplace, or for that matter Copernicus, ever lived', see Tennyson, *In Memoriam: An Authoritative Text, Backgrounds and Sources, Criticism*, ed. Robert H. Ross (New York: W.W. Norton & Company, 1973), p. 95. Cf. T.S. Eliot, 'In Memoriam', in *Selected Essays* (1932; London: Faber and Faber, 1999), pp. 328-38, 335; Susan Gliserman, 'Early Victorian Science Writers and Tennyson's "In Memoriam": A Study in Cultural Exchange', *Victorian Studies*, 18: 3 (1975), 277-308; A.J. Meadows, 'Astronomy and Geology, Terrible Muses! Tennyson and 19th-Century Science', *Notes and Records of the Royal Society of London*, 46: 1 (1992), 111-18; Anna Henchman, '"The Globe

more varying degrees of scholarly scepticism, right up to rigorous dissension, is the idea that Wordsworth astutely registered nineteenth-century mathematics and astronomy in his poetry. Lack of access, interest and understanding have been consistently adduced to furnish support for the view that when it came to hard science Wordsworth and Coleridge were cursed with creative inanition, even in studies that do much to further the wider claims of chemistry, geology and physiology in their life and work.[8]

Since its inauguration in 1869, *Nature* has developed into the most internationally prestigious interdisciplinary science journal, reporting genuinely epochal discoveries. The attention that Lockyer and the scientific community in the late nineteenth century gave to Tennyson has detracted from the fact that from the first issue on 4 November 1869, and proceeding for nearly a century, the previous poet laureate appeared first on the front page, and from 1946 on the volume cover of each number. The ground-breaking work on DNA structure conducted by J.D. Watson and F.H.C. Crick in 1953, together with M. Schmidt's realisation, a decade later, that supermassive black holes lie at the centre of some galaxies, appeared under a Wordsworthian banner.

Lockyer chose as a motto for the journal a line and a half of the revised version of 'A volant Tribe of Bards on earth are found', which appeared misquoted in three places for sixty-five years. *Nature* printed the line thus until emendations were made in 1929 and 1934: 'To the solid ground | Of Nature trusts the mind which builds for aye', whereas Wordsworth actually wrote: 'To the solid ground | Of nature trusts the Mind

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we groan in": Astronomical Distance and Stellar Decay in *In Memoriam*', *Victorian Poetry*, 41: 1 (2003), 29-45.

[8] See, by way of example, Charles L. Pittman, 'An Introduction to a Study of Wordsworth's Reading in Science', *Furman Studies*, 33: 5 (1950), 27-60, 28, 56; McFarland, *Coleridge and the Pantheist Tradition* (1969), pp. 122, 323; Levere, *Poetry Realized in Nature* (1981), p. 6; Gaull, 'Under Romantic Skies', 34-41; Gaull, 'Coleridge and the Kingdoms of the World', 47-52; Wyatt, *Wordsworth and the Geologists* (1995), pp. 83, 192. Big and useful collections do not report on Wordsworth, Coleridge and the mathematical sciences. Cf. John Christie and Sally Shuttleworth (eds.), *Nature transfigured; Science and literature, 1700-1900* (Manchester: Manchester University Press, 1989); Andrew Cunningham and Nicholas Jardine (eds.), *Romanticism and the sciences* (Cambridge: Cambridge University Press, 1990).

that builds for aye'.[9] The difference between 'that' and 'which' may seem venial, although 'that' is in fact a restrictive clause that selectively pressures the following words, drawing out a particular *kind* of purposive 'Mind', one committed to innovative building 'for aye'. This is an important distinction 'which' does not reproduce; rather, 'which' assumes with comprehensive generality that *all* minds will 'build [sic] for aye'. Wordsworth would have disagreed, and he certainly would not have approved the inverted capitalisation of 'Nature' and 'mind', which Lockyer might have effected deliberately.[10] 'Mind' is capitalised because, in the selective instances that it *is* creating, it needs to be the active participant in the world it interrogates and from which it 'builds' imaginings and ideas that live in nature. To capitalise 'Nature' and not 'mind' is to reverse the intellective process, subverting the power of artistic intelligence.

It is worth pausing to consider that in 1869 it was quite proper to Lockyer that he should illustrate his weekly scientific journal with a Wordsworthian mantra, albeit somewhat provocatively altered. He could easily have chosen something, with permission, from his friend and newly-elected Fellow, Tennyson, should he have wished to do so, or indeed from Edward Young's cosmological *Night Thoughts* (1742-1745).[11] That he did not use *In Memoriam* is explicable for a more compelling reason than copyright, and one which remains unacknowledged: it would not have seemed remotely out of place to Victorian scientists, or to Wordsworth himself, to have had lines from 'A volant Tribe' in *Nature*. Indeed, it was a fitting, though ultimately fleeting, memorial. Wordsworth was in the company of a host of excellent

[9] For Wordsworth's sonnet and the 1822-1827 revisions see *Last Poems*, p. 24. Cf. Lockyer et al. (eds.), *Nature*, vols. 1 (November 1869-April 1870); 123 (January-June 1929); 133 (January-June 1934).
[10] R.M. McLeod, 'The New Journal', *Nature*, 224 (1 November 1869), 439. Cf. A.J. Meadows, *Science and Controversy: A Biography of Sir Norman Lockyer* (1972; London: Macmillan, 2008), p. 26. I am grateful to Helen Pearson, Chief Features Editor of *Nature*, and Alysoun Sanders, Archivist at Macmillan Publishers, for alerting me to these sources.
[11] John Batchelor, *Tennyson: To strive, to seek, to find* (London: Chatto & Windus, 2012), p. 278: 'Lockyer had been introduced to Tennyson by Thomas Woolner in 1864…[Tennyson] was a regular visitor to his observatory', in West Hampstead, to share in the enjoyment of his 6-inch Cook Equatorial telescope.

mathematicians and astronomers for the last thirty years of his life and he imbibed their concepts, often honing them before implanting them directly into his poetry.

It is a peculiar truth that a fascination with boundless space and astronomical contemplation is seen as integral to the visions of Young and Tennyson, but not to Wordsworth, whose autobiographical poem covers much of the intervening century.[12] *The Prelude* has not been deemed to exhibit the same lively sensitivity to scientific happenings. This chapter dispels that myth, which has gathered increasing force ever since Wordsworth silently disappeared from the cover of *Nature* in 1963.[13] The motto survived both the Second World War, despite one contributor's comments in 1944 that Wordsworth's 'attitude to science is almost uniformly hostile', and the modernisation of the journal itself in the 1950s.[14] At his death in 1850, Wordsworth was as intimately acquainted as Tennyson with new science and those who fashioned it.

Lockyer's obituary, which pinpointed Tennyson's legacy as aiding science and poetry 'to advance side by side', applies equally to Wordsworth, whose poetic alterations attest to the fulfilment of a conditional promise made long ago, the making good of sentiments about the 'labours of Men of science' in the revised Preface to *Lyrical Ballads* in 1802:

> The remotest discoveries of the Chemist, the Botanist, or Mineralogist, will be as proper objects of the Poet's art as any upon which it can be employed, if the time should ever come when these things shall be familiar to us, and the relations under which they are contemplated by the followers of these respective sciences shall be manifestly and palpably material to us as enjoying and suffering beings.[15]

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[12] Cf. Edward Young, *Night Thoughts*, ed. Stephen Cornford (Cambridge: Cambridge University Press, 1989), p. 5; 'Night Seventh', ll. 1222-26.
[13] Compare the volume covers of *Nature*, vols. 197 (January-March 1963) and 198 (April-June 1963). The latter makes no mention of Wordsworth anywhere.
[14] V.B. Wigglesworth, 'Wordsworth and Science', *Nature*, 153 (25 March 1944), 367.
[15] Preface to *Lyrical Ballads* (1802), in *Prose*, I, p. 141.

The time when scientific pursuits were most 'manifestly and palpably material' to Wordsworth was not whilst he was an undergraduate at St John's College, Cambridge, in the early 1790s, as biographers have traditionally dictated. It was undoubtedly much later, between 1820 and1850. Precious little biographical work has been conducted to establish this or to assess the ramifications of Wordsworth's unique group of mature scientific relationships. Tracking Wordsworth's manuscript variations reveals his sensitivity to intellectual pursuits of a different, though not wholly dissimilar, order. It is a powerfully enabling way to recouple him with an important piece of his intellectual past that thoroughly discredits the potent legend that the mathematical sciences held no allure for him.

For Wordsworth, successful mediation of science only occurs provided the material appeals to people's emotional status 'as enjoying and suffering beings'.[16] This cannot be overstated. Wordsworth reformulated the aesthetics of sympathy to strengthen the channels of intellectual kinship and gratitude. Much weight is given in the revised Preface to the poet's 'one restriction', namely, 'the necessity of giving immediate pleasure to a human Being', which 'is an acknowledgement of the beauty of the universe'. Pleasure is conceived as the exquisite neurological feeling that binds the poet and the scientist:

> We have no knowledge, that is, no general principles drawn from the contemplation of particular facts, but what has been built up by pleasure, and exists in us by pleasure alone. The Man of science, the Chemist and Mathematician, whatever difficulties and disgusts they may have had to struggle with, know and feel this. However painful may be the objects with which the Anatomist's knowledge is connected, he feels that his knowledge is pleasure; and where he has no pleasure he has no knowledge.[17]

[16] Ibid., p. 141.
[17] Ibid., pp. 139-40.

Wordsworth's doctrine of the interrelationship of poetry and science is intensely humane. The richest stores of his scientific learning are founded on a shared somatic impulse. In the *Reply to 'Mathetes'* (1809-1810), Wordsworth suggests this instinct must be nurtured early. The 'Youth' should return 'to the visible Universe' to contact the 'precious feelings of disinterested, that is self-disregarding, joy and love'. This will regenerate 'the thinking mind', one that 'searches, discovers, and treasures up' – 'that builds for aye', as *Nature*'s motto eventually had it. Such restoration is restrictive: the 'Youth' must 'apply the telescope of Art…to look through the system of his Being'. The qualitative indices of natural and created beauty possess the salutary effect of remodelling a psyche by *reflection*, infusing 'by meditation into the objects with which it converses an intellectual life'. The metaphor is yet more personally pertinent to Wordsworth: 'the telescope of Art' is a fine phrase to capture his compulsive revisionary bent, especially those refinements and refractions of the mind 'planted in the memory' by the curiosities of astronomical encounter. [18]

'What distinguishes Tennyson from Wordsworth is not that the former knew about science and the latter did not', Stephen Gill has rightly stipulated, but 'rather the different degrees of intellectual turbulence their knowledge caused in their confrontation, as artists, with the greatest mysteries of life – change, loss, and death'.[19] Their cognisance of science was similar, its expression not so. Wordsworth's vision is

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[18] Wordsworth, *Reply to 'Mathetes'* (1809-1810), in *Prose*, II, p. 18. Cf. Wordsworth, 'Malham Cove' (ll. 11-14), in *Shorter Poems*, p. 277: '…mid the wreck of IS and WAS, | Things incomplete and purposes betrayed | Make sadder transits o'er truth's mystic glass | Than noblest objects utterly decayed.' In 1836 revision, 'truth's mystic glass' became 'thought's optic glass', a good poetic accomplice for 'the telescope of Art'. Another literal instantiation of 'the telescope of Art' is worth rehearsing: Dorothy recorded in her *Journal of a Tour on the Continent* (1820) that WW, MW and herself took a boat out on Lake Lugano in 1820 'forgetful of the expected eclipse of the Sun, when a dimness of light and shadow recalled it to our recollection…The sun was yet too bright to be gazed upon; but, making telescopes of our hands, we found no need of other help, and marked the progress of the shadow, till only a very bright small crescent was left.' This experience presaged Wordsworth's 'The Eclipse of the Sun' (1822). Cf. DW, *Journals of Dorothy Wordsworth*, ed. Ernest De Selincourt, 2 vols. (1941; London: Macmillan, 1952), II, p. 248.

[19] Stephen Gill, *Wordsworth and the Victorians* (Oxford: Clarendon Press, 1998), p. 201.

fundamentally integrative where Tennyson's is agitative. Grief is explicit, pleasure implicit. It is where Wordsworth is taking delight in the revisionary process, zooming in on old experience and new friendships afresh, that his wealth of scientific learning is to be found. "There is no proof like pleasure", cried Tennyson in feckless mood as a student at Trinity College, Cambridge, and it is passages of studied pleasure that show the evidence for Wordsworth's scientific mind.

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> Up that long walk of limes I past [20]
>
> Then, Stelling was an Oxford man, and the Oxford men were always – no, no, it was the Cambridge men who were always good mathematicians.
>
> "I don't think I *am* well, father," said Tom. "I wish you'd ask Mr Stelling not to let me do Euclid – it brings on the toothache, I think".[21]

> The disposal of the Mastership is of course a matter about which much is speculated and little known. The general opinion gives it to Wordsworth. If this turn out so, he shall invite his brother here and you shall come and meet him, and we will be the most poetical and psychological college in the universe.[22]

Tennyson's career at Trinity (1827-1831) coincided with the aftermath of a mathematical revolution pioneered and protested against largely by men from the College. It ramifies in *The Prelude* and is an untold and exciting story. Trinity had a knack for fostering formative student clubs; the Apostles dominated in Tennyson's time, the Analytical Society a generation previously. Founded in May 1812 over a Sunday breakfast meeting in the rooms of Edward Bromhead (Gonville and Caius, 1808), the Society's other leaders included three brilliant but under-stimulated undergraduates, George Peacock (Trinity, 1809), Charles Babbage (Trinity, 1810), and

[20] Tennyson, *In Memoriam*, LXXXVII, l. 15 and n.: 'The limes at Trinity College'.
[21] George Eliot, *The Mill on the Floss* (1860), ed. A.S. Byatt (1979; London: Penguin Group, 2003), pp. 29, 152.
[22] William Whewell to J.C. Hare, 1 July 1820, in I. Todhunter, *William Whewell, D.D.: An Account of his Writings with Selections from his Literary and Scientific Correspondence*, 2 vols. (London, 1876), II, p. 37.

John Herschel (St John's, 1810). Together they sought to introduce the abstract Continental algebraic analysis of Laplace, Lagrange and Lacroix into the Cambridge Tripos. In doing so, the members followed the abortive example of Robert Woodhouse, a mathematician and Fellow of Gonville and Caius College from 1798, Lucasian Professor of Mathematics, 1820-1827, and Plumian Professor of Astronomy and Experimental Philosophy, 1822-1827. Woodhouse planned to modernise the syllabus at the beginning of the nineteenth century, then over-reliant on outdated Euclidean geometry and Newtonian fluxions and mechanics, by incorporating French differential notation and integral calculus. Woodhouse's attempt to promote the replacement of the fluxions with the calculus in *The Principles of Analytical Calculation* (1803) was a failure. Geometry was a British institution that the University did not wish to sacrifice; its principles had been used for centuries to train clergymen in logical argument and its physical applications bolstered the rationale of natural theology. Many believed the truths of geometry led directly to God, whilst baseless French algebra, especially given the socio-political circumstances, was seen as aggressively Napoleonic and godless.[23]

Undeterred by the frosty reception accorded to Woodhouse and frustrated by the parochialism of Cambridge mathematics which they found boring, Herschel and Babbage anonymously published the *Memoirs of the Analytical Society* (1813). In it,

[23] Harvey W. Becher, 'Woodhouse, Babbage, Peacock, and modern algebra', *Historia Mathematica*, 7 (1980), 389-400; Becher, 'Woodhouse, Robert (1773-1827)', *ODNB* (Oxford: Oxford University Press, online edn. 2004); William J. Ashworth, 'Analytical Society (act. 1812-1813)', *ODNB* (Oxford: Oxford University Press, online edn. 2013). All quotation from the *ODNB* is from the *Oxford Dictionary of National Biography* (*ODNB*) *Online*, gen. ed. Lawrence Neil Goldman, Oxford University Press 2004-2013 <http://www.oxforddnb.com>. Cf. W.W. Rouse Ball, *A History of the Study of Mathematics at Cambridge* (Cambridge, 1889), pp. 117-37; J.M. Dubbey, 'The Introduction of the Differential Notation to Great Britain', *Annals of Science*, 19: 1 (1963), 37-48; Dubbey, 'Babbage, Peacock and Modern Algebra', *Historia Mathematica*, 4 (1977), 295-302; Susan Faye Cannon, *Science in Culture: The Early Victorian Period* (Folkestone: Dawson, 1978), pp. 29-71; Joan L. Richards, 'The Art and Science of British Algebra: A Study in the Perception of Mathematical Truth', *Historia Mathematica*, 7 (1980), 343-65; Helena M. Pycior, 'George Peacock and the British origins of symbolical algebra', *Historia Mathematica*, 8 (1981), 23-45; Philip C. Enros, 'The Analytical Society (1812-1813): Precursor of the Renewal of Cambridge Mathematics', *Historia Mathematica*, 10 (1983), 24-47; M.V. Wilkes, 'Herschel, Peacock, Babbage and the Development of the Cambridge Curriculum', *Notes and Records of the Royal Society of London*, 44 (1990), 205-19.

they explained the workings of their coterie, which attracted and included William Whewell when he entered Trinity in October 1812, and who counted the ringleaders as lifelong friends.[24] They assumed the student body would be riveted, aghast to learn, as they were, that 'the history of the more modern discoveries has hitherto unfortunately found little place in our language'.[25] Their pamphlet fell on deaf ears. As advanced undergraduates, Herschel, Babbage, and their precocious peers had no power to regulate the Senate House Examinations and thus the calculus and equations they presented seemed irrelevant to students who would continue to be tested on old and faithful geometrical methods.[26] However, mathematical *rigor mortis* at Cambridge was shortly to be enlivened.

Graduating behind John Herschel as Second Senior Wrangler and Second Smith's Prizeman in 1813, Peacock was elected to a Fellowship at Trinity in 1814. He was tutor in mathematics from 1823-1839 and Lowndean Professor of Astronomy and Geometry from 1837 until his death in 1858.[27] In 1816, he co-authored with Herschel and Babbage a translation of Lacroix's *An Elementary Treatise on the Differential and Integral Calculus* as a prelude to introducing symbolical algebra into the Senate Examinations when he was a moderator in 1817 and 1819.[28] Although Lacroix was eventually moulded into the curriculum, the sudden introduction of profoundly new

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[24] Before commencing his studies at Trinity, Whewell spent the summer at Fowl Ing, two miles from Kendal. This was the home of John Gough, the blind mathematician and natural philosopher commemorated in *The Excursion*, who readied Whewell for Cambridge mathematics. Cf. Joseph Gross, 'Gough, John (1757–1825)', *ODNB* (Oxford: Oxford University Press, online edn. 2008).

[25] Anon., [Charles Babbage and John Herschel], *Memoirs of the Analytical Society* (Cambridge, 1813), p. ii. Cf. Charles Babbage, *Passages from the Life of a Philosopher* (London, 1864), pp. 25-40, 29: As a more apt title for this treatise, Babbage punningly suggested, 'The Principles of pure D-ism [Leibniz's notation] in opposition to the Dot-age [Newton's fluxions] of the University.'

[26] Becher, 'Radicals, Whigs and conservatives: the middle and lower classes in the analytical revolution at Cambridge in the age of aristocracy', *The British Journal for the History of Science*, 4 (1995), 405-26, 415.

[27] Becher, 'Peacock, George (1791-1858)', *ODNB* (Oxford: Oxford University Press, online edn. 2009). He was also Dean of Ely from 1839.

[28] Charles Babbage, George Peacock and John Herschel, *An Elementary Treatise on the Differential and Integral Calculus. By S.F. Lacroix. Translated from the French with An Appendix and Notes* (Cambridge, 1816).

analysis was greeted with 'outcry', as Whewell reported to Herschel in March 1817: 'I do not think he took precisely the right way to introduce the true faith. He has stripped his analysis of its applications and turned it naked among them'.[29]

This was momentous. Before Peacock's reforms, the basis of pure mathematics at Cambridge in the late-eighteenth and early-nineteenth centuries consisted of one of Isaac Barrow's many editions of Euclid's *Elements*, Samuel Vince's *The Elements of the Conic Sections* (1781) and *A Treatise on Plane and Spherical Trigonometry* (1800), and James Wood's *The Elements of Algebra* (1795). The standard texts for mixed mathematics, apart from Newton's *Principia*, were Wood's *The Principles of Mechanics* (1796) and *The Elements of Optics* (1799), together with Vince's *The Principles of Fluxions* (1795), *The Principles of Hydrostatics* (1796), and *The Principles of Astronomy* (1799).[30] Vince and Wood formed two fifths of the old order, Vince as Plumian Professor from 1796-1821, and Wood as Wordsworth's mathematical tutor at St John's and Master of the College, 1815-1839.[31] The other high profile reactionaries included William Lax and Daniel Mitford Peacock at Trinity, the former standing as Lowndean Professor from 1795-1837, and Isaac Milner, a Fellow at Queen's and Lucasian Professor, 1798-1820. They were united in being anti-French, suspicious of Whiggism, and threatened by Peacock's papers.[32] Every one of them was a Churchman who had taken the Senior Wranglership and been First Smith's Prizeman

[29] Whewell to J. Herschel, 6 March 1817, in Todhunter, *Literary and Scientific Correspondence*, II, p. 16.
[30] Becher, 'William Whewell and Cambridge Mathematics', *Historical Studies in the Physical Sciences*, 11: 1 (1980), 7.
[31] Cf. DW and WW to RW, 12 December 1803, in *WL*, I, p. 427.
[32] Becher, 'Radicals, Whigs and conservatives', 414-15. Cf. A.M. Clerke, 'Lax, William (1761-1836)', rev. Anita McConnell, *ODNB* (Oxford: Oxford University Press, online edn. 2004); Kevin C. Knox, 'Milner, Isaac (1750–1820)', *ODNB* (Oxford: Oxford University Press, online edn. 2004); C.W. Sutton, 'Wood, James (1760-1839)', rev. Anita McConnell, *ODNB* (Oxford: Oxford University Press, online edn. 2007); Anita McConnell, 'Vince, Samuel (1749-1821)', *ODNB* (Oxford: Oxford University Press, online edn. 2008).

in their year; French mathematics was an intrusion on their personal achievements, quite apart from being atheism.[33]

It must be emphasised that when William and Christopher Wordsworth were at Cambridge in the 1790s, 'only proficiency in Newtonian science could secure high honours for a B.A. degree candidate. No other field of knowledge counted'.[34] The poet wrote to Lord Lonsdale in 1820, his finger on the pulse of the rancour caused by the introduction of advanced mathematics and yet pleased with the scholarly progress:

> I ought not to omit mentioning that Dr *Wood* is not a little dissatisfied with the present state of the University. *I* spoke of what I saw, and heard of, and may confess that the average of attainment is very much higher than some years back.[35]

Sensing the perceived magnitude of Peacock's introduction of French methods, Whewell wrote to Herschel in November 1818 saying that he 'should not be surprised, if in a short time we were only to read a few propositions of Newton as a matter of curiosity; it would however as yet be treason to breathe such an idea to most people'.[36] Daniel Mitford Peacock, no relation to his radical namesake, was extremely circumspect of such changes, warning in 1819 that 'There is in truth no one point, on which the University should be more upon its guard, than against the introduction of mere algebraic or analytical speculations into its public examinations'. D.M. Peacock's denunciation rested on his scrupulous adherence to the foundations of applied mathematics. Believing that the 'lucubrations of French analysts have no immediate

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[33] The dates relate to the year each was Senior Wrangler and First Smith's Prizeman: Milner (1774); Vince (1775); Wood (1782); Lax (1785); Peacock (1791).

[34] Ben Ross Schneider, Jr., *Wordsworth's Cambridge Education* (Cambridge: Cambridge University Press, 1957), p. 4. Cf. The Appendix on Wordsworth's academic reading, pp. 263-64. Notably, in Wordsworth's day, St John's College was home to a second Cambridge observatory (the oldest was at Trinity). It was erected on the Shrewsbury Tower in 1765. It was well-stocked; James Wood bequeathed a telescope. For these details, together with plates showing the collection, consult R.T. Gunter, *Early Science in Cambridge* (1937; London: Dawsons of Pall Mall, 1969), pp. 169-72, 192-204.

[35] WW to Lord Lonsdale, 11 December 1820, in *WL*, III, p. 653. Wordsworth dined with Wood in April 1835 whilst staying with his brother Christopher at Trinity College. Cf. WW to James Wood, 1 April 1835, in *WL*, VI, p. 40.

[36] Whewell to J. Herschel, 1 November 1818, in Todhunter, *Literary and Scientific Correspondence*, II, p. 30.

bearing upon philosophy', he feared symbolical studies would not structure minds conducive to preparing effective and practical clergymen.[37]

Excerpts from the undergraduate diary of Christopher Wordsworth, Tenth Wrangler from Trinity College in 1796, show the extent to which Euclid, Newton, and the old Fellows monopolised mathematics before the impact of the Analytical Society was felt. His reading is commensurate with what was expected of his brother, the poet, who in the 1820s prized the scientific transformations:

> Trigonometry…Ratios and Variable Quantities…copied a syllabus of Mechanics (belonging to a friend)…Astronomy, Euclid XI (the college lecture subject)…Spherical Trigonometry…Vince's Conic Sections…Plane Trigonometry…Fluxional Problems…Cotes, Newton Opticks…Hydrostatics.[38]

The list is absolutely traditional, appreciably different from the more up-to-date and 'annihilatingly barbarous' one of which Tennyson complained in 1828.

Tennyson and Arthur Henry Hallam were taught by William Whewell, mathematical tutor in 1818 and head tutor at Trinity by 1823. Whewell employed the differential analysis in his Cambridge textbooks, *An Elementary Treatise on Mechanics* (1819) and *A Treatise on Dynamics* (1823).[39] The first of these replaced Wood's *Mechanics* (1796) whilst the second introduced undergraduates to the calculus and formal algebra. Although Whewell helped to secure Continental calculation in the Tripos throughout the 1820s, he came to regard the study of pure analysis as a hindrance, advocating mixed mathematics – the analytical treatment of physical

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[37] Daniel Mitford Peacock, *A Comparative View of the Principles of the Fluxional and Differential Calculus. Addressed to the University of Cambridge* (Cambridge, 1819), p. 85. Dorothy Wordsworth once inquired on behalf of friends, possibly the Marshalls, whether or not D.M. Peacock 'continues to take pupils' for Cambridge preparation. Cf. DW to Robert Foster, 11 March 1813, in *WL*, III, pp. 84-85.
[38] Christopher Wordsworth, Jr., *Scholae Academicae: Some Account of the Studies at the English Universities in the Eighteenth Century* (Cambridge, 1877), p. 75. Cf. pp. 76-77: John M.F. Wright of Trinity (1815-1818) gave a 'formidable list' of new Continental mathematics he read, including major works by Lacroix, Laplace, Monge and Lagrange.
[39] Richard Yeo, *Defining Science: William Whewell, natural knowledge, and public debate in early Victorian Britain* (Cambridge: Cambridge University Press, 1993), pp. 218-20; Yeo, 'Whewell, William (1794–1866)', *ODNB* (Oxford: Oxford University Press, online edn. 2009).

problems – to ensure abstract principles had a sturdy application.[40] In an important sense, though, Whewell's concessions guaranteed the long-lasting survival of the French techniques. Peacock, Babbage and Herschel also tried to conform moderately to empirical necessities, publishing A *Collection of Examples of the Applications of the Differential and Integral Calculus* (1820) as an adjunct to their Lacroix translation.

It would be an emphatic mistake to think that because Tennyson was an immediate product of the mathematical whirligig at Trinity, its presence in his mind and writing was greater than for Wordsworth, who had been formally educated under the ancient scheme. Crucially, Wordsworth's scientific attainments did *not* cease once he left St John's. Indeed, quite the reverse is true; he gained new-found respect for mathematical sciences based on increased exposure. As a family, the Wordsworths widely registered the pedagogical shift at Cambridge, a place of knitted circumstance and shared ambitions.

In September 1817, Wordsworth advised Daniel Stewart to send his protégé to the 'liberal' Trinity College, for 'at Cambridge he will have stronger incitements and inducements to apply to Mathematics'.[41] Exactly the same reasoning dissuaded the Wordsworths from sending their son John there, as Mary related:

> the mathematical education of Cambridge…is so contrary to the course of studies which is most agreeable to himself that he sickened at the thought of how much time he must give to Mathematics… His Father, therefore, has taken some pains (which are fortunately successful in Exeter Coll) to meet with an *accidental* vacancy in Oxford.[42]

[40] Cf. Becher, 'Whewell and Cambridge Mathematics', 14-15, 23. Cf. David B. Wilson, 'The educational matrix: physics education at early-Victorian Cambridge, Edinburgh and Glasgow Universities', in P.M. Harman (ed.), *Wranglers and Physicists: Studies on Cambridge mathematical physics in the nineteenth century* (Manchester: Manchester University Press, 1985), pp. 12-48, 15. For Herschel especially, Whewell's books were not radical enough. Cf. Becher, 'Radicals, Whigs and conservatives', 421-24.
[41] WW to Daniel Stewart, 7 September 1817, in *WL*, III, p. 398.
[42] MW to Edward Quillinan, 3 March 1823, in *The Letters of Mary Wordsworth 1800-1855* (1958), p. 98. Cf. WW to John Keble, 18 December 1822, in *WL*, IV, pp. 174-75.

This was precisely the problem Julius Hare encountered. He went up to Trinity in 1812 at the same time as Whewell, an abiding friend. Hare:

> gave himself up with passionate delight to his classical studies. Of mathematics he would now learn no more than was necessary, though, according to the system which then prevailed in the University, he thus, considerably to his father's annoyance, shut himself out from competing for the chancellor's medal.[43]

Hare should have gone to Oxford, where the *Literae humaniores* dominated 'well into the second half of the nineteenth century'.[44] In *The Mill on the Floss*, Eliot scientifically insinuates that Tom Tulliver is doubly doomed. Stelling was at Oxford, not Cambridge, and he taught Euclid, which was outmoded. The classes never served Tom well; they were redundant even mathematically.

Trinity College was the epicentre of the mathematical revolution in England that spread to London and Edinburgh when Christopher Wordsworth became Master in 1820. His position established a vital nexus of communication between the Wordsworths and the scientists. Visiting Cambridge for the month of January 1821, Dorothy took an instant shine to George Biddell Airy, whom Christopher also 'thinks very highly of', and whom she relied upon for messages about the Master's health.[45] By 1830, Airy had become affectionately known to the family as 'Orson the hairy',[46] and the poet even wrote several astronomical epigrams supporting Airy's vote for John Lubbock in University elections in 1832.[47] Airy graduated as Senior Wrangler and First

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[43] Augustus J.C. Hare, *Memorials of a Quiet Life*, 2 vols. (1872; London, 1876), I, p. 192.
[44] Becher, 'Voluntary Science in Nineteenth-Century Cambridge University to the 1850's', *The British Journal for the History of Science*, 19 (1986), 87.
[45] DW to Catherine Clarkson, 19 January, 15 February, 27 March 1821, in *WL*, IV, pp. 17, 34, 53.
[46] WW to Edward Quillinan, 10 September 1830, in *WL*, V, p. 323.
[47] WW, DW and Dora W, to JW, 5 December 1832, and WW to JW, 7 December 1832, in *WL*, V, pp. 568, 572-73. In 1838, by way of return, Wordsworth asked Airy to support the candidature of John Thomas Graves, brother of Robert Perceval Graves, for the Registrarship of University College, London. Cf. WW to George Biddell Airy, late March 1838, in *WL*, VI, pp. 544-45; 'Poems Written in Response to the Reform Movement, December 1832', in *Last Poems*, pp. 230-31.

Smith's Prizeman from Trinity in 1823, to the fulfilment of Dorothy's predictions and much to her considerable happiness.[48]

Airy was taught by George Peacock and William Whewell and is regarded by historians of science as 'the first great success of the new system'.[49] On arrival, Peacock gave him the Lacroix translation and he read Whewell's *Mechanics*, which he recognised to be 'the first innovation made in the Cambridge system of the Physical Sciences for many years'. He took the Senate House Examinations in 1823, the year after Peacock proposed a paper entirely on the differential calculus, which 'was considered as establishing the new system in the University'.[50] Airy brought a mathematical reading party to the Lakes for the summer of 1825, seeing much of the Wordsworths and Southey, and working on 'a little Lunar Theory, a little of Laplace's Equations, something of the Figure of the Earth, and…wrote out very carefully [his] Trigonometry for the Encyclopaedia Metropolitana'. Airy's rise was meteoric: Lucasian Professor in 1826, Plumian Professor in 1828, and Astronomer Royal in 1835. He was in the Lakes again in 1827, 1830 and 1841.[51]

It was clearly not the case, as Wordsworth purportedly supposed in 1824, that 'the Idle Mount is too pleasant a spot for *mathematical* studies, to prosper in'.[52] Indeed, the Lakes became a hotspot for mathematical trips. In 1832, following another reading party of 'several promising Cantabs' led by George Peacock and Julius Hare, Wordsworth informed Quillinan: 'I could tell you much about…the perplexity of the

[48] DW to Catherine Clarkson, 16 January 1822, in *WL*, IV, p. 105. Cf. Allan Chapman, 'Airy, Sir George Biddell (1801–1892)', *ODNB* (Oxford: Oxford University Press, online edn. 2011).
[49] Walter F. Cannon, 'Scientists and Broad Churchmen: An Early Victorian Intellectual Network', *Journal of British Studies*, 4: 1 (1964), 68.
[50] George Biddell Airy, *Autobiography of George Biddell Airy*, ed. Wilfrid Airy (Cambridge, 1896), pp. 23-26, 48.
[51] Ibid., pp. 65, 76, 150; Cf. WW to WRH, 9 September 1830, in *WL*, V, pp. 320-21.
[52] DW to Thomas Monkhouse, 20 May 1824, in *WL*, IV, p. 268.

young mathematicians'.[53] Wordsworth consistently met 'the Mathematicians of Trinity, Peacock, Airy, Whewell' on visits to his brother in the 1820s and 1830s.[54] He was interested in their findings: 'We shall all be looking for great things from your last Summer's doings in Cornwall. Professor Airey, Professor Sedgwick and Professor Whewell…cannot have been so long underground together for a slight purpose',[55] and in their achievements: 'I congratulate you upon one of your Pupils being so high upon the Tripos – and notice with regret that St John's has not made so great a figure as usual'.[56] It is thus little wonder Wordsworth deemed David Brewster's article on the 'decay of Science in England' in *The Quarterly Review* for October 1830 to be 'a very foolish one'. Wordsworth's cognisance of the academic vicissitudes at Trinity, brought about largely by his brother's position as Master, together with his loyalty to scientific friends and their books, made it obvious to him that this was an inaccurate and 'poor compliment…to Science!'[57]

Although Tennyson's Lincolnshire library is justly viewed as an important source for his scientific knowledge, it is not well-known that the shelves at Rydal Mount contained all of the same material. In Wordsworth's case, it was acquisition

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[53] WW to Edward Quillinan, 10 July 1832, in *WL*, V, p. 541. Cf. WW to Julius Charles Hare, in *WL*, VIII, p. 215.

[54] WW and DW to WRH and Eliza Hamilton, 13 June 1831, in *WL*, V, p. 398. It is possible, though unlikely, that he did not meet Peacock until 1831. For Wordsworth (and/or family) visits to Trinity throughout the 1820s-1830s, see: *WL*, IV, pp. 7, 13, 15, 22, 45, 266-72, 603-6; *WL*, V, pp. 351-58, 377-78*; WL*, VI, pp. 33-42, 700 and n. 2.

[55] WW to William Whewell, 4 December 1828, in *WL*, IV, p. 682.

[56] WW to John Hymers, 26 January 1832, in *WL*, V, p. 481. 'The Revd. John Hymers (1803-87), mathematician: Fellow of St John's College, Cambridge, 1827-53, President, 1848-52'. Cf. Ibid., DW to CW, 6 August 1830, p. 314 and n. 1: 'Your Cambridge Men are found in every pleasant place. Only think of W^{m} being in the same town with Hymers and his Flock! Hymers and he drink tea together once in the week, and he gives him a little instruction in German.' William Wordsworth Jr. met Hymers on his German tour in 1830, for which see Owens, 'Wordsworth and G.E. Papendiek (1788-1835)', *Notes and Queries*, 58: 4 (2011), 540-42. Hymers' *A Treatise on Conic Sections* (1837) became the standard textbook on analytic geometry at Cambridge. Hymers was well-affiliated with Continental mathematics, for which see R. E. Anderson, 'Hymers, John (1803–1887)', rev. Maria Panteki, *ODNB* (Oxford: Oxford University Press, online edn. 2004).

[57] WW to WRH, 24 January 1831, in *WL*, V, p. 364 and n. 2.

stemming from real intimacy with the authors.[58] Wordsworth owned John Herschel's *A Preliminary Discourse on the Study of Natural Philosophy* (1831), which had appeared in Dionysius Lardner's popular *Cabinet Cyclopaedia*, together with his Cambridge textbook, *A Treatise on Astronomy* (1833). It was from Herschel 'that intelligent Victorians learned their astronomy',[59] grappling with studies that had so charmed Coleridge: infra-red, double stars, and Laplace's model of the universe.[60] Wordsworth and Herschel never did have their double portrait painted by Thomas Heathfield Carrick in 1848 as planned, a venture Wordsworth considered 'as no small honor'.[61] They were already united poetically, however. 'A volant Tribe' originally appeared in Joanna Baillie's *Collection* (1823) alongside three anonymous contributions from Herschel, making the lines from the revised version an even more fitting appendage for *Nature*.[62]

Wordsworth and Whewell became very close, visiting each other at Rydal and Cambridge into the mid-1840s.[63] A decade before Whewell dedicated *The Elements of Morality, Including Polity* (2 vols., 1845) to Wordsworth, the poet had been 'a *long time* in [Whewell's] debt for the present of your valuable Bridgewater Treatise', *Astronomy and General Physics Considered with Reference to Natural Theology*

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[58] Nancie Campbell (ed.), *Tennyson in Lincoln: A Catalogue of the Collections in the Research Centre* (Lincoln: Tennyson Society, 1971), pp. 79, 95, 105. Cf. Laura J. Snyder, *The Philosophical Breakfast Club: Four Remarkable Friends who Transformed Science and Changed the World* (New York: Broadway Books, 2011), p. 351; Shaver, *Catalogue*, pp. 121, 185, 271-72.

[59] Walter F. Cannon, 'John Herschel and the Idea of Science', *Journal of the History of Ideas*, 22: 2 (1961), 226.

[60] John F.W. Herschel, *A Preliminary Discourse on the Study of Natural Philosophy* (London, 1831), pp. 195-96, 275-81, 314; *A Treatise on Astronomy* (London, 1833), pp. 385-94. Cf. Whewell's review in *The Quarterly Review*, 45: 90 (1831), 374-407.

[61] WW to Sir John Frederick William Herschel, 3 February 1848, in *WL*, VII, p. 864. In 1839, Wordsworth and Herschel received honorary degrees together from Oxford. Cf. WW to Thomas Gaisford, 12 June 1839, in *WL*, VI, p. 704 and n. 2.

[62] Joanna Baillie (ed.), *A Collection of Poems, Chiefly Manuscript, and from Living Authors* (London, 1823), p. 53. Wordsworth's sonnet 'Not love nor war' (p. 52) was included; Herschel's poems were 'To the Lark' (pp. 81-83), 'The Sailor's Departure' (p. 142) and 'The Lament' (pp. 192-93). Cf. Keith Moore, '"Space and Time forgot": John Herschel as a Poet', in Desmond King-Hele (ed.), *John Herschel 1792-1871: A Bicentennial Commemoration* (London: The Royal Society, 1992), pp. 29-36.

[63] For these visits see *WL*, VI, p. 632, n. 2; *WL*, VII, pp. 251-52, n. 3; 466-67; 593, n. 1; 626. This last in November 1844 must have been special: 'Our Host was the Master of Trinity College, Dr Whewell, Successor to my Brother Dr Wordsworth, who filled the office for more than 20 years highly to his honor'. Whewell was Master, 1841-1866.

(1833).[64] Whewell described the controversy surrounding the corpuscular, vibration, and wave theories of light, 'some considering light as consisting in the emission of luminous particles; others accounting for its phenomena by the propagation of vibrations through a highly subtle and elastic ether'. He also documented Laplace's model for the stability of the Solar System, which held that 'The planets produce perpetual perturbations in each other's motions, but these perturbations are not indefinitely progressive, they are periodical', together with Laplace's nebular hypothesis, which proposed (incorrectly) that gaseous clouds called nebulae contracted and cooled, forming rings which shrunk into planets.[65] Whewell's astronomical content relied heavily on Herschel.

Whewell and Herschel reviewed each other's work publicly in *The Quarterly Review* and were solicited to write detailed articles, with other leading scientists such as Airy, to keep the major British encyclopaedias (*Britannica*, *Edinburgh* and *Metropolitana*) updated with the latest findings on light, heat, sound, tides, electricity and physical astronomy.[66] Their discoveries were even more widely disseminated in issues of *The Saturday Magazine*, all of which Wordsworth owned, and which ran a

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[64] WW to William Whewell, 14 May 1834, in *WL*, V, p. 709. Cf. WW to William Whewell, 12 May 1845, in *WL*, VII, pp. 672-73. Wordsworth had written a sonnet on the strong character of Whewell's future wife, Cordelia Marshall, in 1833: 'To Cordelia M –, Hallsteads, Ullswater', in *Sonnet Series*, p. 607. The Marshalls of Ullswater were well-known to the Wordsworths. John Marshall, Cordelia's father and Whewell's first father-in-law, was a wealthy flax spinner and politician from Leeds, whom William met as early as 1800. John Marshall and his son, James, accompanied William to Ireland in 1829, and hosted WRH at Hallsteads in October 1838. Marshall's wife, Jane (née Pollard), was Dorothy's oldest childhood friend. For Marshall's life see Maurice Beresford, 'Marshall, John (1765-1845)', *ODNB* (Oxford: Oxford University Press, online edn. 2006). For a longer account of these relationships see Wyatt, *Wordsworth and the Geologists*, pp. 89-91;

[65] William Whewell, *Astronomy and General Physics Considered with Reference to Natural Theology* (London, 1833), pp. 128-37, 163-64, 181-83. Cf. Herschel's review in *The Quarterly Review*, 68: 135 (1841), 177-238. Wordsworth may first have come across Laplace in 1808. He read Henry Brougham's review of Byron's *Hours of Idleness* in the *Edinburgh Review* for January 1808. Cf. Wu, *1800-1815*, p. 29. In the same issue was John Playfair's essay on Laplace, *Edinburgh Review*, 22 (1808), 249-84, which 'surveyed the whole continental tradition of analytical mathematics and its employment in the topics of mechanics and physical astronomy'. For this quote and a discussion of the article see Maurice Crosland and Crosbie Smith, 'The Transmission of Physics from France to Britain: 1800-1840', *Historical Studies in the Physical Sciences*, 9 (1978), 11-12.

[66] I. Grattan-Guinness, 'Mathematics and mathematical physics from Cambridge, 1815-40: a survey of the achievements and of the French influences', in Harman (ed.), pp. 88-89. This details a superb table of the scientists' contributions to encyclopaedias.

series entitled 'Popular Astronomy' in the late 1830s.[67] John Pringle Nichol's fashionable manual, *Views of the Architecture of the Heavens* (1837), also recounted Herschel's and Laplace's observations, and Wordsworth thanked the author for receipt of the 1850 edition in his last extant letter. Wordsworth knew the content was on 'a subject that cannot but be interesting to everyone', and only a month before his death, relayed an invitation: 'Should Profr. Nichol come into this neighbourhood, it would give Mr Wordsworth much pleasure to see him at Rydal Mount'. [68]

'Pleasure' prompted Wordsworth's homiletic passage on geometry in the 'AB-Stage' 1805 *Prelude* (VI, 135-57),[69] beginning:

> Yet must I not entirely overlook
> The pleasure gather'd from the elements
> Of geometric science. I had stepp'd
> In these inquiries but a little way,
> No farther than the threshold: with regret
> Sincere I mention this; but there I found
> Enough to exalt, to chear me, and compose.
> With Indian awe and wonder, ignorance
> Which even was cherish'd, did I meditate
> Upon the alliance of those simple, pure
> Proportions and relations with the frame
> And laws of Nature, how they could become
> Herein a leader to the human mind,
> And made endeavours frequent to detect
> The process by dark guesses of my own… (VI, 135-49)

It was instinctual remembrance of that 'pleasure' – enjoyment transformed, in fact, by the scientific company of Trinity College – that impelled significant adjustments to this

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[67] Shaver, *Catalogue*, p. 225; *The Saturday Magazine*, pt. I. 12: 368 (1838), 121-28; pt. II. 13: 389 (1838), 33-40; pt. III. 13: 400 (1838), 121-28; pt. IV. 13: 410 (1838), 201-8; pt. V. 14: 426 (1839), 73-80; pt. VI. 14: 437 (1839), 161-68. In an 1837 issue, which Wordsworth possessed, John Herschel described the positive effects on a mind which 'has once imbibed a taste for scientific inquiry' in terms remarkably similar to the societal woes Wordsworth attempted to cure with his poetry, and which he outlined in the *Preface* to Lyrical Ballads, in *Prose*, I, pp. 128, 130. Cf. Herschel, 'Taste for Scientific Inquiry', *The Saturday Magazine*, 11: 324 (1837), 29-30: 'Nor is it a mere passive pleasure which is thus communicated…lassitude is excluded from his life, and that craving after artificial excitement and dissipation of mind, which leads so many into frivolous, unworthy, and destructive pursuits, is altogether eradicated from his bosom.'

[68] WW to John Pringle Nichol, 15 March 1850, in *WL*, VII, p. 917 and n. 2. Nichol was made Regius Professor of Astronomy at Glasgow University in 1836. Cf. Shaver, *Catalogue*, p. 185.

[69] All quotation from 'AB-Stage' and 'C-Stage' reading texts and revisions in *The Thirteen-Book Prelude* is from *Prelude 1805*.

section in MS. D in the 1830s. These corrections have puzzled critics unnecessarily. Wordsworth was not revising 'defensively', as Joan Baum has suggested.[70] Rather, he was strengthening the ties of a creed in natural theology, of a *mathematical* faith in God of the kind proposed by Whewell.

Notable revisions to MS. D, a copy-text written in the hand of Mary Wordsworth in 1832 and 'heavily revised, perhaps in 1832 and certainly in 1838-39', were stirred by Cambridge mathematics. They produced a very different version of what Wordsworth owed to geometry for the 1850 *Fourteen-Book Prelude* (VI, 115-39).[71] In the published version, the same extract commences:

> Yet may we not entirely overlook
> The pleasure gathered from the rudiments
> Of geometric science. Though advanced
> In these enquiries, with regret I speak,
> No farther the threshold, there I found
> Both elevation and composed delight.
> With Indian awe and wonder, Ignorance pleased
> With its own struggles, did I meditate
> On the relation those abstractions bear
> To Nature's laws, and by what process led
> Those immaterial Agents bowed their heads
> Duly to serve the mind of earth-born Man
> From star to star, from kindred sphere to sphere,
> From system on to system without end. (VI, 115-28)

The opening plural pronoun, 'we', present in MS. C (c. 1819),[72] gestures towards a new collective experience which the 'AB-Stage' text denies and which is fleshed out in MS. D modifications. The revisions also shed considerable light on why, when Wordsworth 'Yielded up moral questions in despair' (X, 900) following his disillusionment with the French Revolution, he 'Turn'd towards mathematics, and their clear | And solid evidence' (X, 903-4) in 1805, but 'To abstract Science turned and its severe | And solid

[70] Baum, 'On the Importance of Mathematics to Wordsworth', 403.
[71] All quotation from the reading text and MSS. D and E revision in *The Fourteen-Book Prelude* is from *Prelude 1850*. Cf. MS. D revision, pp. 658-59. On the dating of MS. D see 'Introduction', pp. 6-11, 11.
[72] *Prelude 1805*, II, p. 95, l. 122. Cf. pp. 643-45.

evidence' (X, 941-42) from MS. C onwards.[73] What better way to characterise his spirit of 'severe' betrayal than by turning to *French* mathematics.

By the 1830s, Wordsworth discerned that the foundation of mathematics had changed, and with it the 'elements' vanished, replaced instead with the 'rudiments | Of geometric science'. 'Elements' was too close to its Euclidean homophone to warrant inclusion. The fabric of mathematics was in flux and Wordsworth updated the poem, charting the growth of his scientific mind as it was restructured by Cambridge friendships. He seemed initially undecided about how 'advanced | In these enquiries' he really was – 'Though advanced' is ambiguously usurped in the following two lines, rendering it unclear whether or not Wordsworth made any progress at all or if, in fact, he had 'advanced', but still spoke from 'the threshold' compared with the Trinity set. Nevertheless, since he was pleased in the 1830s with his 'struggles' *against* ignorance, whereas in the 'AB-Stage' *Prelude* ignorance was 'cherish'd', it is reasonable to claim that Wordsworth 'advanced' some distance, much as his letters and reading attest. His 'regret' at neglecting mathematics was certainly 'Sincere' in 1805; the frontiers of knowledge proved invigorating for him. Where he initially found 'Enough to exalt, to chear me, and compose', he discovered 'Both elevation and composed delight' years later. The affirmation has shifted in tone from the hesitatingly reserved to one of renewed rectitude.

In the first draft of *The Prelude*, Wordsworth's mathematics was strictly traditional; he venerated 'the alliance of those simple, pure | Proportions and relations', aware only of the Euclid and Newton he was taught at University. The Analytical Society dispelled that 'alliance' with the introduction of abstract Continental analysis, and Wordsworth recast his thinking accordingly. In later life, he meditated 'On the

[73] The line reference in the text is to MS. C. Cf. *Prelude 1850*, XI, 328-29.

relation those abstractions bear | to Nature's laws'. It was not a given that pure mathematics *did* bear any relation to 'Nature's laws', as the 'AB-Stage' manuscript assumes. It was precisely this fact, that the French algebra and calculus were 'immaterial Agents' devoid of real applicability, which worried Wood, D.M. Peacock and others. They were concerned that only Euclidean mathematics was 'a leader to the human mind', and that symbolical studies would parodically, even demonically, reverse the intelligential process, as Wordsworth reported in MS. D revision: 'Those immaterial Agents bowed their heads | Duly to serve the mind of earth-born Man'. New science, Wordsworth discovered in Herschel, was uncovering 'star[s]', 'sphere[s]' and 'system[s]', a plurality of worlds over which Man might assert an intellectual control and which were not imagined as part of the 'dark guesses' in 1805.[74] This was not the prescribed scientific diet of a Cambridge-educated clergyman at the turn of the nineteenth century.

However, the balanced and incorporative mathematical model proposed by Whewell in his Cambridge textbooks, that 'abstractions' *should* be applied to 'Nature's laws', generated an increased Wordsworthian confidence in the geometrical properties of God. From geometry in the 'AB-Stage' *Prelude*, the poet:

> …drew
> A pleasure calm and deeper, a still sense
> Of permanent and universal sway
> And paramount endowment in the mind,
> An image not unworthy of the one
> Surpassing Life, which out of space and time,
> Nor touch'd by welterings of passions, is
> And hath the name of God. (VI, 150-57)

This is an equivocating pronouncement by comparison with the firm, *crescendo*-like declaration that followed MS. D alteration:

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[74] Referring to his boyhood love for the Sun in Book Two of *Prelude 1850*, Wordsworth inserted another line which registers his grip on the expanded cosmos: 'Nor for his bounty to so many worlds' (l. 182). Cf. Wordsworth, *Prelude 1850*, pp. 52, 434-35, ll. 180-81.

> …from the same source I drew
> A pleasure quiet and profound, a sense
> Of permanent and universal sway
> And paramount belief: there recognized
> A type, for finite natures, of the one
> Supreme Existence, the surpassing life
> Which…
> Superior and incapable of change,
> Nor touched by welterings of passion, *is*,
> And hath the name of God. (VI, 129-35, 137-39)

The crucial phrase is 'paramount belief', catalysing a richer and more 'profound' feeling of spiritual 'pleasure' than recorded in the earlier version. This is an assertion of faith. It is recognition, in a way that 'paramount endowment' is not, of 'the one | Supreme Existence'; it therefore necessitates the deletion of one of Wordsworth's classic formulations, the indecisively charged 'not unworthy'. Certitude follows: '*is*,' becomes resolutely italicised with uncharacteristic surety. Mathematics has attained visionary power for the poet. The verb garners an additional pause which is very valuable. The extra comma confers real existential being on 'those abstractions' –a vivid presence for Wordsworth courtesy of George Peacock, Herschel, Whewell, and Airy – even as it confirms algebra's presence in God.

In the 'AB-Stage' *Prelude*, 'Such dispositions' were Wordsworth's 'almost | Through grace of Heaven and inborn tenderness' (VI, 188-89); in MS. D, they were 'Mine, through heaven's grace, and inborn aptitudes' (VI, 170), and in MS. E, those 'aptitudes' were 'inward'.[75] At each stage, Wordsworth takes ownership of his own capacity for scientific learning, comprehending in the process the divinity of the mind's lucubrations.[76] Perhaps Wordsworth passed this novel delight on to the young Tennyson when he was staying at Trinity in November 1830. They almost certainly met on this

[75] Ibid., pp. 116, l. 170n; 662-63, l. 171.
[76] Cf. WW to WRH, 8 February 1833, in *WL*, V, p. 590. In this letter Wordsworth thanked Hamilton for receipt of his *Introductory Lecture on Astronomy* (1832), remarking that it 'makes me regret – as I have had a thousand occasions of doing – that I did not apply to Mathematics in my youth'. Although he goes on to claim that 'It is now, and has long been, too late to make up for the deficiency', his *Prelude* revisions would suggest he found a remedy.

occasion. Wordsworth noted that 'We have a respectable show of blossom in poetry. Two brothers of the name of Tennyson in particular, are not a little promising'. In this same letter, which marks the beginning of his acquaintance with the Cambridge Apostles, Wordsworth also reported on the protracted and long-standing effects of an earlier Trinity group, the Analytical Society, whose impact he fully understood: 'There is a great deal of intellectual activity within the walls of this College, and in the University at large'.[77] Wordsworth's mathematical changes in *The Prelude* represent an accomplishment James Wood and his ilk thought impossible: a dynamic natural theology kindled out of the 'pleasure' induced by 'abstract Science'.

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> According to [Hamilton], the modern geometry, which deals with the infinities and imaginaries of space, has its beauty and its fascination; and he reckoned the happy daring of such geometers as Poncelet and Chasles as closely allied to poetry. We happen to know that this view of his, as communicated by him to the poet Wordsworth, was to the latter an entirely new revelation, and had the effect of raising his conception, which had before been unduly depreciatory, of the dignity both of science itself, and of its most eminent votaries.[78]

Meeting for the first time in September 1827, in Ambleside, Wordsworth and William Rowan Hamilton (1805-1865) quickly became devoted to one another. 'Seldom have I parted – never I was going to say', wrote Wordsworth, 'with one whom after so short an acquaintance, I lost sight of with more regret'.[79] Indeed, Robert Perceval Graves, Hamilton's first biographer, declared that Wordsworth 'has said in my hearing that Coleridge and Hamilton were the two most wonderful men, taking all their

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[77] Ibid., WW to WRH, 26 November 1830, p. 354 and n. 5. Wordsworth's friendship with the Apostles, inaugurated by this visit, should not be underestimated. Cf. Ibid., WW to Robert Jones, 29 October 1833, p. 651 and n. 2: 'A sad case was that of my young friend Hallam who was cut off at the age of 23…He was a young Man of genius, great acquirements and high promise.'

[78] Charles Graves, 'Eloge Delivered at the Stated General Meeting of the Royal Irish Academy on the 30th November, 1865', in A.W. Conway and J.L. Synge (eds.), *The Mathematical Papers of Sir William Rowan Hamilton, Volume I: Geometrical Optics* (Cambridge: Cambridge University Press, 1931), pp. xiii-xiv.

[79] WW to WRH, 24 September 1827, in *WL*, IV, pp. 546-47.

endowments together, that he had ever met'. Likewise, for Hamilton, 'His heart settled upon Rydal and the poet of Rydal' with immediate steadfastness.[80]

In assessing this relationship, modern studies have stressed the rootedness of Hamilton's intellect in the stimulus he derived from harmonising science with both poetry and Coleridgean and Kantian metaphysics.[81] In 1823, Hamilton himself thought he united 'in some degree the poet with the astronomer', and recorded in 1831 that he was keeping 'an optico-poetico-mathematico-musical diary'.[82] It is true that he found the most methodologically apposite scientific studies to consist in deducing an overarching unity from a plurality of discrete laws. Consequently, the allurement of Coleridge's trichotomous logic was utterly bewitching to him. Hamilton considered the French analyst Lagrange to have produced 'a kind of scientific poem' with research showing that 'the most varied consequences respecting the motions of systems of bodies may be derived from one radical formula'.[83]

Lacking from this picture is a keen sense of creative symbiosis between Hamilton and Wordsworth. Whilst it is accepted that the former learnt copiously about poetic composition from the obliging old master, almost nothing has been done to illuminate what Wordsworth derived from the scientist.[84] One biographer's appraisal is that 'Ireland does not seem to have made any similarly major impact on the poet's

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[80] Graves, *Life*, I, pp. 269-70.
[81] Thomas L. Hankins, 'Triplets and Triads: Sir William Rowan Hamilton on the Metaphysics of Mathematics', *Isis*, 68: 2 (1977), 174-93; Hankins, *Sir William Rowan Hamilton* (Baltimore: The John Hopkins University Press, 1980); Marcus Tomalin, 'William Rowan Hamilton and the Poetry of Science', *Romanticism and Victorianism on the Net*, 54 (2009), 1-26; Daniel Brown, 'William Rowan Hamilton and William Wordsworth: the Poetry of Science', *Studies in Romanticism*, 51: 4 (2012), 475-501.
[82] Graves, *Life*, I, pp. 127, 452.
[83] WRH, 'On a General Method in Dynamics; by which the Study of the Motions of all free Systems of attracting or repelling Points is reduced to the Search and Differentiation of one central Relation, or characteristic Function', *Phil Trans*, 124: 2 (1834), 247.
[84] Cf. Owens, 'Wordsworth, William Rowan Hamilton and Science in *The Prelude*', *The Wordsworth Circle*, 42: 2 (2011), 166-69. This chapter constitutes a thoroughly expanded and much revised version of this article.

works'.[85] Yet when Hamilton died in 1865, the President of the Royal Irish Academy declared that he 'had the effect of raising [Wordsworth's] conception…of the dignity both of science itself, and of its most eminent votaries'. Herein lay the origins of Wordsworth's true esteem. His approbation of the young scientist, however, has not been pinpointed in his poetry. This would have displeased Charles Graves, who was absolutely clear that 'we must not lose sight of, nor underrate, the benefits flowing from intellectual converse between parties engaged in pursuits of different kinds. Between all the various branches of study there is a wondrous correlation'.[86] Elucidating instances where Wordsworth attuned his verse to Hamilton's ideas rebalances the shared artistic influences in their friendship, powerfully proofing how the young scientist 'conquered him completely'.[87] It further suggests that the way in which Wordsworth wrote poetry was radically changing, that it was scientific discovery itself that often enabled him to refine and revitalise his autobiographical poem.

Pacing eagerly back and forth between Rydal and Ambleside in the middle of the night in September 1827, '*without any companion* except the stars and our own burning thoughts and words', [88] Hamilton awoke in Wordsworth a sudden access of poetic confidence. Nothing could have been more unexpected for the distinguished fifty-seven year old poet. They were perfect strangers and their gifts seemed antithetical. Hamilton was a twenty-two year old mathematical prodigy who had just graduated from Trinity College, Dublin, where he had been appointed Andrews Professor of Astronomy and Director of the Dunsink Observatory before finishing his

[85] Seán O'Donnell, *William Rowan Hamilton: Portrait of a Prodigy* (Dublin: Boole Press, 1983), p. 78.
[86] Charles Graves, 'Address by the President', *Proceedings of the Royal Irish Academy (1836-1869),* 7 (1857-1861), 420.
[87] Gill, *William Wordsworth: A Life* (Oxford: Clarendon Press, 1989), p. 355.
[88] Graves, *Life*, I, p. 262.

degree. On his return to Ireland he was swiftly elected Irish Astronomer Royal.[89] Schooled with his uncle and aunt near Trim in County Meath from the age of three, Hamilton showed very early signs of linguistic and scientific genius, reading Milton at five and translating Homer and Virgil aged six. In 1822, in preparation for his entrance examinations to Trinity the following year, in which he excelled, his uncle had him 'getting up before five for several mornings…he pulls a string which goes through the wall and is fastened to my shirt at night'.[90]

At the same time that Peacock, Herschel, and Babbage were plotting mathematical subterfuge over breakfast in the rooms of Bromhead in 1813, Bartholomew Lloyd was appointed Erasmus Smith's Professor of Mathematics at Trinity College, Dublin. Lloyd's goal was akin to the Analytical Society's; he revolutionised mathematics in Ireland by bringing into the curriculum the French algebraic methods. The transformative effect of this was more immediate than in Cambridge due to Lloyd's position of authority; he published details of the reforms in *A Treatise on Analytical Geometry* (1819) for his students. Hamilton was taught by Lloyd and read his *Treatise* and other Continental mathematics in 1822.[91] The academic demands placed on Hamilton and Airy at their respective Trinity Colleges were very similar. In 1825, Hamilton wrote to his uncle, informing him that 'I will in all probability be among the first to be examined on the new system, and an intimate acquaintance with modern Mechanics will be necessary to support my mathematical

[89] Albert C. Lewis, 'Hamilton, Sir William Rowan (1805-1865)', *ODNB* (Oxford: Oxford University Press, online edn. 2004).
[90] Graves, *Life*, I, pp. 41-42, 118.
[91] Ibid., I, pp. 110-11. Cf. Thomas Hamilton, 'Lloyd, Bartholomew (1772-1837)', rev. M.C. Curthoys, *ODNB* (Oxford: Oxford University Press, online edn. 2004).

character'.[92] This supposition was correct; an analytical basis underlay all of Hamilton's major discoveries.

Before arriving in the Lakes in 1827, Hamilton had recently presented his first piece of important research, on geometrical optics, at the Royal Irish Academy. His 'Theory of Systems of Rays' was the culmination of four years' undergraduate work into how light operated on crystals under certain conditions. It was the foundation for Hamilton's prediction, in three supplementary essays, that at particular angles of incidence light rays would not be refracted as single or double rays but would in fact 'become a series of concentric spheroids' – a cone of rays.[93] Conical refraction, as it became known, was experimentally verified in biaxial crystals by Humphrey Lloyd, son of Bartholomew, in 1832: 'The phenomenon was exceedingly striking. It looked like a small ring of gold viewed upon a dark ground; and the sudden and almost magical change of the appearance from two luminous points to a perfect luminous ring, contributed not a little to enhance the interest'.[94]

Wordsworth took stock of Hamilton's first 'Supplement to an Essay on the Theory of Systems of Rays' in 1830 and expressed gratitude for it in September, wondering how he could 'have forgot so long to thank you for your obliging present, which I shall value on every account?'[95] This was not politeness. Hamilton specifically sent it because, as he wrote earlier in February, it was 'on subjects upon which we have

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[92] Ibid., I, p. 172. For a list of these texts, which included the works of Lardner, Lacroix, Lloyd, Poisson and Laplace, see A.J. McConnell, 'The Dublin Mathematical School in the First Half of the Nineteenth Century', *Proceedings of the Royal Irish Academy. Section A: Mathematical and Physical Sciences*, 50 (1944/1945), 77.

[93] WRH, 'Theory of Systems of Rays', *The Transactions of the Royal Irish Academy*, 15 (1828), 78. Cf. G.N. Cantor, *Optics after Newton: Theories of Light in Britain and Ireland, 1704-1840* (Manchester: Manchester University Press, 1983), pp. 171, 196.

[94] Humphrey Lloyd, 'On the Phenomena Presented by Light in Its Passage along the Axes of Biaxal Crystals', *The Transactions of the Royal Irish Academy*, 17 (1837), 155-56. This account is more detailed than the ones presented in the *Philosophical Magazine* (1833). Cf. J.G. O'Hara, 'The Prediction and Discovery of Conical Refraction by William Rowan Hamilton and Humphrey Lloyd (1832-1833)', *Proceedings of the Royal Irish Academy. Section A: Mathematical and Physical Science*, 82A: 2 (1982), 231-57; Graves, *Life*, I, pp. 623-38.

[95] WW to WRH, 26 September 1830, in *WL*, V, p. 327 and n. 1. Cf. Shaver, *Catalogue*, p. 114.

conversed'.[96] Indeed, in November 1830, Hamilton trusted Wordsworth to communicate a message to Airy at Trinity College explicitly about the publication of his second supplement.[97] Wordsworth was intensely stirred by Hamilton's scientific pronouncements on light when he first heard them in 1827, as the ice-skating episode in *The Prelude* reveals.

Wordsworth's insistent return to his depiction of childhood ice-skating, first composed for the two-part *Prelude* in 1798-1799, shows a degree of tinkering remarkable even for such an inveterate reviser. The 'crack skater on Rydal Lake' could not leave the lines alone; ice-skating was one of Wordsworth's favourite hobbies, and he wanted to get it just right. [98] Hamilton helped him. For the first stage of Book I *Prelude* composition,[99] Wordsworth remembered the scene thus:

> Not seldom from the uproar I retired
> Into a silent bay, or sportively
> Glanced sideway leaving the tumultuous throng
> To cut across the shadow of a star
> That gleamed upon the ice… (I, 170-74)

Unsatisfied with the quality of the star's interaction on the ice – shadows do not gleam – Wordsworth amended the passage slightly for the 'AB Stage' Prelude, 'leaving the tumultuous throng' in order:

> To cut across the image of a star
> That gleamed upon the ice… (I, 478-79)

In this state, the lines survived for a decade, but neither 'shadow' nor 'image' incisively articulated the constituent properties of starlight flickering on ice. Both had an artificiality Wordsworth wrestled against. He came closer to making the phrase shine in two later manuscript drafts, but used neither of them:

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[96] Graves, *Life*, I, p. 354.
[97] WW to WRH, 26 November 1830, in *WL*, V, pp. 353-54 and n. 4: 'Now for a word about Professor Airey; I have seen him twice, but I did not communicate your message…I thought it best not to speak of it till I saw him, which I mean to do, upon a morning call.'
[98] Ibid., DW to Mary Lamb, 9 January 1830, p. 191.
[99] All quotation from *The Prelude, 1798-1799* is from *Prelude 1798-1799*.

To cut the bright reflexion of a Star, *MS. 1815/20*
To cross the bright reflection of a Star, *1820* [100]

Perhaps the poet felt that 'bright reflexion' was tautological, or that the line ceded quickness to clumsiness, quite unforgiveable in the circumstances. Verbal sharpness was fundamental here to capture the children 'All shod with steel', who 'hiss'd along the polish'd ice, in games | Confederate (I, 461-63). Mark Reed has dated the final change Wordsworth made to 1827 and this is how it was printed in *The Fourteen-Book Prelude* (I, 450):[101]

To cut across the reflex of a star

The genesis of the line preoccupied Wordsworth for nearly thirty years and, buoyed by his selection, he abruptly stopped polishing it in 1827. The 'reflex of a star' certainly served the poet's purpose: the compression and clarity of phrase is matched by a dazzling new awareness of the star's physicality – the light the skaters 'cut' is a part of the star, its moving emanation, and not a 'shadow' or 'image' of it. Its origins, however, lay elsewhere.

The completion of the line owed much to the expertise of Hamilton, by whom the poet was gripped at this time. Hamilton's work on the refractive indices of light was a subject 'upon which we have conversed' and 'reflex' was part of the technical, investigative vocabulary used by scientists to establish how light operates. It was a felicitous change, since 'shadow' and 'image' conjure a sense of misguided solidity Hamilton would have deemed imitative of the Newtonian particle or corpuscular theory of light, and which his own work on 'Systems of Rays' did much to reject. A mechanical concept was replaced by a dynamic one in a move that enhances the power of 'the Mind that builds for aye'. Paul Fry's belief that 'no striking semantic change

[100] Cf. *Prelude 1805*, I, p. 119, l. 478n.
[101] Ibid., I, p. 119, l. 478n.

results from these choices' hardly does justice to Wordsworth's new-found appreciation for the geometry and composition of light.[102] 'Reflex' is true both to the latest undulatory or wave theories that Hamilton, Airy, Herschel, and Whewell propounded,[103] and to the pellucid transmissions of the poet's reflexive mind, sparking passages that need to be retuned. Refraction becomes the scientific process by which the contours of the poet's memory swerve together, unexpectedly, in lightning flashes.

For *The Fourteen-Book Prelude*, Wordsworth devised two further lines, which he modified in MS. E^2.[104] The final printed passage is very different from its oldest predecessor:

> Not seldom from the uproar I retired
> Into a silent bay, – or sportively
> Glanced sideway, leaving the tumultuous throng
> To cut across the reflex of a star
> That fled, and, flying still before me, gleamed
> Upon the glassy plain. (I, 447-52)

The 'glassy plain' is a new addition. This is no ordinary frozen lake, but one that actively participates in a night scene about studied shape and the poetry of angles. Wordsworth manages something very special, balancing two distinct encounters, since the revisions are responsive to his current comprehension of the latest Hamiltonian science and to his childhood fun on the ice: 'fled, and, flying still' is a pitch-perfect contradiction for the child's uncertain yet eager feel for the surroundings; even the commas mirror the lurching into the uncatchable light. It is an illusion, after all, that the same 'reflex' is readily identifiable, constantly supposed by the child to be 'flying still before me', but it enhances the pleasure and dizziness of the practice, and contributes to

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[102] Paul H. Fry, *Wordsworth and the Poetry of What We Are* (New Haven and London: Yale University Press, 2008), p. 130.
[103] Cantor, 'The Reception of the Wave Theory of Light in Britain: A Case Study Illustrating the Role of Methodology in Scientific Debate', *Historical Studies in the Physical Sciences*, 6 (1975), 113.
[104] Cf. *Prelude 1850*, pp. 40, l. 451n; 402-3, ll. 439-44.

the subsequent sensation that 'the earth had rolled | With visible motion her diurnal round!' (I, 459-60).

Wordsworth's decision to revise is predicated, in this instance, on scientific advance. The skating episode no longer simply maps the progress of a poetic mind at work; it becomes the evolutionary evidence for it. Indeed, at its most remarkable, the poetry works in a way that Humphrey Lloyd had yet to prove experimentally. Following from the 'glassy plain' in the 1850 text, Wordsworth continued with a clause that had not agitated him since he wrote it in 1798-1799:

> …and oftentimes,
> When we had given our bodies to the wind,
> And all the shadowy banks on either side
> Came sweeping through the darkness, spinning still
> The rapid line of motion, then at once
> Have I, reclining back upon my heels,
> Stopped short… (I, 452-58)

Unquestionably, 'the shadowy banks' are the proximate cause for the 'spinning' of the 'rapid line of motion', but the 'reflex of a star' is another possible subject for the action. Although Lloyd's experiments in 1832 held true only for biaxial crystals like aragonite, and not for uniaxial ones like ice, it may yet have given Wordsworth intensified pleasure to think of the passage keeping up with the summation of his friend's optical research. Hamilton reminded Wordsworth of it in 1834: 'You have heard, I believe, that a new Law of Light, the Conical Refraction, predicted theoretically by me, has been verified experimentally by Professor Lloyd, now more than a year ago'.[105] The 'sudden and almost magical change' brought about by 'a small ring of gold viewed upon a dark ground' would not have looked out of place coruscating on Rydal Water. If it is a childish dream that the starlight 'fled' and yet was 'flying still', Lloyd's certification that Hamiltonian light was 'spinning still' triumphs

[105] WRH to WW, 20 July 1834, in Graves, *Life*, II, p. 98

over another oxymoron with a trick the landscape is unable to perform without the skater.

What struck Wordsworth so forcefully about Hamilton was the vital challenge he posed to poetic creativity. It was with a retrospective impulse that Wordsworth adapted the skating scene in 1827. He had fully committed himself to doing so in 1802:

> If the labours of Men of science should ever create any material revolution, direct or indirect, in our condition, and in the impressions which we habitually receive, the Poet will sleep then no more than at present; he will be ready to follow the steps of the Man of science, not only in those general indirect effects, but he will be at his side, carrying sensation into the midst of the objects of the science itself.[106]

This did not mean Wordsworth was prepared to sacrifice his stringent artistic standards for science. Far from it. He was as rigorous as ever in critiquing Hamilton's poems. Firing off 'It Haunts Me Yet' to Wordsworth as soon as he returned to Dublin in September 1827, Hamilton quickly received instructive comments back about the 'Workmanship' of the following three lines in particular:

> Some *touch* of human sympathy find way,
> And whisper that while Truth's and Science' *ray*
> With such serene effulgence o'er thee shone –

> Sympathy might whisper, but a '*touch* of sympathy' could not. 'Truth's and Science' ray', for the ray of truth and Science, is not only extremely harsh, but a 'ray *shone*' is, if not absolutely a pleonasm, a great awkwardness – A 'ray fell' or 'shot' may be said; and a *sun*, or a *moon*, or a *candle* shine, but not a ray.[107]

Wordsworth's analysis of the word 'ray' sustains a subtle but crucial difference between the poet and the scientist. He would reject the word again two years later, this time in Hamilton's 'To Poetry': '"*Greets thy rays*". You do not greet the *ray* by *daylight*; you greet the *moon*; there is no ray'.[108] Hamilton had spent years dissecting light; he had never seen anything but shining rays from the beginning. It would have made no sense to him whatsoever to admit 'there is no ray'; it was contrary to his lived

[106] Preface to *Lyrical Ballads* (1802), in *Prose*, I, p. 141.
[107] WW to WRH, 24 September 1827, in *WL*, IV, p. 545.
[108] WW to WRH, 23 December 1829, in *WL*, V, p. 184.

experience. Hamilton acknowledged that he had 'always aimed to infuse into my scientific progress something of the spirit of poetry', [109] and this instance shows the reverse was obviously true too: 'the telescope of Art' worked both ways.

Wordsworth, however, took a firm line. It is an important moment in their trajectories; the realisation that they were distinct personalities. This recognition, though, makes their affinities all the more triumphant. They may have differed over the proper use of 'ray', but 'reflex' was a real tribute to their friendship, and a great boon to Hamilton. Graciously receiving another poem entitled 'Recollections' from Hamilton in 1839, Wordsworth assured him 'that without the help of these interesting lines I should retain a most lively remembrance of our first meeting, and of the hours so pleasantly and profitably spent in your Society, both in Ireland and at Rydal'.[110] One stanza in particular contained an irony that may not have been lost on either of them:

> While other star-like minds shed other rays,
> Companion orbs, which may not be forgotten,
> Nor from those Rydal Hours dissevered be.[111]

Wordsworth's 'star-like' mind 'shed other rays' benignantly; 'reflex' was his preferred choice in 1827. He never used the word again.

In 1829, on Wordsworth's only trip to Ireland, it was the poet's work which was admonished. The scientist's sister, Eliza, recorded that one evening at home in Dunsink Observatory Wordsworth read a passage from *The Excursion* which 'did not quite please [Hamilton] by its slight reverence for Science'.[112] Mary Moorman has identified this as 'evidently those lines in the fourth book in which the Wanderer criticizes the

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[109] Graves, *Life*, I, p. 354. Cf. Ibid., WRH to WW, 8 December 1827, p. 284: 'For Science, as well as Poetry, has its own enthusiasm, and holds its own communion with the sublimity and beauty of the Universe.'
[110] WW to WRH, 20 January 1839, in *WL*, VI, p. 655.
[111] Graves, *Life*, II, p. 277.
[112] Ibid, I, p. 312.

"presumption" of men of science who "pry" and "pore"'.[113] Hamilton might have been yet more aggrieved had he heard the original version of those lines. In the printed text of 1814, the Wanderer initiates his tirade in Book Four with a series of questions, of which the second is as follows:

> Shall Men for whom our Age
> Unbaffled powers of vision hath prepared,
> To explore the world without and world within,
> Be joyless as the blind? (IV, 940-43)

When these lines were composed in DC MS. 70 (40[r]), a notebook which contains verse written between December 1809 and March 1812, Wordsworth initially wrote 'The optic glass of Science' in place of 'Unbaffled powers of vision'.[114] Hamilton may have been personally affronted by this implication had it been read aloud and it was auspicious that Wordsworth changed it, first substituting for it 'A microscopic vision', before eventually settling on the published version. As it was, Wordsworth's characterisation of the 'Ambitious Souls' (IV, 943) was close enough. They were those that 'regulate the moving spheres, and weigh | The planets in the hollow of their hand' (IV, 945-46). It was good fortune, perhaps, that Hamilton's real talents lay in mathematics and not in astronomical observation. However, he need not have worried at all.

Wordsworth 'defended himself with a beautiful mixture of warmth and temperateness, from the accusation of any want of reverence for Science', gathering the coolness of one who had long been consistent.[115] He has since been consistently misunderstood. Mechanistic sciences which did not give credence to the 'Mind that builds for aye' were, in Wordsworth's view, inimical. Their practitioners viewed 'all objects unremittingly | In disconnection dead and spiritless' (IV, 957-58), as the

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[113] Mary Moorman, *William Wordsworth: A Biography. The Later Years: 1803-1850* (1965; Oxford: Oxford University Press, 1968), p. 438.
[114] *Excursion*, pp. 427, 732, ll. 937-43.
[115] Graves, *Life*, I, p. 313.

Wanderer warned in *The Excursion*. This 'dividing' (IV, 959) worked directly against what gave Wordsworth much pleasure in Book Six of the 1850 *Prelude*:

> And specially delightful unto me
> Was that clear Synthesis, built up aloft
> So gracefully! (IV, 161-63)

It is no coincidence that these lines come straight after his enriched homage to mathematics, which positioned 'abstract Science' and natural theology as corollaries. As he told Hamilton in Dunsink, valuable scientific endeavour 'raised the mind to the contemplation of God in works' and 'was pursued with that end as its primary and great object'.[116]

The exchange was not completely one-sided. Wordsworth gauged intently Hamilton's reaction. Indeed, Eliza documented that the poet fended a question about Newton that he would answer elsewhere. '"What," he said at the time, "would have been the use of my praising such men as Newton? They do not need my insignificant praise, and therefore I did not allude to such sons of Science"'.[117] The additions about Newton in Book Three of the 1850 *Prelude* are only explicable in terms of a complete transformation in attitude. Hamilton is the obvious candidate to have effected this conversion. The immortal couplet squeezed into MS. D depicts the statue of Newton in Trinity College rendering the 'Marble index of a Mind for ever | Voyaging through strange seas of Thought, alone' (III, 62-63). This is not, in fact, as compelling as a later and less well-known alteration, despite commemorating afresh Wordsworth's Cambridge friendships.[118]

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[116] Ibid., I, p. 313. Indeed, it was not even true that 'the habit of analysing decomposing, & anatomizing is inevitably unfavourable to the perception of beauty', as Wordsworth detailed in his Fenwick note to 'This Lawn'. Cf. *Fenwick*, p. 45: '…the beauty in form of a plant or an animal is not made less but more apparent as a whole by more accurate insight into its constituent properties & powers'. The phrase 'as a whole' is key to the holistic picture of beauty Wordsworth admired.
[117] Graves, *Life*, I, p. 314.
[118] Cf. *Prelude 1850*, pp. 470-71, ll. 58-59 and additions.

Midway through Book Three, Wordsworth added lines to MS. D following his admission that 'Even the great Newton's own etherial Self, | Seemed humbled in these precincts' (III, 270-71) which deserve more notice. Referring to Cambridge's most illustrious alumni now hanging as 'Persons in their portraits' (III, 273), but specifically singling out Newton, Wordsworth quietly paid a new tribute, claiming that 'Their several Memories':

> Put on a lowly and a touching grace
> Of more distinct humanity… (III, 275-76)

This couplet on Newton was propelled by a singular impetus: active friendship with Hamilton, who continued to visit in the 1830s and 1840s, frequently around meetings of the newly-established British Association for the Advancement of Science.[119] At a dinner in the library of Trinity College, Dublin, in August 1835, to conclude one such British Association meeting, Hamilton was knighted. In the conclusion of his speech, William Whewell could not resist noting that 'it was now one hundred and thirty years since a great man in another Trinity College knelt down before his sovereign and rose up Sir Isaac Newton'.[120] It was that persistent lustre of 'distinct humanity' that restored the glory of Newton in *The Prelude*, and which, in the familiar figures of Hamilton, Whewell, Herschel, Peacock, and 'Orson the hairy', was responsible for other reflexive marks of mathematical celebration and wonderment.

[119] Hamilton was in the Lakes at times of important *Prelude* revision: in 1830, 1834, 1838 and 1844. His last three visits corresponded with BAAS meetings in Edinburgh, Newcastle and York (although he was too ill to attend the last conference). Cf. Graves, *Life*, I, p. 368; *Life*, II, pp. 110, 226, 459-60.
[120] Graves, *Life*, II, pp. 157-58. The professional kinship between Hamilton and Newton was close. Cf. Thomas and Ober, *A Mind For Ever Voyaging* (1989), pp. 119-24.

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It was riotously busy at 'the Idle Mount' in the summer of 1844. Isabella Fenwick was served an early warning in mid-July: 'Professors Hamilton and Butler and Mr Graves and Archdeacon Hare dine here to day; and in the evening we have a rout of some thirty or forty; you will think it well you are not here'.[121] Hamilton arrived in the Lakes on 18 July and stayed, as did the Reverend William Archer Butler, with Robert Perceval Graves at his rectory in Windermere.[122] One hot summer's day, as Graves recounts, Wordsworth led the whole party over Loughrigg Fell and down to Loughrigg Tarn, where 'the loveliness of the scene arrested our steps and fixed our gaze'. Wordsworth's concentration:

> was attracted by a fair, smooth stone, of the size of an ostrich's egg, seeming to imbed at its centre, and, at the same time, to display a dark star-shaped fossil of most distinct outline. Upon closer inspection this proved to be the shadow of a daisy projected upon it with extraordinary precision by the intense light of an almost vertical sun. The poet drew the attention of the rest of the party to the minute, but beautiful phenomenon, and gave expression at the time to thoughts suggested by it…[123]

For Julius Hare, the scene of churchmen, mathematicians, astronomers, and poets poring over the illusory celestial fossil was a memorable one, and he predicted "We shall have a sonnet upon it". The poem it inspired, however, did not have that 'orbicular body'. In late August, Hare was sent the verses Wordsworth 'threw off' after that 'delightful walk',[124] and he noted in his reply the following month that 'instead of the

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[121] WW to Isabella Fenwick, 22 July 1844, in *WL*, VII, p. 580 and n. 2: 'Another of W.W.'s visitors at this time was the Revd. Charles Pritchard (1808-93), the astronomer; headmaster of Clapham Grammar School, 1834-62, and Savilian Professor of Astronomy at Oxford, 1870.'

[122] Graves had been made the clergyman of the parish of Windermere in 1835, where he remained for thirty years. Cf. Graves, 'Recollections of Wordsworth and the Lake Country', in *The Afternoon Lectures on Literature & Art, delivered in the theatre of the Royal College of Science, Dublin* (Dublin, 1869), pp. 275-321, 279.

[123] Graves's account is written in a letter to Thomas Woodward on 31 March 1849, in William Archer Butler, *Sermons, Doctrinal and Practical*, ed. Thomas Woodward (Dublin, 1849), p. xxix.

[124] WW to Julius Charles Hare, late August 1844, in *WL*, VII, pp. 589-90.

sonnet, you have adopted a new form of verse, that is, new, I believe, in your writings, in composing the beautiful triplets'.[125]

This poem, 'So fair, so sweet, withal so sensitive', is Wordsworth's single venture in writing stanzas consisting of three lines each. Even the opening line mirrors the overall tripartite structure. Jared Curtis notes that the 'earliest draft suggests that he first conceived the poem as three triplets with beginning and ending couplets…but by August…he had expanded the opening and closing couplets to triplets…By November 1845…Wordsworth had revised the poem and added two more triplets'.[126] In the poem, the 'little Flowers' (2) are neither able to 'take account' (8) of the natural relationships they foster, nor register the infinitely serendipitous beauty they are pressed into by their surroundings. The daisy cannot complete its own exquisite transformation into 'a dark star-shaped fossil'. The poet suggests that only by conversing 'with Nature in pure sympathy' (18) can 'These delicate companionships' (11) be revived at all. Nature's humility in unrequitedly nurturing these associations provides a restorative model for human interaction, one that retains a degree of equanimity and love 'Whatever boon is granted or withheld' (21).

One reason why Wordsworth may have attempted a unique verse arrangement in his mid-seventies is that its structure quietly and beneficently enshrines another of these 'delicate companionships'. Since their last reunion in 1838, Hamilton had been obsessed with the effort of trying to multiply triple sets of complex numbers in order to create an algebraic formula applicable to three dimensions. As he told John Thomas Graves, the brother of Robert (who was to be his own future biographer), 'I have long wished…to possess a Theory of Triplets'. In this he was frustrated, suddenly realising on 16 October 1843 that he needed to 'admit, in some sense, *a fourth dimension* of

[125] Julius Charles Hare to WW, 14 September 1844, in *Last Poems*, p. 502.
[126] Ibid., p. 387. All quotation is from the revised 1845 version in *Last Poems*, pp. 388-89.

space for the purpose of calculating with triplets'.[127] He was so astonished at his discovery that he immediately carved the four sets of numbers into Broome Bridge in Dublin, where a plaque remains to this day commemorating his theory of Quaternions.

Hamilton would not have been impervious to 'half the pleasure' (3) of Wordsworth's poem. Recalling in 1855 that Quaternions were born 'as the curious offspring of a quaternion of parents, say of geometry, algebra, metaphysics, and poetry',[128] the shape of the lines would have deeply moved him. What Hamilton could not achieve scientifically, Wordsworth 'could take account | Of' (8-9) poetically. If Wordsworth designed the poem intentionally with this aim, it was not the first time that science had impelled his poetry or implicated the inmost architecture of its forms. The triple measure was a powerful, numerological tool with which to dignify that day at Loughrigg Tarn, poetically affirming an unreachable trichotomous logic. It was thus the perfect mathematical expression of lasting affection and gratitude.

[127] Hamilton's letter to J.T. Graves explaining his discovery of Quaternions is in Hamilton, 'On Quaternions; or on a new System of Imaginaries in Algebra', *The London, Edinburgh and Dublin Philosophical Magazine and Journal of Science*, 25 (July – December 1844), 489-95, 490-91.
[128] WRH to Rev. Richard Townsend, 14 May 1855, in Hankins, *Hamilton*, p. 247. This letter is not in Graves's biography.

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> THE third Meeting of the British Association commenced its sittings at Cambridge on Monday, the 24th June, 1833. It was attended by more than nine hundred Members, and was honoured with the presence of several foreign philosophers. The extent of accommodation provided by the University, and by the societies of which it consists, corresponded with the magnitude of the Meeting.[129]
>
> The bed on which I slept at Cambridge was as near as I can describe it a couple of sacks full of potatoes tied together. I understand the young men think it hardens them. Truly I lay down at night a man, and arose in the morning a Bruise.[130]

Of the twenty leaders who founded the British Association in 1831, nine had been educated at Trinity College, Cambridge, or Trinity College, Dublin. Wordsworth knew five of them well: Airy, Hamilton, Peacock, Sedgwick and Whewell.[131] They were all in attendance at the 1833 meeting, as were Herschel and Humphrey Lloyd. It was a spectacular reunion. Hamilton told Wordsworth 'nothing almost was wanted, except yourself',[132] and the poet would have enjoyed it. Indeed, Hamilton and Lloyd confirmed 'the laws of extraordinary refraction in crystals called biaxal', whilst George Peacock gave a long report on the progress of analytical mathematics. [133]

Despite sleeping very badly in the rooms of Connop Thirlwall, a friend of Hare's, Peacock's, and Whewell's from their undergraduate days, Coleridge could not recollect ever having, 'of late years at least, passed three days of such great enjoyment,

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[129] Anon., *Report of the Third Meeting of the British Association for the Advancement of Science; Held at Cambridge in 1833* (London, 1834), p. ix. These meetings were wittily satirised by Charles Dickens in his account of Professors Doze, Snore and Wheezy. Cf. Dickens, 'Full Report of the First Meeting of the Mudfog Association for the Advancement of Everything', *Bentley's Miscellany*, 2 (1837), 397-413.
[130] Coleridge, 29 June 1833, in *TT*, I, pp. 391-92.
[131] Jack Morrell and Arnold Thackray, *Gentlemen of Science: Early Years of the British Association for the Advancement of Science* (Oxford: Clarendon Press, 1981), p. 24. Hamilton was shown around Trinity by Christopher Wordsworth in April 1832, where he met Whewell, Sedgwick and Peacock. Cf. Graves, *Life*, I, p. 553.
[132] This quotation is from a manuscript letter Hamilton wrote to Wordsworth on 30 June 1833. It is held at The Jerwood Centre, Grasmere. Ref: WLMS A/ Hamilton, W.R., Sir / 2.
[133] Anon., *Report of the Third Meeting…Held at Cambridge*, pp. 366, 185-369.

and healthful excitement of mind and body'.[134] Though 'unable to rise till the afternoon', Henry Crabb Robinson learned that 'he had a crowded levée at his bedside'.[135] Coleridge was lionised. It was the last great display of his volubility and the pyrotechnics were impressive. On 27 June, the Reverend Joseph Romilly went 'with Hare to Thirlwall's dinner from 9 till 10 to hear Coleridge talk: wonderful old man'.[136] Francis Garden was present, recalling the 'highest luxury…of the whole week' was 'quietly meeting Coleridge both at breakfast and at dinner…We got rid of the "phantom time" very soon, and had the pleasure of being made to think in Trinity'.[137] For Robert Wilmott, a student at the college in 1833, the evening was extremely rousing, 'a symposium from which Plato himself might have carried something away'.[138] Coleridge shone.

Sifting through this packed schedule in June in his biography of Coleridge, Richard Holmes selected three events to highlight from Coleridge's itinerary: 'He met Sir Humphry Davy's pupil Michael Faraday; he discussed the evolutionary implications of new discoveries in geology published by Charles Lyell; and he went to contemplate Titian's "Venus" at the Fitzwilliam Museum'.[139] To this list, there are two other vignettes which simply cannot be overlooked.

The first is conceptual, the second social. The formation of the British Association provoked a problem in semantics that had been brewing for years and which Whewell apprehended 'was felt very oppressively by the members' at

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[134] *TT*, I, p. 392.
[135] HCR, *Diary, Reminiscences, and Correspondence* (1869), III, p. 35.
[136] J.P.T. Bury (ed.), *Romilly's Cambridge Diary 1832-42. Selected passages from the diary of the Rev. Joseph Romilly, Fellow of Trinity College and Registrary of the University of Cambridge* (Cambridge: Cambridge University Press, 1967), p. 36.
[137] T.W. Reid, *The Life, Letters and Friendships of Richard Monckton Milnes, first Lord Houghton*, 2 vols. (London, 1890), I, p. 146. Richard Monckton Milnes, Lord Houghton, was a member and future President of the Wordsworth Society, founded in 1880 by William Knight. Cf. Gill, *Wordsworth and the Victorians*, pp. 235-38.
[138] Wilmott, *Conversations at Cambridge* (1836), p. 2.
[139] Holmes, *Coleridge: Darker Reflections* (1998), p. 559.

Cambridge, namely 'the want of any name by which we can designate the students of the knowledge of the material world collectively'. The surge in intellectual societies in the third decade of the nineteenth century sealed the compartmentalisation of disciplines, heralding in a new professionalism that deadened the old terminology.[140] General expressions like 'natural philosopher' and '*savant*' had long ceased to reflect the specific pursuits of those that variously explored the world. The solution was found at the 1833 meeting, although not accepted until 1840. Whewell précised the debate thus:

> *Philosophers* was felt to be too wide and too lofty a term, and was very properly forbidden them by Mr. Coleridge, both in his capacity of philologer and metaphysician…some ingenious gentleman proposed that, by analogy with *artist*, they might form *scientist*…but that was not generally palatable.[141]

On the back of Coleridge's prohibition, 'some ingenious gentleman', Whewell himself, coined '*scientist*'. Coleridge surely did not dissent. He would have remembered the prefatory revisions to *Lyrical Ballads* (1802) where, as Gillian Beer has decreed, 'Wordsworth's term "the Man of Science" itself marks a new isolating of "scientific" from other intellectual and creative activity'.[142] It seems only fair, after this study, that Coleridge should have had a small role in the nomenclature of Victorian science. He was always so alive to the challenge of discovery. As a young man, astronomical pursuits with the Wordsworths amidst the hills of Somersetshire trickled into his poems; later on, astronomical possibilities filled his philosophical and religious thought, acting as the controlling coronal of that myriad mind. Perhaps it was the

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[140] Cf. Morrell and Thackray, *Gentlemen of Science*, p. 18: Geological (1807); Institution of Civil Engineers (1818); Astronomical (1820); Asiatic (1823); Royal Society of Literature (1823); Zoological (1826); Law (1827); Geographical (1830).
[141] Whewell, 'Review of Mary Somerville's *On the Connexion of the Physical Sciences* (1834)', *The Quarterly Review*, 51: 101 (1834), 54-68, 59.
[142] Gillian Beer, 'Problems of Description in the Language of Discovery', in George Levine (ed.), *One Culture: Essays in Science and Literature* (Madison: The University of Wisconsin Press, 1987), pp. 35-58, 39.

genuine attention the scientists paid Coleridge which was the real reason why, as Mrs Coleridge reported, 'Samuel was most highly gratified with his reception'.[143]

The other event which especially pleased Coleridge was one he jotted down later in a notebook in November 1833: 'For I was introduced to Lady Herschell at Cambridge, during the assemblage of the British Philosophers – and she and Professor Airy's wife were confessedly the twin stars of the first magnitude in the Constellation of Beauties'. It was a nice touch to draw on William Herschel's cataloguing of 'twin' or double stars to compliment the wife of his son, John. Coleridge did not stop there, but wrote out an amusing ditty inviting them all to his home 'To learn the extreme polar ridge | Of metaphysic Scholaridge':

> Deep Wits, tis true ~~h~~ live yet in Paris!
> But Highgate Hill not near so far is.
> There your night owl of Wisdom tarries…[144]

Coleridge knew the allure of cutting-edge Parisian astronomy and mathematics for Herschel and Airy. They were brought up on it at Trinity. In a slightly earlier entry he expressed his own 'vain regret & craving for an insight into & comprehension of the mysteries of the Transcendental Analysis ~~in~~ of the great French and German Mathematicians'.[145] The self-professed 'night owl of Wisdom' should have started by talking to his oldest and once best friend, Wordsworth, if he wanted to fly further down that 'extreme polar ridge'. It was a trajectory they experienced together at first, in the pages of the *Philosophical Transactions*, and in the poems of *Lyrical Ballads*. Their future paths did not eclipse those fond memories, nor dampen their enthusiasm for astronomy in its various poetic and philosophic guises. '[T]he language of the heavens' always exerted a strongly imaginative and 'orbicular' pull. It was an exalting tug felt

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[143] Stephen Potter (ed.), *Minnow among Tritons: Mrs S.T. Coleridge's Letters to Thomas Poole* (London: Nonesuch Press, 1934), p. 176.
[144] *CN*, V, 6825.
[145] Ibid., 6742, *f*6. Cf. *CN*, IV, 4672, *f*37^{v}.

right at the very end of the 1850 *Prelude*, when astronomical delights were part of 'all which then we were' (XIV, 411). For Wordsworth and Coleridge, nothing superseded their pleasure in 'looking back' (XIV, 395), and seeing:

> …in clearer view
> Than any liveliest sight of yesterday,
> That summer under whose indulgent skies
> Upon smooth Quantock's airy ridge we roved (XIV, 395-398).

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